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Editor: Janice Fuller



Introduction

The observant among you will have noted in the header that the name of IQUA has changed to the 'Irish Quaternary Association', as decided at the recent Annual General Meeting.

This issue of the Newsletter includes abstracts from the Spring Meeting, which was particularly well-attended, and a report of the AGM. Unfortunately the foot and mouth crisis has lead to the cancellation or postponement of many events including the QRA trip to Kerry as noted in 'Dates for your diary'. A few new web sites that may be of interest are listed, as well as, some recent publications relating to the Quaternary in Ireland. I think this latter section can be particularly useful for keeping up to date with the literature and I would appreciate if people could send me the details of relevant publications.

Please send these and any other contributions for the next Newsletter to me by the end of October, 2001.

Dates for your diary

1. QRA field excursion to SW Ireland

(9-13th May 2001) has been **postponed** because of the outbreak of foot and mouth disease. It is hoped to re-schedule the field excursion for sometime in mid-September.

For more details contact:

Tim Mighall (Email gexo43@coventry.ac.uk)

2. International Coastal Symposium 2002

March 25th-29th 2002

University of Ulster at Coleraine

The Coastal Research Group of the School of Environmental Studies, University of Ulster (Coleraine) is pleased to announce the hosting in March 2002, of the 7th International Coastal Symposium. ICS 2002 is the 7th of a series of International Coastal Symposia supported by the Journal of

Coastal Research. It is a multi-disciplinary international symposium convened for scientists, engineers and managers to discuss the latest advances in the scientific understanding, engineering and environmental issues of coastal processes. The symposium provides a forum for the exchange of information and will provide the opportunity to visit some of the world famous coastal sites of Northern Ireland. Integral to the conference are a series of fieldtrips to coastal sites around this highly variable and scenic coastline. Quaternary and Holocene coastal evolution and dynamics will be a strong theme. The symposium proceedings will be published in a special issue of Journal of Coastal Research. Only papers presented at the conference will be eligible for inclusion in the JCR Special Issue. Symposium Themes include: Coastal Change (Quaternary to historical); Contemporary coastal processes; Coastal engineering and management; Coastal ecosystems.

More information is available on the conference website at:

<http://www.science.ulst.ac.uk/ics2002/>

3. IQUA Fieldtrip and Annual Symposium

No decisions have been taken on the fieldtrip or symposium but members will be advised in

advance of the date and venue or location for these events.

Web sites of interest

Please send any suggestions you may have and a brief review to the editor.

1. www.science.ulst.ac.uk/crg/es2k/es2k.html

The Earth Science 2000 web page was established to promote earth sciences in Northern Ireland. A co-ordinating body was formed to focus the activity of a diverse range of organisations and interest groups. Their aim is to promote public awareness and education in earth science and to act as a lobbying body in Northern Ireland. The site includes pages describing what geology is all about, book reviews, information for schools and answers for frequently asked questions. Worth checking out.

2. www.ualberta.ca/~abeaudoi/cap/diction.html

A dictionary of Quaternary acronyms and abbreviations. Ideal for those who have always wanted to know what EDAX, LOICZ or MXD stand for. This site also lists other similar links and allows the user to search the page for a particular acronym or abbreviation.

3. www.ngdc.noaa.gov/paleo/paleo.html

NOAA (National Oceanic and Atmospheric Administration) Paleoclimatology Program (note the American spellings!). This page is not just of use to those interested in the Quaternary in North America. It contains some very useful free software (including mapping and pollen plotting programmes), educational tools (including some excellent slidesets that can be downloaded and printed on colour overheads for teaching purposes), as well as, extensive datasets (including the North American, European and Latin pollen and macrofossil databases).

Spring meeting April 2001 abstracts

Neogene and Pleistocene palaeosurfaces in Connemara: the implications for Ireland's glacial history

Pete Coxon¹, David Doff², Tara Nolan¹ and John Graham², Dept. of Geography¹ and Dept. of Geology², TCD

Neogene palaeosurfaces

The search for a clearer understanding of Ireland's Tertiary landscape evolution (Davies 1970; Mitchell 1980; Dewey 2000; Coxon 2001) has led to the discovery of a number of remarkable sites many of which are located on Carboniferous limestone (e.g. Drew and Jones

2000; Simms and Boulter 2000). The identification of a Neogene surface overlying weathered granite in Connemara (Coxon in press) has opened up the possibility of finding further datable palaeosurfaces on rocks other than limestone in Ireland. Current studies, for example at Bloody Foreland in Co. Donegal, appear to be confirming this latter possibility (Stuart Bennett, pers. comm.). The geomorphological implications of widespread Tertiary weathering deposits and of the survival of Tertiary surfaces are numerous and will be touched on during the talk. The possibility that deeply weathered rock outcrops around Ireland might represent evidence of Tertiary denudation has often been suggested. Now might be the time to begin a widespread analysis of such deposits and to make attempts to understand and date them.

(Middle) Pleistocene palaeosurfaces

Palynological work on two palaeosols in the townland of Gowlan East, County Galway, has been discussed elsewhere (Coxon in press). This paper will concentrate on the importance of the younger of the two surfaces exposed on the northern flank of Cnoc Mordáin which is believed to be Pleistocene (possibly Middle Pleistocene) in age. If this Pleistocene surface separates two

glacigenic sediments then a number of possibilities arise. The paper will examine a range of analyses that have been carried out on the diamictos at Gowlan East including clay mineral, particle size and clast lithological analyses. Information collected from the upper and lower diamictos may eventually lead to the differentiation of two glacial episodes separated by a temperate stage soil. Such good evidence for two distinct glaciations, perhaps widely separated in time, is exciting as it will force a reappraisal of the use of erosional features, erratic distributions and limited (undated) sections in reconstructing the extent of the ice sheets that once covered Ireland.

Ireland's glacial history

Our knowledge of the glacial history (particularly of terminal ice limits) of Ireland remains dogged by dated models that, understandably, few authors have attempted to correct. The main barriers to progress remain the lack of a large scale (integrated) programme of field mapping, a slow rate of application of widely available remotely sensed data and a paucity of reliable stratigraphical information related to glacigenic sediments. Despite our greatly enhanced knowledge of the behaviour of the Irish ice sheet during the latter part of the last

glaciation (e.g. McCabe and Clark 1998) and informed use of LANDSAT TM imagery (Knight 1999; Knight et al. 1999) we still have little idea of the maximum ice limits of the Glenavy Stadial. Recent models fail to identify the ice limits of the last glacial maximum, (LGM / MIS 2) and as such are of little use to ice sheet modellers. Given the importance of establishing dated glacial limits, especially from the LGM, to all aspects of modern Quaternary science we will need to begin to gather the evidence to enable us to draw lines on maps representing terminal ice positions. Fortunately the promise of the offshore work is abundantly evident from the data. Here, successions of massive moraines marking glacial limits are piled up on Ireland's continental shelf. The dating (and further mapping) of these moraines is of paramount importance, not just for academic interest, but so that we can begin to define the limits of Ireland's ice caps.

The calibre of work that is eventually done on the offshore moraines may yet decide whether the numerous glaciations of Ireland can be identified. Feedback from such projects may also give a clearer idea of onshore glacial events and allow a better understanding of the evolution of a landscape that must bear the imprint of multiple glacial

episodes.

Coxon, P. 2001. Cenozoic: Tertiary and Quaternary (until 10,000 years before present.) *In: Holland, C.H. (ed.) A Geology of Ireland* (Second Edition). Scottish Academic Press, Edinburgh. pp 387-427.

Coxon, P. (in press) Understanding Irish landscape evolution: Pollen assemblages from Neogene and Pleistocene palaeosurfaces in western Ireland. *In: Mitchell, F.J.G. (ed.) Proceedings of the Royal Irish Academy* (Special volume in honour of Prof. William Watts' 70th birthday.)

Davies, G.L. 1970. The enigma of the Irish Tertiary. *In: Stephens, N. and Glasscock, R.E. (eds) Irish Geographical Studies*, Queen's University, Belfast. pp 1-16.

Dewey, J.F. 2000. Cenozoic tectonics of western Ireland. *Proceedings of the Geologists' Association*, 111, 291-306.

Drew, D.P. and Jones, G.L. 2000. Post-Carboniferous pre-Quaternary karstification in Ireland. *Proceedings of the Geologists' Association*, 111, 345-53.

King, E.L., Hafliðason, H., Sejrup, H.P., Austin, W.E.N., Duffy, M., Helland, E., Klitgaard-Kristensen, D. and Scourse, J.D. 1998. End moraines on the northwest Irish continental shelf. 3rd ENAM II Workshop,

Edinburgh, 1998. Abstract volume.

Knight, J. 1999. Problems of Irish drumlins and Late Devensian ice sheet reconstructions. *Proceedings of the Geologists' Association*, 110 (1), 9-16.

Knight, J., McCarron, S.G. and McCabe, A.M. 1999. Landform modification by palaeo-ice streams in east-central Ireland. *Annals of Glaciology*, 28, 161-167.

McCabe, A.M. and Clark, P.U. 1998. Ice-sheet variability around the North Atlantic Ocean during the last deglaciation. *Nature*, 392, 373-377.

Mitchell, G.F. 1980. The search for Tertiary Ireland. *Journal of Earth Sciences, Royal Dublin Society*, 3, 13-33.

Simms, M.J. and Boulter, M.C. 2000. Oligocene cave sediments in Co. Cork: implications for reconstructing the Tertiary landscape of southwest Ireland. *Proceedings of the Geologists' Association*, 111, 363-372.

CHILL-10,000 @ Lochnagar, Cairngorm Mountains

Catherine Dalton, Dept. of Geography, Mary Immaculate College, University of Limerick.
Battarbee, R.W., Birks, H.J.B., Brooks, S.J., Cameron, N.G., Derrick, S., Evershed, R. P., Peglar, S.M., Scott, J.A. & Thompson, R.

The CHILL 10,000 project was funded under the EU Framework V, Environment and Climate Programme. The aim of CHILL-10,000 was to quantitatively investigate past climate changes as recorded in lake deposits in ecologically sensitive situations. Lochnagar in the Scottish Cairngorms was selected, along with seven other high altitude lakes, for high resolution examination of their Holocene sedimentological and biological sequences. Lochnagar is a corrie loch and is ideally suited as it is situated in the only natural alpine environment in the UK, has high quality monitoring data available.

Lake sediment cores were retrieved representing a c. 9,000 Cal yrs BP. High resolution microfossil (pollen, diatoms and chironomids) and sedimentological proxies (organic matter, minerogenic matter, biomarkers, lipid analyses, mineral magnetism and particle size) were examined to reconstruct past climate conditions.

The major pattern of long-term change in the fossil pollen data is a progressive loss of woodland cover and soil deterioration from brown-earths to podsoles and shallow peat. Highly distinctive cycles in LOI during the last 6000 years were reflected in bulk and lipid geochemical analysis. Biomarker studies

have succeeded in quantifying the relative proportions of autochthonous and allochthonous organic matter in the Lochnagar sediments and are expected to provide a more direct link with palaeoclimate. Diatom analyses show a general decline in pH and this was supported by the results of chironomidae analysis while inferred temperatures fluctuate throughout the Holocene period. The potential of these high altitude lake sites as high-resolution sensors of environmental change has been realised in some proxies but not in others. The highly characteristic results from Lochnagar remain an interesting phenomenon.

Pathways and processes of Late Pleistocene subglacial meltwater flows, County Kilkenny

Susan Hegarty, Dept. of Geography, UCD.

The work being presented looks at the various types of sub-glacial drainage conduits in Co Kilkenny, south east Ireland. The glacial deposits of the area have also been mapped and described and from this the form and distribution of these different conduits has been described and mapped.

Preliminary results suggest that the distribution of bedrock lithologies plays a major role in the geographical distribution of forms of drainage conduits to be found in the area. Certain basal till types are also absent over large areas of high-transmissivity bedrock. Finally, it is hypothesised that the sub-glacial karstic system was one of the major sub-glacial drainage conduits in Kilkenny during the last glaciation of the area.

Late Quaternary peat formation and vegetation dynamics in a lowland tropical swamp; Nee Soon, Singapore

David Taylor, Dept. of Geography, TCD.

Cores of sediment from Nee Soon, a peat-forming freshwater swamp located in the perimarine zone of Singapore, have yielded a record of vegetation history that include parts of the last glacial and Holocene periods. The evidence includes two conventional and four AMS radiocarbon dates, the oldest of which is 23,050 \pm 330 BP (uncalibrated radiocarbon years) and variations in the abundances of sub-fossil pollen and spores and charcoal. The results of a study of the relationship between contemporary vegetation and modern pollen accumulation facilitated interpretation of sub-fossil tree pollen data. Peat formation occurred at Nee Soon during

the last glacial, when sea levels on the Sunda continental shelf are thought to have been well below those at present. The occurrence of montane pollen types, notably Podocarpaceae, in sediment samples dated to the late glacial and early Holocene suggests temperatures substantially lower than those of the present and, possibly, humid conditions. The abundance of charcoal in sediments of the same age and older indicates the widespread occurrence of fires at the time and indeed throughout the entire period represented by the cores. For the mid-Holocene, the evidence indicates an increased saline influence, presumably as a result of relatively high sea levels. Falling sea levels during the late Holocene appear to have preceded the onset of the most recent period of peat formation at Nee Soon. The evidence confirms that long (last glacial -interglacial) records of lowland vegetation history are available from terrestrial locations in the humid core of Southeast Asia and suggests that the complexity of perimarine swamp dynamics is not captured fully by Anderson's 'depositional model', which assumes a close relationship between peat formation and sea level.

The Irish Drumlin Belt – a misnomer?

Chris D. Clark¹ and Robert T. Meehan²,

¹Dept. of Geography, University of Sheffield;

²Teagasc, Kinsealy Research Centre.

It has recently been realised that ribbed (rogen) moraines form an integral part of Irish geomorphology (Knight and McCabe, 1997). The fact that these features were not recognised for such a long period of time, and the piecemeal approach to previous drumlin mapping, is probably responsible for the highly contrasting views of palaeo-flow patterns of the Irish Ice Sheet.

Using a high resolution (25 m) digital elevation model morphological mapping of a large part (100 x 100 km) of the so-called 'Drumlin Belt' was conducted. The landforms mostly comprise ribbed moraine much larger than found elsewhere (up to 16 km in length) and which in places are superimposed on each other. Contrary to most prior assessments we find the bedform record to contain numerous and overlapping episodes of bed formation (ribbed moraine, drumlins, crag-and-tails, subtle flutings) providing a palimpsest record of changing flow geometries. These demonstrate an ice sheet whose centre of mass and flow geometry changed during growth and decay.

Using distinctive flow patterns and relative age relationships between them we reconstruct ice sheet evolution in this area into four phases during a single glacial cycle. In Phase-1 (early in glacial cycle) Scottish and local ice coalesced forming a NE-centred Irish Ice Sheet. As it grew its centre of mass migrated southwards culminating in a major N-S divide positioned down the east of Ireland (Phase-2, ca. Last Glacial Maximum). During retreat, the centre of mass migrated at least 120 km northwards and became established in NW Ireland and at this point a dramatic bedforming event produced one of the world's largest and most contiguous ribbed moraine fields (Phase-3). Final deglaciation is thought to be by fragmentation into many topographically-controlled minor ice caps (Phase-4). These reconstructed phases indicate a relatively predictable pattern of ice sheet growth and decay with changes in centres of mass, and does not require major readvances or ice stream events.

Knight J, McCabe AM. 1997. Identification and significance of ice-flow-transverse subglacial ridges (Rogen moraines) in north central Ireland. *Journal of Quaternary Science* 12 (6), 519-524.

Hunting the Penultimate Glaciation in Western Ireland

Mike Simms¹ and Mabs Gilmour²; ¹Dept. of Geology, Ulster Museum; ²NERC Scientific Services, The Open University

The Burren, Co. Clare, owes much of its character to Pleistocene glaciations. Rounding of north-facing scarps and plucking of south-facing ones indicates prevailing ice movement from north to south, with bedrock striations indicating specifically that the most recent glacial advance was from the NNE. Such a flow direction is consistent with till composition here, which is overwhelmingly dominated by limestone. However, erratics of more exotic lithologies, notably boulders of Galway Granite a metre or more across, occur thinly scattered across much of the Burren. They cannot have been transported directly by the last ice advance and must relate to an earlier one for which little evidence remains on the surface. Several Burren caves, up to 20 km apart, have been found to contain coarse sediments unusually rich (>75% of total clast counts) in quartz, granite and other exotics indicating an origin in Connemara and west Galway. These sediments are thought to derive from fluvial reworking of an earlier till, emplaced by ice from the north west, with their position in these caves having protected

them from destruction by later ice movement. But what is the age of this earlier glaciation?

The most parsimonious interpretation would have the earlier till emplaced from the north-west during Oxygen Isotope Stage 4, fluvially reworked into the caves during the interstadial of Stage 3, and then largely erased from the surface during the north-easterly ice advance of Stage 2. But how can this be proven? Remarkably, an intact pocket of this older till has been found in a half-metre wide fissure in Poulsallagh Bay, in the south-west Burren. More remarkably, a thin flowstone layer between the fissure wall and the till provides potential for obtaining a maximum date, from U-Th disequilibrium, for emplacement of the till. Even more remarkably, remnants of a second flowstone layer lie between the older till and the most recent till, rich in limestone, directly above; hence obtaining a minimum age for the older till may also be possible.

Hopefully, lab refurbishments permitting, the maximum and minimum dates for this ancient till will be announced at the meeting.

The storminess record from Armagh Observatory 1796 to 1999

Kieran Hickey, Armagh Observatory

This paper is an examination of the changes in storminess over a 205 year period as shown by the Armagh Observatory meteorological station. The record clearly shows significant changes in frequency of storms over this time period particularly as it stretches back well into the end of the Little Ice Age and up to the present day with concerns about global warming and predicted increases in storminess for NW Europe. The paper will also identify some of the difficulties in assembling such a record including changes in recording instrument, frequency of observations, reliability of observations, different measurements of wind speed and direction and the difficulties in converting these to a common unit.

Glacio-isostatic flexural modelling of the Galtee Mountains, County Tipperary: A glimpse of pre-Quaternary landscapes?

Sarah Taylor & Alex Densmore, Dept. of Geology, TCD.

The Galtee Mountain range lie on an anticlinal axis, which trends ENE and brings up Old Red Sandstone and Lower Palaeozoics

through Carboniferous along the crest line. The Galtees are the fourth highest mountain in Ireland, and the highest parts of the range have been modified by Quaternary valley glacial erosion. Depth to bedrock studies in the Glen of Aherlow, adjacent to the north flank of the mountain indicate a thin cover of overburden, whilst significantly thicker amounts of overburden fill a channel-like (possibly pre-glacial) depression to the north of Slievenamuck.

During the Quaternary, Ireland was partially covered by both ice sheets and valley glaciers. A commonly cited, but poorly constrained, hypothesis is that a significant fraction of present-day mountain-scale relief in southern Ireland is due to glacial erosion and subsequent isostatic unloading. Molnar & England (1990) suggested "relatively rapid erosion of highlands fuelled by climatic changes of the Quaternary would naturally be associated with high rebound rates due to accelerated erosional unloading of buoyant continental crust." The critical assumption is that, excluding the effects of removing the ice load, basins being fed by glaciers will receive more sediment than those being fed by streams. Hallet et al. (1996) substantiated this claim in their paper on rates of erosion and sediment evacuation by glaciers, which

state, "on average, yields for basins extensively covered by glaciers (say >30% glacier cover) are about one order of magnitude higher than for glacier free basins."

This paper aims to mathematically quantify the amount of mountain-scale relief that would have been generated by Quaternary glaciation of Galtee Mountain.

An estimate of the spatial distribution of rock removed by glacial erosion was generated for the Galtee Mountain range, using outcrop data, geomorphology and field observations, and the flexural rock uplift induced by the removal of this material was determined. Restoration of both the glacially-eroded material and the rock uplift pattern from the present topography reveals the likely form of the landscape before the last episode of significant valley glacier erosion. Depth to bedrock studies in County Tipperary indicates a thin cover of overburden. This sediment, which is assumed to be glacial in origin, represents a small positive load, which has a negligible effect on the rock uplift pattern.

HALLET, B., HUNTER, L. & BOGEN, J.,
1996. Global and Planetary Change, 12,
213-235.

MOLNAR, P. & ENGLAND, P., 1990.
Nature, 346, (6279), 29-34.

Vegetation Change and Human Impact in Clare Island in the last 13,000 years

Ryan Corcoran, Dept. of Geography, TCD.

The purpose of this study is to assess the vegetation change in Clare Island during the Late-Glacial and Holocene periods and to examine possible indicators that might be indicative of human arrival. A 13m core was abstracted from Lough Avullin that is located on the northeastern edge of the island. The lake is now completely sedimented over and geophysical methods have been used to map the profile of the lake basin. Results obtained from palynology and geochemistry are presented. Preliminary results from pollen analysis have shown the expansion of Arboreal Pollen (AP) in the early Holocene period. Evidence for human induced impacts on vegetation (e.g. a drop in AP, a rise in *Plantago*) are apparent although absolute dates on such influences have not yet been established. Geochemical methods can be used alongside palynology to indicate anthropogenic activity. Using this method, human impact can often be related to anomalies in the concentration of certain elements in the core. The vegetation history of the island with consideration towards the human effects on the environment can thus be described.

The genesis and significance of Late Devensian glaciolacustrine deposits in the Dungiven Basin, northern Ireland

Stephen McCarron, Geological Survey of Ireland

A suite of extensive, predominately Gilbert-type deltas occurs in the northern foothills and valleys of the Sperrin Mountains in the north of Ireland. The deposits form a well-preserved glaciofluvial landscape containing examples of classic morphological forms. A Late Devensian (~16 Cal. ka B.P.) morphostratigraphic age is inferred for the deltas. Probable mechanisms of proglacial lake impoundment imply significant variability in the timing of deglaciation by Irish ice masses. The inferred patterns of ice sheet activity support ideas of a dynamic, multi-sectored ice sheet and rapid Late Devensian deglaciation in the north of Ireland.

AGM 2001 Report

Date: 7th April

Venue: TCD

The meeting began at 1600h and was attended by 16 members. It was chaired by Michael Philcox who signed the minutes of the 2000 AGM as being an accurate record of that meeting.

In the Chairperson's report, Michael Philcox outlined the main activities of IQUA over the year. Unfortunately the Annual Fieldtrip had to be cancelled but in its absence Robbie Meehan organised a day trip in Mayo which was highly enjoyable despite the terrible weather. The Annual Symposium addressed the theme of the Quaternary of the Irish Sea and seven invited speakers gave talks. IQUA organised the annual IQUA-IGA lecture this year and Dr Tony Waltham gave a well-illustrated account of ground subsidence at venues in Galway and Dublin. The IQUA committee held three meetings during the year. Aoibheann Kilfeather and Valerie Hall have resigned as ordinary members of the committee. Aoibheann has started a PhD in England and Valerie had reached the end of her term. Both were thanked by the Chairperson for their valued contribution. The Chairperson has also reached the end of his term but will remain on the committee.

The Treasurer, Robbie Meehan, reported that IQUA's finances remain in a healthy state. Membership has increased to about 130 members. IQUA's deposit funds have increased (to £1300) for several reasons including the acquisition of a number of new corporate members.

No decision about the Autumn Fieldtrip has been made so far although a couple of suggestions were made. Michael O'Connell made the point that decisions about the fieldtrips need to be made over a year in advance to give the organisers time to make preparations. This was agreed by the Chairperson and other participants. Michael Philcox has suggested that a list of possible fieldtrip areas be compiled to facilitate advance planning. There has also been no decision made on the topic of the Annual Symposium to date.

Michael Philcox also reported that Ireland's membership to INQUA has been paid by the Royal Irish Academy. Pete Coxon suggested that a delegate should therefore be sent to INQUA meetings in order to represent IQUA.

As suggested at the last AGM, Michael Philcox proposed a motion to change the name of IQUA from the 'Irish Association for Quaternary Studies' to the 'Irish Quaternary Association'. This was voted on and unanimously accepted.

Michael Philcox has reached the end of his term as Chairperson but will remain on the committee as an ordinary member. Pete Coxon was proposed and elected as the new

Chairperson. The committee still requires a secretary and this vacancy will be filled at the next committee meeting by one of the ordinary members. New ordinary members proposed and elected to fill the vacancies were Louise Hildebrand, Daniel Praeg and Catherine Dalton. The composition of the committee is now as follows:

Chairperson:	Pete Coxon
Secretary:	To be selected
Treasurer:	Robbie Meehan
Newsletter editor:	Janice Fuller
Ordinary members:	Mike Simms, Susan Hegarty, Louise Hildebrand, Catherine Dalton, Daniel Praeg.

Robbie Meehan proposed a vote of thanks to Michael Philcox for his excellent work as Chairman of IQUA over the past few years, in particular, for more recently covering both the role of Chair and Secretary.

Abstracts of recently completed thesis in Quaternary Science

McMahon, H. (2000). Holocene vegetation and land-use history at Caherkine Lough, S.E. Co. Clare, western Ireland. M.Sc. thesis (Unpub.). Palaeoenvironmental Research Unit, Dept. of Botany, NUI, Galway

Investigations toward the reconstruction of Holocene environmental change were undertaken on a lake sediment core from Caherkine Lough, north of Newmarket-on-Fergus, south-east Co. Clare. Whole core magnetic susceptibility measurements and detailed pollen analytical investigations were carried out on the sediment. These have given a palaeoenvironmental record that spans ca. 11 000 years, i.e. most of the Holocene.

Pollen data indicate that pine, oak and elm were the main canopy trees in the densely forested landscape around Caherkine Lough for much of the early Holocene. In the Atlantic period, pine declined in importance but alder, which is a key indicator tree of the Atlantic period, made only a minor contribution to the overall woodland cover.

As in most Irish pollen diagrams, the Elm

Decline is a well defined event which features a sharp decline in *Ulmus* and a minor but obvious *Plantago lanceolata* curve. There is no evidence for a Landnam-type event at this time and it is argued that Neolithic activity was weak or absent from the Mooghaun area. There is however a sharp increase in whole core susceptibility values prior to the Elm Decline which indicates soil disturbance and mineral inwash into the lake. This may reflect the first significant disturbance of the landscape by an early farming culture (Neolithic). A feature of the mid/late Neolithic period is a substantial expansion of yew and also ash. This change in woodland composition takes place in a period where there is little evidence for human activity. It cannot therefore be ascribed, at least directly, to human activity alone.

During the Bronze Age and Iron Age, at least three phases with elevated levels of human activity are recorded. The final phase, which is considered to date to the mid-Iron Age is the most pronounced. This contrasts sharply with the record from nearby Mooghaun Lough where the main Landnam phase for the Holocene as a whole dates to the Late Bronze Age. Also, at Mooghaun, the archaeological evidence for intensive human activity during the Late Bronze Age is

particularly convincing. As at Mooghaun Lough, the Late Iron Age Lull, followed by renewed farming activity in the immediately following Early Christian period, forms particularly well-defined features.

The data presented here enable a detailed picture of vegetation and land-use history to be reconstructed, at both local and regional levels, for the Mooghaun/Caherkine area of south-east Co. Clare. It is the first such detailed study of local and regional Holocene environmental change based on lake sediments that has been carried out in Ireland.

Recent publications on Quaternary research in Ireland

- Coxon, P. 2001 Cenozoic: Tertiary and Quaternary (until 10,000 years before present. *In*: C.H. Holland (ed.) *A Geology of Ireland*. (Second Edition). Scottish Academic Press, Edinburgh. pp 387-427.
- O'Connell, M., Molloy, K., Saarinen, T., Schettler, G., McDermott, F., Hawkesworth, C.J., Huang, Y., Holmes, J.A., Jones, R., Leuenberger, M., Chambers, F.M., Hunt, J.B., Daniell, J., van der Plicht, J., Heijnis, H., van Geel, B., Barton, K., Haas, J.N. and Dalton, C. 2000. Human impact and climate change at

the western fringe of Europe: multidisciplinary studies of calcareous sediments from An Loch Mór, Aran Islands, W. Ireland. *Terra Nostra*, 2000, 77-81.

Molloy, K., Fuller, J.L. and Conaghan, J. 2001. Vegetation and land-use history on High Island: the results of preliminary investigations. In 'High Island' (J. White-Marshall and G. Rourke). Town House Publishers. pp. 233- 243.

IQUA wishes to acknowledge the support of our Corporate and Institutional members:

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EX LIBRIS, Frankfurt, Germany
Natural History Museum, London.

Contributions for the next IQUA Newsletter should be sent to:

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