



## 1. Introduction

Dear All,

Happy New Year and welcome to IQUA newsletter No. 38. 2006 was an eventful year for IQUA starting with our roving AGM which took place in Belfast this year and was organised by Nick Whitehouse. September saw us visit Belfast again for the September fieldmeeting which looked at northern Ireland palaeo-environments and was excellently organised by Graeme Swindles. The year rounded off in November with a stimulating meeting on 'Caves: Natural Time Capsules' at the GSI organised by Mike Simms. A big thank you to all those who organised and attended the meetings and here's to another thought-provoking series of meetings in 2007.

These last few months have seen much progress in terms of plans for the 2008 Year of Planet Earth (IYPE). The IYPE working committee now has four thematic groups on Education, General Public, Media/PR and International. Watch out for news on proposals from these groups in the next month or so on the GSI website.

Catherine Dalton

## 2. IQUA Fieldmeeting 2007

*The IQUA committee invite the membership to make suggestions for a location for the 2007 fieldmeeting.*

Email: [stephen.mccarron@nuim.ie](mailto:stephen.mccarron@nuim.ie)

## 3. IQUA 2006 Fieldmeeting Report

### Late Quaternary stratigraphy and environmental evolution of the Lough Neagh area and Belfast.

Saturday Sept 30<sup>th</sup> to Sunday 1<sup>st</sup> October

Organiser: Graeme T. Swindles

[g.swindles@qub.ac.uk](mailto:g.swindles@qub.ac.uk)

With the topics of lake levels and raised bog hydrology much to the fore, it was entirely fitting that the 2006 IQUA Autumn fieldtrip should witness so much of the offending matter i.e. precipitation. However despite the inclement conditions on nearly each stop, the trip was as enjoyable as ever, a chance to catch up with friends and colleagues and meet newcomers to the Quaternary research community in Ireland.

We were treated throughout the weekend to the organisational work of Graeme Swindles, who deserves a great vote of thanks from all the Irish Quaternary community. Graeme had quickly assembled guide materials and a cast of willing local experts to guide his visitors through the excellent work ongoing in the Belfast area on northern Ireland's palaeo-environmental conditions and archaeology.

On Saturday morning, we first visited Cave Hill to hear of the geological background to the region from Mike Simms, and learnt also of many interesting developments in the study of regional relative sea levels from Tony Brooks and Peter Wilson. Marcus Simms proved an authority on the tastiness of herb-coated bread sticks, much to everyone else's envy.

A quick cross-country drive brought us after lunch to the increasingly damp surrounds of Lough Neagh, and a visit to Graeme's PhD study site at Dead Island (Moyagoney) Bog. The visit shed light on the recent research the QUB team of Graeme and Gill Plunkett into palaeo-hydrological conditions gleaned from the raised bog records. It was then on by traditional IQUA 'car-valcade' (new phrase?) to the shores of the River Bann, and discussion of Gill and Nikki Whitehouse's investigation into the diatomite deposits of the area. Further discussions at a later stop served to explain to all the complexity of palaeo-environmental reconstruction in such a dynamic fluvio-lacustrine area. Phil Barratt also discussed the difficulties of dealing with palaeo-environments and the importance of remembering the spatial scales of environmental variation when working with dendrochronologically derived records.

Sunday began with a visit to the spectacular archaeology of the Giant's Ring on Belfast's south-eastern margin, near Shaw's Bridge. Here we also saw the sun for the first time all weekend, which may be the reason the site is located where it is! The site demonstrated quite clearly both the extensiveness of research that that been put into understanding the site by our leader Barrie Hartwell and his team and the sophistication of archaeological riches present in the Lagan Valley area. To this author, images of a former Stormont, an imposing white-washed wall of timber, fronting a highly planned and architecturally advanced possibly skyward-focussed religious site, were vividly painted by Barrie's infectious passion for the Ballynahatty site. Following this, unfortunately this author had to curtail his stay with the group while they were led to an exposure of late-glacial sands close by (which in Belfast speak can be anywhere from 5 minutes to 5 miles, Pete), and the oldest building in the Belfast area by Thom Kerr (QUB).

The author and IQUA Committee extend their warmest thanks to all who helped organise and lead this excellent short trip, and all those who rewarded the effort of the organisers with their attendance. I hope it may have served as a warm welcome into the IQUA community for those who were new (Marcus included!), and a reminder to the more tooth-long members of why engaging in inter-disciplinary discussion is academically healthy and good fun (if a little wet).

*Steve McCarron  
(IQUA Chair)*

---

## 4. IQUA AGM 2007

The 2007 IQUA AGM will be hosted at the Department of Geography, NUI, Maynooth in March 2007 (dates, details of the programme, accommodation etc. will be posted on the IQUA listserv and website).

A new development this year will be the revival of the Geographical Society of Ireland (GSI) Farrington Lecture.

### **FARRINGTON LECTURE**

IQUA and the Geographical Society of Ireland will co-host the Farrington Lecture to coincide with the IQUA AGM in March 2007. The Farrington Lecture is a lecture in honour of Anthony Farrington, one of the founders of the GSI, and has over the years featured distinguished Quaternary scientists such as Frank Mitchell, Francis Synge and Pete Coxon among others.

The 2007 lecture will be delivered by:

**Dr. Colm Ó'Cofaigh**  
Durham University

Talk title and abstract to follow.

---

## 5. Abstracts from the IQUA Symposium 2006

### **Caves in a Quaternary context**

Mike Simms

Department of Geology, Ulster Museum, Botanic Gardens,  
Belfast BT9 5AB  
michael.simms@magni.org.uk

Caves, particularly those formed by dissolution in karst terrains, represent an almost unparalleled source of information on Quaternary palaeoenvironments and biotas. Their relative neglect, compared with other Quaternary deposits, reflects the often considerable discomfort that prospective cave researchers must endure for their science! Their value is that, being formed below the surface, they and their contents are

protected from weathering, erosion and biological processes for much longer than equivalent geomorphological features, sediment deposits and organic material on the surface. Karst caves can provide unique information on the past position of the water table and the direction and velocity of water flow, from which drainage and valley incision histories can be reconstructed for an area. Sediment fills provide data on water flow source, velocity and direction. Contained macro- and microfossils can provide evidence for the age of sediment fills while 'absolute' chronologies can be constructed by Uranium-series dating of speleothems (stalactites and stalagmites) and luminescence dating of sediments. Any such biostratigraphic, radiometric and luminescence dates must be treated with caution since they may significantly postdate the formation of the void itself.

\*\*\*\*\*

### **Isotopes in speleothems: Signals from the sun, sea and soil**

Frank McDermott

UCD School of Geological Sciences  
frank.mcdermott@ucd.ie

Interest in speleothems (secondary cave carbonates such as stalagmites) as recorders of continental palaeo-environments has increased markedly during the past decade. This renewed interest has been underpinned by important analytical advances that facilitate the acquisition of well-Arrhenius-type kinetics framework to address the issue of the sensitivity of soil carbon to degradation to form CO<sub>2</sub> in a future warmer world, with implications for the strength of this positive feedback mechanism. dated oxygen and carbon isotope data at a high spatial resolution, and by emerging methodologies for the extraction of stable isotope signals from fluid inclusions in speleothems. Speleothems (mostly calcite, but occasionally aragonite), are deposited slowly by slow degassing of CO<sub>2</sub> from calcium carbonate saturated drip waters in caves. Most studies utilise stalagmites rather than stalactites or flowstones, because their simple geometry, relatively rapid growth rates and tendency to precipitate close to isotope equilibrium with the cave drip waters facilitates palaeoclimatic reconstruction. The rationale for interpreting oxygen isotopes in speleothems is broadly similar to that for other secondary carbonate archives on the continents such as lake carbonates and tufa, insofar as they reflect the d<sup>18</sup>O of meteoric water (cave drips) and the temperature dependent water-calcite

oxygen isotope fractionation. Speleothems also preserve several additional non-isotope climate sensitive signals (e.g., carbonate petrography, annual band thickness, trace element ratios, luminescence and organic molecular signals) that contribute greatly to the correct interpretation of isotope-based speleothem records. Carbon isotope variations in speleothems are usually taken to reflect climate-driven palaeovegetation signals, but careful consideration of all possible fractionation effects is essential to avoid misinterpreting these data. Recently, the radiocarbon systematics of speleothems has been investigated to provide independent constraints on the factors that control the rate of decomposition of soil carbon. Some fraction of the carbon in stalagmite carbonate is so-called 'dead carbon', meaning that it contains negligible amounts of <sup>14</sup>C, because it is derived from geologically ancient carbonate bedrocks above a cave void. A critical observation however, is that some of this 'dead carbon' is actually derived from aged carbon within the soil. Insights derived from the <sup>14</sup>C systematics of speleothems will be discussed within an

\*\*\*\*\*

### **British caves, and new advances in our understanding of Late Upper Palaeolithic hunter-gatherers of northern Europe**

Dr Paul B. Pettitt

Department of Archaeology, University of Sheffield, Northgate House, West Street, Sheffield S1 4ET

Until recently it has been axiomatic that Pleistocene deposits in British caves have long been worked out and have little value left for the archaeologist. In recent years, however, considerable impetus has been reinjected into cave archaeology, through several strands. Ongoing reanalysis of materials excavated from caves in the nineteenth century has led to finer understanding of Pleistocene fauna biostratigraphies into which human settlement can be placed.

Major research projects on the human recolonisation of northwest Europe after the Last Glacial Maximum have crystallised research questions, and the discovery in 2003 of Britain's first examples of Late Upper Palaeolithic cave art (in Church Hole and Robin Hood caves at Creswell Crags) has revolutionised the way in which we view Late-glacial (Magdalenian) societies. Here, the record of British caves pertinent to these issues will be explored, presenting up-to-date information about human life

in Britain in the last few thousand years of the Pleistocene.

\*\*\*\*\*

### **Archaeological discoveries in Glencurran Cave, the Burren, Co. Clare**

Marion Dowd

I.T. Sligo

The chance discovery of archaeological material on the floor of Glencurran Cave by cavers a number of years ago led to a rescue excavation in 2004 and 2005, funded by the Department of the Environment, Heritage and Local Government. The purpose of the dig was to ascertain the extent of archaeological deposits and to recover archaeological material that faced further threat of disturbance or destruction by animal and human activities.

Though Glencurran Cave is almost 1km in length, only the outer 50m or so can be considered of archaeological significance. Five areas of the cave were targeted for excavation. The strata deep in the cave were very shallow with archaeological bones and artefacts occurring between 1cm and 10cm below the surface. Almost all the human bones and animal bones recovered were fragmentary and a large proportion of the artefacts were also broken. The stratification was greatly disturbed with prehistoric artefacts turning up in the same layers as modern rubbish. The damage to artefacts and bones and the disturbance to archaeological strata is the result of centuries of animal activity (rabbits, foxes and badgers), human activity and natural processes such as periodic flooding.

Archaeological excavations revealed three main periods of activity. In the Middle Bronze Age, the cave was used for some form of funerary activity, possibly burial. A cluster of human bones was discovered in the same area as perforated cowrie and periwinkle shells, amber beads and a stone axe. Because the stratigraphy was very disturbed, it is not possible to say that the human bones are definitely associated with the beads and axe, but it is quite likely. This concentration of material was found at the base of an artificial cairn-like structure which may cover a prehistoric burial.

The second main phase of activity in the cave was during the Late Bronze Age. At this time, it appears that the body of a young child, who died at 2 or 3 years of age, was placed on the cave floor about 45m from the entrance together with a large quantity of perforated cowrie shells

and periwinkle shells, amber beads and sherds of two Late Bronze Age pottery vessels. Again, because of disturbance to the stratigraphy it is impossible to definitively associate the artefacts with the child. A human bone from the entrance area of the cave produced a Late Bronze Age/ Early Iron Age radiocarbon date indicating further prehistoric ritual activity at the site.

The third main phase of activity at Glencurran Cave dates to the Early Medieval period. The evidence suggests that at this time the outer part of the cave was used for occupation. The remains of a hearth seem to have been located outside the cave entrance. A number of typical Early Medieval domestic artefacts were also found on this platform including an iron knife blade, a spindle whorl (for spinning wool), an iron sickle and a ringed pin (used to fasten a cloak).

Post excavation work is ongoing and future results should add significantly to our knowledge of how Glencurran Cave was used by people at different times in the past. What is clear, however, is that this is a very important archaeological site.

\*\*\*\*\*

### **The Cyrenaican Prehistory Project: an initial reappraisal of the geomorphology of Charles McBurney's Cyrenaican cave sites**

Chris Hunt, Graeme Barker, Tim Reynolds and Paul Bennett

Charles McBurney excavated several important cave sites during the 1950s in Cyrenaica, Libya. They yielded one of the most complete archaeological records for the last 100,000 years from anywhere in Africa, but have never been re-examined. In this talk we show some preliminary results of a reconnaissance resurvey of these caves, dealing particularly with their geomorphology and geomorphological history. We use this information to provide an overview of cave formation processes in Cyrenaica.

\*\*\*\*\*

### **The Dungarvan Valley Caves Project: an interim report**

Cóilín Ó Drisceoil and Richard Jennings

Kilkenny Archaeology, Threecastles, County Kilkenny

kilkennyarchaeology@googlemail.com

At present there is no convincing evidence for human activity in Ireland during the Palaeolithic. Whilst this may be explained by Ireland's position at the periphery of Palaeolithic

Europe and the effects of intense glaciations that have regularly scoured the landscape during the course of the Pleistocene, the fact remains that Ireland shared largely the same climatic conditions that made human settlement possible in England and Wales (Woodman 1998). Irish caves and bogs have also produced many of the animal species exploited by these populations.

Perhaps an explanation for the absence of evidence for an Irish Palaeolithic lies instead in the lack of a tradition of field research in this area; the past fifty years have seen only one archaeological excavation of Pleistocene cave-deposits and there is little or no monitoring of gravel and limestone extraction as occurs in England, where such material would be expected to occur. It could be said therefore that evidence for a human presence in Palaeolithic Ireland awaits discovery.

In the search for an Irish Palaeolithic the Dungarvan valley in south Co. Waterford is a key geographical area. This is due to its location south of the Midlandian ice-limit and its proximity to areas of human occupation in Wales and England. Moreover, the valley has produced some of the country's most important Pleistocene faunal assemblages from caves at Ballynamindra, Kilgreany and Shandon (Woodman et al. 1997). Some seventy years have elapsed since the caves of the valley have been the subject of archaeological excavation and it was with this in mind that the Dungarvan Valley Caves Project was instituted in 2003. Initial survey work by the project identified twenty-eight caves, many of which have not been explored in any great detail. Two of these, Ballynamuck 1 and 2 near Shandon, were test-excavated to determine if they contained Pleistocene deposits. Funding granted to the project by the Heritage Council allowed for a full sedimentary appraisal and for a series of Optically Stimulated Luminescence (OSL) dates to be obtained from the stratigraphic sequences (Ó Drisceoil and Jennings 2006). Phytoliths and microfauna sampled during the excavations were also studied.

These analyses have documented a largely waterlain, fluvio-glacial sequence in both caves; making for wet and inhospitable places that were not suitable for human occupation. The OSL determinations demonstrated that the earliest cave-sediments were emplaced during the interglacial of OIS 7 (186,000 - 245,000 BP). These were subsequently covered by deposits from the penultimate glaciation and the last interglacial. Microfaunal remains of frog and rabbit from the temperate deposits were identified

though these may be intrusive. An abundance of grass phytoliths and birch pollen was recovered from the OIS 7 units in Ballynamuck 2.

The survival in both Ballynamuck 1 and 2 of such early sediments with associated palaeontological material is a fortuitous discovery with three key implications. To begin with, because the two sites produced pre-Munsterian sediments, it implies that early cave-deposits may be more widespread than was hitherto thought, reviving the possibility that Lower Palaeolithic deposits may survive in Irish caves. Secondly, the palaeoenvironmental evidence recovered suggests that Ireland during OIS 7 potentially sustained habitats that were suitable for human occupation, such as occurred at Pontnewydd Cave, Wales. Thirdly, the methodology employed has proved a relatively efficient and cost-effective means of assessing the archaeological potential of a given cave.

Results to date from the project have been promising and indicate the potential that exists in the valley for future discoveries that can contribute much to questions concerning the absence of an Irish Palaeolithic. However, there is a limit to what can be gained archaeologically from expanding the existing cuttings at the Ballynamuck sites so it is intended that future work will concentrate on further assessments of previously unexcavated caves in the area. As well as this it is proposed to revisit Ballynamindra cave. Excavations here in 1879 and 1928 were thought to have emptied the cave of sediments but intact stratigraphy has recently been identified, the interpretation of which could benefit greatly from modern techniques.

#### References:

- Ó Drisceoil, C. and Jennings, R. (2006) The Dungarvan Valley Caves Project: First Interim Report, Decies No. 62 (forthcoming).
- Woodman, P.C. (1998) Pushing out the boat for an Irish Palaeolithic in N. Ashton, F. Healy and P. Pettitt (eds.) Stone Age Archaeology. Oxbow Monographs 102. Oxford. 146-57.
- Woodman, P.C., McCarthy, M. and Monaghan, N. (1997) The Irish Quaternary Fauna Project, Quaternary Science Reviews 16, 129-59.

\*\*\*\*\*

**Curious about Cave Contents: Museum collections and what they reveal**  
Nigel Monaghan

National Museum of Ireland – Natural History, Merrion Street,  
Dublin 2 (nmonaghan@museum.ie)

Collections of animal remains from Irish caves have proved invaluable in developing our understanding of the wildlife in the Irish landscape over the last 40,000 years. The work of late 19th century and early 20th century cave explorers established the basic faunal list but could not go beyond this to place faunas reliably in a stratigraphic sequence.

Up until 1995 we had a list of species in the late glacial and postglacial but a poorly anchored sequence of faunas with much of the story based on educated guesswork and overseas comparisons. The advent of Accelerated mass Spectrometry (AMS) dating gave the opportunity to use cave remains from Irish museum collections to establish a succession of faunas and match this with stratigraphy from open sites. Work published in 1997 placed several species more firmly in the landscape and allows a greater resolution in comparing ecologies in terms of relationships between predator and prey and their habitats.

Few caves discovered in the last fifty years have contributed much in the way of solid science in relation to terrestrial mammals. The early cave explorers found most of the useful deposits and excavated them completely, leaving little for later researchers. A cave in Glenade, Co. Leitrim has added significantly to our understanding of brown bears and is part of an expanded project. Brown bears (*Ursus arctos*) have been known from remains in Irish sediments since the 1840s. There are now 25 field localities where their bones have been found, most of them caves. The bear remains belong to all three main periods when Ireland was generally habitable for terrestrial mammals. Results in 2006 now show that these animals were an integral part of our landscape much more recently than previously thought. There are now 20 AMS dates for bear in Ireland and of those samples, 17 have now yielded DNA with sufficient quality of recovery to start mapping the differing genetic populations present at different times.

Museum collections continue to provide a rich vein for research using new techniques. Mammals have been studied by a number of research groups in recent years. The collections also include significant resources of bird bone, which have yet to be added to the story.

## 6. Research

### **WILDS: Wicklow Integrated Landscape Development Studies. Kings River Catchment Pilot Investigation.**

Jonathan Turner, School of Geography, Planning and Environmental Policy, UCD  
(Jonathan.Turner@ucd.ie)

Graeme Warren: School of Archaeology, UCD  
(Graeme.Warren@ucd.ie)

Ireland faces a future of unprecedented climatic uncertainty and continuing rapid economic development. This means that there is an urgent need to develop understandings of the long-term links between human activity and environmental change, particularly in marginal areas. Upland catchments provide an ideal location to investigate such interactions, because of their sensitivity to environmental change and disturbance, coupled with their relatively sparse human occupation histories. Additionally, geomorphic and archaeological records are often well preserved in upland settings, providing essential information for retrodictive studies.

The Kings River Catchment, Co. Wicklow has been the focus of research and teaching programmes in the Schools of Archaeology and Geography, Planning and Environmental Policy (GPEP) for more than a decade. The WILDS: Kings River Catchment Pilot Investigation has been recently set up to establish baseline geoarchaeological information, including a synthesis of existing research data, in order to develop key research questions for landscape evolution models in the region. WILDS is funded internally by the UCD Seed Funding Grants programme. In particular, WILDS received funding to support the 'preparation of interdisciplinary and multi-disciplinary proposals ... creating new knowledge which draw on different disciplines'. The project aims to develop generic, cost-effective approaches to landscape studies, through the integration of archaeological and geomorphological interrogative techniques, which may be applied to other strategically important river catchments in Ireland. Our research themes include the causal relationship between geomorphic adjustments, climate change and human occupation.

The platform for this baseline investigation will be data acquisition through dedicated aerial photography and GPS survey as well as reviews

of historical documentation. This will be followed by ground proofing of target archaeological sites and preliminary coring of relict floodplain surfaces, to establish dating control for valley floor alluviation in the catchment. Acquired data, including published and unpublished documentary information, will be integrated into a dedicated GIS. Fieldwork begins in spring 2007 and we look forward to keeping you informed of our progress.



Figure 1: Contrasting sedimentation styles exposed in alluvial sections along the Kings River are indicative of changing sediment supply patterns and dynamics during the Holocene.



Figure 2: Relict glacial sediments and landforms that have been dissected by the R. Ballinagee (O 046 046), one of several tributaries in the headwaters of the Kings River.

**Archaeological Excavations at Belderrig, Co. Mayo**

Graeme Warren, UCD School of Archaeology  
(Graeme.Warren@ucd.ie)

Excavations continued in 2006 at the site of Belderrig, Co. Mayo (Licence 04E:0893). The project, which is directed by Graeme Warren, UCD School of Archaeology, is funded by the National Committee for Archaeology of the Royal Irish Academy.

This year, Trench One was cleaned down to an extensive stone deposit, seemingly a deliberately laid platform or surface, placed upon an increasingly waterlogged, organic rich topsoil. Excavations focused upon two areas of the stony surface with a large sample left unexcavated for completion in 2007. The upper portion of was targeted for excavation and large areas of the stony surface, and underlying peat/silts were removed. Artefacts were found above, within and below the stony layer. Excavation of this area was incomplete due to the discovery of a complex lens of redeposited material within the peat/silts sealed by the stony layer. A small cutting was excavated to examine an area of fish bone exposed in the cliff section (Trench 3). This excavation revealed a clearly metallated surface overlying more irregular stony deposits, both sealing organic silts overlying clean sands and gravels.

Artefacts include numerous lithics, mainly in quartz but also chert, flint and siltstone. Two exceptional flakes of rock crystal were recovered: both are of a remarkable quality raw material, almost completely glass like, and of considerable size. A mica schist point is a thin, elongated piece, whose cross section is formed by the intersection of foliation planes, but which has clearly been fashioned into a point and may have had its base shaped. A single flake of quartz-feldspar porphyry is also of interest as, it is likely to be introduced to the area (I am grateful to Prof. P. Shannon for geological identifications.)

The excavations in 2006 have been a considerable success. The provisional identification of an extensive stony surface, apparently of Mesolithic age, is very significant. The proximity of this material to field walls of Neolithic age is of key analytical importance. Finally, the continued presence of high quality and diverse artefacts and organic remains will contribute greatly to our understanding of the period.

\*\*\*\*\*



Figure 1: Belderrig 2006: view of stony surfaces, Trench One, facing uphill, to the east.



Figure 2: mica schist point, Trench 1, scale in 10 cm divisions.

## 7. Postgraduate Research



### ***An Investigation into Relict Landscapes of Ireland- a Multi-Disciplinary Approach***

Claire McLoughlin NUI, Maynooth  
 Email: CLAIRES.M.MCLOUGHLIN@nuim.ie  
 Supervisor: Steve McCarron  
 Funded by SFI Embark PhD scholarship

Tantalising, fragmentary glimpses of pre-Quaternary Irish landscapes and deposits have recently been discovered at several sites dotted throughout Ireland. The pre-Quaternary deposits occur as plugs in bedrock depressions and as buried surfaces beneath, or inside 'modern' (Last Glacial Maximum ~22ka B.P. or younger) glacial landforms. Traditional thinking holds glacial erosion in Ireland to have been pervasive and that all current ground surfaces are 'modern' in age. However, recent accelerated deglaciation in upland areas of Arctic Norway, have provided process analogues for the formation and preservation of pre-Last Glacial Maximum surfaces under active glacial ice cover. A strong possibility exists that LGM conditions in upland areas of Ireland may have mirrored these 'preservative' conditions and that much of our current Irish landscape surface may in fact be inherited from pre-Quaternary eras. Therefore it is hypothesised that selected areas of the Irish landscape are underlain by pre-LGM deposits, which occur within traditional limits of 'modern landscapes' contradicting current models of the last British and Irish Ice Sheet's thickness and flow regime.

This project aims to: (i) collate and augment the information available on Ireland's relict landscapes. This will be achieved through systematic field based surveying and sedimentological investigation, starting from areas of known relict landform occurrences e.g. Donegal, Wicklow and Connemara and expanding into other areas of Ireland. The information will serve to increase our knowledge of the age of Ireland's landscapes, and through their pattern and characteristics, provide additional control on the dynamics of the last ice masses which glaciated these regions. (ii) Much new data about the age of eroded bedrock landform surfaces is being provided by approaches such as

Cosmogenic radionuclide Surface-exposure Dating (CSD). These techniques are employed to provide an age of how long a rock surface has been continuously 'exposed' to cosmogenic particle bombardment since 'uncovering' e.g. by glacial erosion. Suitable bedrock surfaces will be sampled and dated. (iii) The mapping of upland landforms indicative of low glacial erosion rates in highland areas of Ireland has never been attempted systematically before. The opportunity arises for a rejuvenation of techniques and scientific method for identifying areas of low or negligible glacial erosion and thus the preservation of 'relict' landscapes relative to traditional LGM glacialiation limits. The mapping of these landscapes in Ireland will form an important dataset to independently validate and constrain new estimates of landscape 'age' indicated by CSD.

There is a need to increase geochronological control of the extent, pattern and effect of glacial-ice growth and erosion in Ireland by sectors of the last British and Irish Ice Sheet (BIIS). Significant recent advances in establishing geochronological control of deglacial events has not been matched by any advances in the timing and nature of ice sheet build-up and maximum flow phases, crucial in the development of realistic numerical reconstructions of past Irish ice sheet behaviour. This project will address these data gaps directly.

\*\*\*\*\*



### Deposits of thermohaline currents on slopes west of Ireland - implications for climate change

Nick Owen, Trinity College Dublin  
Email: [ownensn@tcd.ie](mailto:ownensn@tcd.ie)  
Supervisor: Robin Edwards  
Funding: Science Foundation Ireland Research Frontiers Programme

Ocean currents are important to global temperature regulation, providing poleward transport of heat. Where the currents impinge on the seabed, they can transport and deposit sand and mud. Such deposits can be used to identify periods when currents were active in the past, and to constrain variations in current strength and depth. The project will investigate underwater slopes to the west of Ireland where deposits

spanning the last glacialiation are found. An extensive array of cores on the west Porcupine Bank will be used to reconstruct the history of current activity and to relate this to climate records onshore.

\*\*\*\*\*



### Examining the evidence for a recent acceleration in the rate of sea level rise using combined instrumental and proxy data

Kate Southall, Trinity College Dublin  
Supervisor: Robin Edwards  
Funding: Science Foundation Ireland Research Frontiers Programme

Scientists agree that sea level rise is potentially one of the most devastating impacts of future climate change, but tide gauge records are too short to show whether sea levels are rising faster today than in the past.

This project will use high-resolution geological indicators to relocate former sea levels. These geological-based reconstructions will be validated against tide gauge data and historical evidence of coastal change. They will then be extended to reconstruct sea level rise over the last 200-300 years, and evaluate the evidence for accelerations that may be linked with human activities.

\*\*\*\*\*

## Postgraduate Opportunities

School of Geography, Archaeology and Palaeoecology at Queen's University Belfast. See <https://pg.apply.qub.ac.uk/home/> Project descriptions, on request from Ms Mary Conway, School of Geography, Archaeology & Palaeoecology, Queen's University, Belfast, BT7 1NN. Tel: 0044 (0)2890 97341. [m.a.conway@qub.ac.uk](mailto:m.a.conway@qub.ac.uk)

APPLICATION DEADLINE: 14th FEB 2007!

### PAST CULTURAL CHANGE (Archaeology)

Place of the Dead, 1600-1800  
(Dr F McCormick & Prof J Mallory)

Social Structure of Steppe Populations from Prehistory through the Historic Periods (Prof. J P Mallory & Dr E. M. Murphy)

### **ENVIRONMENTAL CHANGE (Palaeoecology)**

Floodplain-mire interactions and palaeoecology: implications for wetland ontogeny and Holocene climate change. (Dr N Whitehouse & Dr B Gearey, Univ of Birmingham) seeking ORS/DEL support

Peatland archives of recent (last 150 years) climate and environmental change in the North of Ireland. (Dr H Roe and Dr R Tomlinson)

Chronological coherence of dispersed particulate organic matter in sediments. (Dr C Hunt)

Palynology and chronology of late Pleistocene cave sediments in Island, SE Asia. (Dr C Hunt)

Middle and Late Pleistocene sea-level history of the Belgian Coastal plain. (Dr H Roe, Dr A Ruffell and Dr C Baateman, Belgian Geological Survey)

Palaeoenvironment and palaeoeconomy at Euhesperides, Cyrenaica, Libya. (Dr C Hunt)

Forensic Importance of Microenvironmental Changes in Shallow Water Bodies and Soil (Dr A Ruffell, Dr C Hunt)

Dynamics of a tropical raised bog in Sarawak (Dr C O Hunt, Dr P J Reimer and Dr G Thompson (Bradford) seeking DEL support

research, to give them experience in presenting and talking about their research projects, and to facilitate their interaction with students and staff from their own and other institutions. A feature of recent IPTCs has been the growing proportion of physical geography students.

This year's IPTC is being organised by Mary Gilmartin (mary.gilmartin@ucd.ie) of UCD.

\*\*\*\*\*

### **New WEBSITE www.palaeolim.ie**

A new Website for Palaeolimnological research (the reconstruction and interpretation of past changes in freshwater lakes and their catchments) in Ireland has been launched. The website is being moderated by David Taylor, School of Natural Sciences in Trinity College Dublin (taylord@tcd.ie). The website currently outlines key projects that have received substantial funding in recent years, and introduces current research students. Sections on data and publications will be added in the near future.

\*\*\*\*\*

### **2006 call for IGCP project proposals**



A new call for proposals for IGCP projects has been posted on the UNESCO website:

<http://www.unesco.org/science/earth/igcp/guidelines31July.pdf>

<http://www.unesco.org/science/earth/igcp/ProposalForm31July.doc>

This new call for project proposals is in line with the new orientations of the IGCP Programme. The proposal guidelines and application forms were updated in order to bring them in line with the requirements of the strategic plans of UNESCO and IUGS (International Union of Geological Sciences), the two co-sponsoring partners. New

## **8. Notices**

### **Irish Postgraduate Training Consortium for Geography**

The 8th Irish Postgraduate Training Consortium (IPTC) for Geography will take place in Glencree, Co Wicklow, from 9-11<sup>th</sup> February 2007. Students and staff from third level colleges across Ireland will take part in the weekend, which involves a combination of talks by invited speakers, research seminars and project work. The purpose of the weekend is to introduce new PhD and MLitt students in geography to the nature of academic

IGCP projects shall reach out beyond the earth science community to decision-makers, government planners and policy-makers. Moreover, the new IGCP projects shall be more interdisciplinary in nature and give particular attention to the following topics: **Geoscience of the Water Cycle, Geohazards, Earth Resources, Global Change and Life Evolution, the Deep Earth** and other relevant topics in basic/applied geoscience.

### 9. Recent Publications

#### Ireland-related Publications:

Brooks, A., Edwards, R.J. 2006. The development of a sea-level database for Ireland. *Irish Journal of Earth Science* 24, 13-27.

Leira, M., Jordan, P., Taylor, D., Dalton, C., Bennion, H. and Irvine, K. (2006) Recent histories of the main types of candidate reference lakes in Ireland: a palaeolimnological approach. *Journal of Applied Ecology*. 43, 816–827.

Roberts, D.H., Chiverrell, R.C., Innes, J.B., Horton, B.P., Brooks, A.J., Thomas, G.S.P., Turner, S., Gonzalez, S. 2006. Holocene sea levels, Last Glacial Maximum deglacial environments and geophysical models in the northern Irish Sea basin, UK. *Marine Geology* 231: 113-128.

Taylor, D., Dalton, C., Leira, M., Jordan, P., Chen, G., León-Vintró, L., Irvine, K., Bennion, H., and Nolan, T. (2006). Recent histories of six productive lakes in the Irish Ecoregion based on multiproxy palaeolimnological evidence. *Hydrobiologia* 571:237–259.

Wilson, P. 2006. On the pig's back - the geomorphology of Muckish, Co. Donegal. *Irish Mountain Log* 78, 28-31.

#### International Publications:

Edwards, R.J. 2006. Mid to late Holocene relative sea-level change in southwest Britain and the influence of sediment compaction. *The Holocene* 16(4) 575-587.

Edwards, R.J. 2006. Sea levels: change and variability during warm intervals. *Progress in Physical Geography* 30 (6), 785-796.

Edwards, R.J., Horton, B.P. 2006. Developing Detailed Records of Relative Sea-Level Change Using A Foraminiferal Transfer Function: An Example from North Norfolk, UK. *Philosophical Transactions of the Royal Society A* 364, 973-991.

Horton B.P., Edwards R.J. 2006. Quantifying Holocene Sea Level Change Using Intertidal Foraminifera: Lessons from the British Isles. *Journal of Foraminiferal Research*, Special Publication 40.

Horton, B.P., Corbett, R., Culver, S.J., Edwards, R.J., Hillier, C. 2006. Modern saltmarsh diatom distributions of the Outer Banks, North Carolina, and the development of a transfer function for high resolution reconstructions of sea level. *Estuarine, Coastal and Shelf Science* 69, 381-394.

Itzstein-Davey, F. (2007) Changes in the abundance and diversity of Proteaceae in south-western Australia: a review of an integrated palaeoenvironmental study. *Geographical Research*, 45 (1): 43 – 53.

Shennan, I., Bradley, S., Milne, G., Brooks, A., Bassett, S., Hamilton, S. 2006a. Relative sea-level changes, glacial isostatic modelling and ice-sheet reconstructions from the British Isles since the Last Glacial Maximum. *Journal of Quaternary Science* 21:585-599.

Shennan, I., Hamilton, S., Hillier, C., Hunter, A., Woodall, R., Bradley, S., Milne, G., Brooks, A., Bassett, S. 2006b. Relative sea-level observations in western Scotland since the Last Glacial Maximum for testing models of glacial isostatic land movements and ice-sheet reconstructions. *Journal of Quaternary Science* 21: 601-613.

Southall, K.E., Gehrels, W.R., Hayward, B.W. 2006. Foraminifera in a New Zealand salt marsh and their suitability as sea-level indicators. *Marine Micropaleontology* 60, 167-179.

Wilson, P. 2006. Rock-slope failures in Craven: where, when and how? In: Re-thinking Craven's Limestone Landscape. *North Craven Historical Research Group - October 2006 workshop*, 12-14.

Wilson, P. & Smith, A. 2006. Geomorphological characteristics and significance of Late Quaternary paraglacial rock-slope failures on

Skiddaw Group terrain, Lake District, northwest England. *Geografiska Annaler* 88A, 237-252.

opportunities. The forum will include two key note addresses by international speakers.

Registration fee €50 until 31st January 2007, and €70 thereafter. For further information visit the Forum website: [www.pef2007.haastlodge.net/](http://www.pef2007.haastlodge.net/)

## 10. Forthcoming Workshops Seminars & Conferences

**Environmental Archaeology in Ireland: new perspectives and recent research**  
**Association for Environmental Archaeology**  
One-day Spring Meeting,  
Saturday, 17th February 2007  
University College Cork, Ireland  
<http://envarch.ucc.ie>

For further information, please contact the meeting organisers:  
Meriel McClatchie and Mick Monk  
Department of Archaeology, University College Cork, Cork, Republic of Ireland  
Email: [m.mcclatchie@ucc.ie](mailto:m.mcclatchie@ucc.ie) & [mmonk@archaeology.ucc.ie](mailto:mmonk@archaeology.ucc.ie)  
Telephone: +353 21 4904048

\*\*\*\*\*

**2ND ANNUAL POSTGRADUATE ECOLOGY FORUM 2007**  
**11<sup>th</sup> - 13<sup>th</sup> MARCH, UNIVERSITY COLLEGE DUBLIN,**  
**IRELAND**



**PEF**  
**2007**



Following an extremely successful inaugural meeting in Cork in 2006, the second Postgraduate Ecology Forum will be hosted by University College Dublin in co-operation with Trinity College Dublin from **Sunday 11th of March to Tuesday 13th of March**. The primary aim of the conference is to promote awareness and interaction between postgraduate students, ultimately improving the level of ecological research being carried out in Ireland. **The forum is open to all postgraduate students and researchers of Third Level Institutes and Research Centres in the general discipline of Ecology.**

Delegates are invited to submit oral presentations or posters. Closing date for abstracts is the **31st January 2007**. There will be a series of workshops highlighting research methodologies, national policies and international funding

\*\*\*\*\*



The conference of Irish Geographers will take place in St. Patrick's College Drumcondra, May 11th-13th 2007.

<http://main.spd.dcu.ie/main/academic/geography/CIG/CIGindex.shtml>

2007

**Periglacial and Paraglacial Environments and Processes, Past, Present and Future**, Geological Society, London, 15-16 January 2007  
[http://www.geolsoc.org.uk/template.cfm?name=Periglacial and Paraglacial](http://www.geolsoc.org.uk/template.cfm?name=Periglacial%20and%20Paraglacial)

**Time in Karst**, KWI Symposium Postojna, Slovenia, March 14 to March 18, 2007.  
<http://www.karstwaters.org/timeinkarst/tikannouncement.htm>

**Climate Change and Aquatic Ecosystems in the UK**: Science, Policy and Management, 16th May 2007 University College London.  
<http://www.ecrc.ucl.ac.uk/content/view/349/151/>

**CANQUA Ottawa 2007** June 4-8, 2007 Carleton University, Ottawa, Ontario, Canada.  
[www.canquaottawa2007.ca](http://www.canquaottawa2007.ca).

**4th International Limnogeology Congress** International Association of Limnogeology (IAL) Barcelona (NE Spain) from 11th-14th July 2007  
<http://www.iilc2007.com/>

**XVII INQUA congress** Cairns, Australia 28th July to the 3rd August 2007.  
<http://www.aqua.org.au/AQUA/INQUA2007.html>

**International Conference on Karst Hydrogeology and Ecosystems (Karst2007)** 13

# IQUA Newsletter January 2007

- 15 August 2007 Bowling Green, USA  
<http://hoffman.wku.edu/karst2007/k2007.html>

**People/environment relationships from the Mesolithic to the Middle Ages: recent geo-archaeological findings in Southern Italy** 4 - 7 September 2007, Salerno, Italy.  
[http://www.news.unina.it/dettaagli\\_agenda.jsp?ID=3277](http://www.news.unina.it/dettaagli_agenda.jsp?ID=3277)

## 11. General Membership Items

### Renewal of Membership

Please check the date on your address label (on the Newsletter envelope) and contact the Treasurer if you think it is incorrect. Please let your students/ colleagues know about IQUA and encourage them to join.

Please complete the form at: [http://www.tcd.ie/Geography/IQUA/Member/Mem\\_Hme.htm](http://www.tcd.ie/Geography/IQUA/Member/Mem_Hme.htm) and send it with the relevant annual subscription to the Honorary Treasurer of IQUA.

**Full members €15.00**  
**Students and unwaged €10.00**

Dr. Michael Philcox,  
The Nettle Patch,  
Red Bog,  
Blessington,  
Co. Wicklow.  
E-mail: [mphilcox@tcd.ie](mailto:mphilcox@tcd.ie)

Cheques should be made payable to IQUA. It is suggested that members pay two or three years subscription on a single transaction, to cut down on bank charges and maintain an active membership for a longer time period. Note: The treasurer has confirmed that IQUA will accept Sterling cheques, although a small handling charge will be incurred.

### IQUA Sponsors

<a href="http://www.nhm.ac.uk/">http://www.nhm.ac.uk/</a> 	<a href="http://www.roadstone.ie/">http://www.roadstone.ie/</a> 	<a href="http://www.gsi.ie/">http://www.gsi.ie/</a> 	<a href="http://www.epa.ie/">http://www.epa.ie/</a> 
--	--	---	--

### IQUA discussion List

<https://listserv.heanet.ie/iqua-l.html>

IQUA members if you are not receiving IQUA listserv emails, please sign up!

To join the IQUA list go to [listserv@listserv.heanet.ie](mailto:listserv@listserv.heanet.ie) and 'Join or leave the list (or change settings)'. A request for subscription to the IQUA-L list goes initially to the list moderator (Catherine Dalton) first for cross-referencing with the membership list.

\*\*\*\*\*