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IQUA Cumann Ré Cheathartha na h-Éireann

Irish Quaternary Association
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Editor: Ellen OCarroll

1. Introduction

Dear IQUA member,
Welcome to Newsletter no. 55.

IQUA congratulates the INQUA team on the successful conference bid

On behalf of the IQUA committee and the IQUA membership I am delighted to welcome the 2019 International Union of Quaternary Research (INQUA) Congress in Dublin. The team who travelled to Nagoya, Japan with the bid to host the XX INQUA Congress was expertly led by Pete Coxon and Fraser Mitchell. Hosting a conference of c. 3000 delegates will undoubtedly have profound and lasting repercussions for the Quaternary research community in Ireland. The Congress, which will be held in the Convention Centre Dublin, will showcase the Irish landscape, promote Ireland's research reputation, facilitate the dissemination of our research activities to a wider audience and attract world-class scientists to the country.

IQUA was founded in the late 1970s in part to provide Irish field excursions for the 1977 INQUA Congress held in Birmingham. The Quaternary community in Ireland has helped shape the international research platform by providing an INQUA President (Frank Mitchell 1969-1973), a Secretary General for two terms (Pete Coxon) as well as Commission and International Focus Group leaders. Additionally Irish academics have attended most of the nineteen INQUA congresses to-date where they presented research findings of national and international significance. The successful award of the 2019 INQUA Congress truly demonstrates an accomplishment far beyond what would be expected given the relatively small size of our academic community. A detailed account of the bid process in Nagoya, Japan and the twenty months of preparation as well as the many people who contributed to the success is detailed in Section 6.

Catherine Dalton (President of IQUA)

The IQUA spring meeting was held on a very wet day in Maynooth University. Despite the rain the attendance was very good and the talks were both stimulating and broad and covered topics from Subglacial processes and environments, Ice sheets, Palaeolimnological and Palaeoenvironmental investigations in Ireland, Mayo's Late Quaternary Glacial Landscape and the Genetic Diversity and population status of pine and elm trees in Ireland and beyond. We would like to thank Dr Benjamin Thebaudeau and Maynooth University for organising such a successful Spring Meeting (see Item 3 for abstracts). A refreshing wine reception and discussions was enjoyed by all at the end of the sessions. Due to the exceptional standard of talks on the day it proved very difficult to award the postgraduate presentation prize. In the end the price was presented to two speakers - Karen Taylor (NUI Galway) for her talk: *A high resolution palaeoenvironmental assessment of the Neolithic at the Carrowkeel-Keshcorran complex, County Sligo, Ireland* and Carlos Chique (NUI Galway) who talked on *'A Palaeolimnological Investigation in a Polluted Freshwater Lake – Lough Muckno, Co. Monaghan'.* Thanks also to all who attended the Spring Meeting and AGM.

The AGM included the election of a new postgraduate rep (Margaret Brown) and also a new ordinary member (Martha Coleman). We would like to welcome the new committee members and thank most sincerely the continuing and outgoing members who have contributed to the growing success of IQUA and its associated events. Gayle McGlynn presented the financial report at the AGM.

Looking towards the second half of 2015, we have included the programme for the annual fieldtrip. This year the QRA is teaming up with IQUA to explore the south **east of Ireland** between the **25th and 29th of September**. We will visit classic sections in **Blackwater Harbour, Ely House, Kilmore Quay, Bannow, Courtmacsherry** and **Howes Strand** (see item 4 for further details).

IQUA's Autumn Symposium is themed **Extreme Events from a Quaternary Perspective** it will be preceded by the similarly themed Scientific Workshop of the Irish Geomorphology Group (IGGy). **IGGy** will present their workshop on **Extreme Events** from a Geomorphological Perspective. The two groups will hold seminars between **25th-27th November** in the lecture theatre of the **GSI, Beggars Bush, Dublin.** Outline programme: *Wednesday 25th*, afternoon: IGGy Postgraduate Workshops; *Thursday 26th*: IGGy Scientific Workshop; and *Friday 27th*: IQUA Symposium. (see item 5 for more information).

Thanks to all who contributed to this edition of the newsletter.

Kind regards,
Ellen OCarroll

2. IQUA Committee (2015/2016)

President: Dr Catherine Dalton, MIC, University of Limerick (continuing)
Secretary: Dr Bettina Stefanini, Maynooth University (continuing)
Treasurer: Dr Gayle McGlynn, TCD (continuing)
Postgraduate rep: Margaret Brown, MIC, University of Limerick (elected)
Website manager: Dr Francis Ludlow, Yale University (continuing)
Publications Secretary: Dr Kieran Craven, TCD (continuing)
Newsletter editor: Dr Ellen OCarroll (continuing)
Ordinary members: Dr Steve Davis, UCD (continuing), Dr Benjamin Thebaudeau, Maynooth University (continuing), Dr Rory Flood, QUB (continuing), Dr Gill Scott, GSI (continuing), Martha Coleman, Maynooth University (elected).

3. IQUA Spring meeting 2015

IQUA Spring Meeting, Maynooth University, Abstracts 2015:

Subglacial processes and environments: a view from Clew Bay

Jasper Knight

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Abstract

Subglacial sediments are preserved along the southern margin of Clew Bay (Co. Mayo, western Ireland) and are particularly well-exposed within drumlins at Thornhill, Carrowmore Quay and Askillaun. The regional sediment stratigraphy, of a grey limestone-rich till (Askillaun Till) overlain by a red sandstone-rich till (Newport Till), conceals considerable variability as to the internal sedimentary structures within the drumlins. These structures are important, however, because they can inform on subglacial processes and environments, including subglacial water availability, degree of ice-bed coupling, and glacitectonic processes behind the ice terminus. This study presents sedimentary and structural evidence from Thornhill, Carrowmore Quay and Askillaun that illustrates changing subglacial processes and environments across Clew Bay during the late Midlandian glaciation. A particular focus is placed on brittle (clastic dikes, hydrofractures) and ductile structures (folds, soft sediment deformation), because these reflect variable patterns of ice-bed coupling. A model for drumlin development, incorporating both stratigraphic and structural data, is presented.

Ice Sheet - Ocean Interaction in the North Atlantic, West Porcupine Bank, Offshore Ireland: A Palaeoceanographic Perspective

Sabrina J. Renken[1]; Robin J. Edwards[1]; Stephen G. McCarron[2]; Sara Benetti[3]; Andrew J. Wheeler[4]; Lee T. Toms[5]; Nicholas L. Owen[1]

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[2] Department of Geography, Maynooth University, Co. Kildare
[3] School of Environmental Sciences, University of Ulster, Coleraine, Northern Ireland, United Kingdom
[4] School of Biological, Earth & Environmental Sciences, University College Cork, Cork
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Abstract

The North Atlantic region is a key site for understanding the role of oceanographic and climatic changes. Since the Greenland Ice Sheet exhibits ice sheet collapses over the last decade, concerns about the potential contribution to alterations in temperature, sea level and the Atlantic Meridional Overturning Circulation (AMOC) configuration and strength are reinforced.
The British Irish Ice Sheet (BIIS) is a useful past analogue for the behaviour of a marine-based ice sheet in a warming world. Sediments accumulating along the Porcupine Bank and in the adjacent Rockall Trough have provided potential insights into the evolution and demise of the former BIIS.
X-ray images confirm the appearance of ice rafted debris (IRD) throughout the last glacial within sediment cores taken from the lower slope of the Porcupine Bank (>2700 m water depth). The IRD can be well differentiated from Heinrich Events (HE) which appear as distinct grey bands with a dense presence of IRD and accompanied high magnetic susceptibility. Accordingly, the Porcupine Bank region west of Ireland seems clearly influenced by the BIIS and by imprints coming from Laurentide Ice Sheet (LIS) triggered HE. The chronology of the cores will be given by lithostratigraphic and foraminifera based event-stratigraphy correlations to already existing cores and data. The acknowledged radiocarbon dates will work as age markers and enhance stratigraphic 'tie-points' of the sedimentary sequence with previous work.
In which extend the oceanographic conditions at the Porcupine Bank were influenced by the BIIS or how the conditions changes during HE is distinguished by foraminifera based analyses. Planktonic foraminifera assemblage data and an approach combining stable isotopes (δ18O) and trace elements (Mg/Ca) of planktonic foraminifera are performed to explore changes in sea surface temperatures (SST), sea surface salinities (SSS) and water mass characteristics.

A Palaeolimnological Investigation in a Polluted Freshwater Lake – Lough Muckno, Co. Monaghan

Carlos Chique

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Abstract

This project involves the analysis of a number of ecological indicators in a sediment core obtained from Lough Muckno located in Co. Monaghan, Ireland. L. Muckno has experienced long-term eutrophication which has severely impacted the water quality of the lake and associated systems. Given the lack of long-term monitoring data for L. Muckno, a 'palaeolimnological' approach involving the reconstruction of water quality parameters and catchment land-use through the use of chironomid (non-biting midge fly) and pollen grains was implemented. This reconstruction is based on a comprehensive time-span aimed at identifying human impacts on the system across timescales. A link between (neo-) limnology and palaeolimnology will be established by integrating the palaeolimnological reconstruction with contemporary data on chironomid spatial distribution within the lake basin. This link will allow for a better understanding of modern lake conditions and to fully interpret past changes in fossil assemblages observed throughout the sediment sequence. The results of this project will aid in the identification of ecological 'reference' conditions in L. Muckno, but are also expected to document multiple eutrophication and recovery episodes through time. The project involves the first reconstruction of vegetation cover change based on pollen evidence in Co. Monaghan during the Holocene, and one of the few in the wider region. Emphasis has been given to periods of anthropogenic disturbance in the catchment area starting in the Neolithic (c. 4000 BC).The presentation will provide an overview of the project, methodology, and results to date including the outcome of pollen analysis.

A high resolution palaeoenvironmental assessment of the Neolithic at the Carrowkeel-Keshcorran complex, County Sligo, Ireland

Karen Taylor[1], Susann Stolze[2], David Beilman[3], Aaron Potito[1]*

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Abstract

This study provides a high resolution palaeoenvironmental assessment of the Neolithic at the Carrowkeel-Keshcorran complex, County Sligo. Using a high sampling resolution (160 samples with a 6.5 - 15 year sampling interval (mean = 9.9 years)) combined with a multi-proxy analysis of a lake sediment core, allowed for detailed information on the timing of within-lake responses to Neolithic human activity. Chironomid (non-biting midge fly) subfossils and lake sediment geochemistry ($\delta^{13}C$, $\delta^{15}N$ and C:N) were used to assess changes in limnological conditions through time. The limnological data were compared with macroscopic charcoal concentration and pollen data to examine the potential influence that early farmers had on a freshwater lake system within a prehistorically active catchment.

This study was successful in detecting evidence of anthropogenic activity and subsequent impacts to the lake system through nutrient loading and lake eutrophication. The most intensive period of human activity occurred from 3775 - 3610 BC - Early Neolithic farming. This was followed by a period of decline in human activity from the Middle to Late Neolithic, with a return of small scale activity at the end of the Late Neolithic. The nutrient enrichment during the Early Neolithic, was presumably as a result of substantial input of animal waste into the lake, as indicated by increased levels of $\delta^{15}N$ and decreased levels of $\delta^{13}C$ and C:N during this time. This study emphasises the usefulness of chironomids in archaeological research and provides further affirmation of this methodological approach for investigations into prehistoric farming.

Investigating the population dynamics of *Pinus* and *Ulmus* in Europe during the Holocene

Alwynne H McGeever and Fraser JG Mitchell*

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Abstract

Pollen data from *c.*300 sites on the European Pollen Database (EPD) were used to investigate the decline dynamics of pine (*Pinus)* and elm (*Ulmus*) tree populations in Europe during the Holocene. The R package Bchron was used to create a time-depth chronology for each core and construct a dataset of 10'000 values within the time range a decline event occurred. Using the mean and standard deviation of these 10'000 values, a series of maps were made to show when a decline was happening at each site.

The earliest *Pinus* declines cluster around the Alps at the beginning of the Holocene. By 8000calBP decline events occur in the British Isles, spreading through Ireland from 6000calBP-2200calBP. Two peaks in the frequency of decline events occurred at 8500calBP and 5500calBP.

Declines in *Ulmus* populations also started in the Alpine region at the beginning of the Holocene. These decline events spread quickly across Europe, reaching the north coast of The Netherlands by 9400calBP, and reaching Scotland by 8600calBP. The peak in the frequency of declines occurred at 5000calBP.

This work shows how the decline of these tree populations spread across Europe, and demonstrates a method that incorporates the uncertainty of defining where in a core an event happens, and the uncertainty associated with extrapolating dates of depths from a radiocarbon dated core.

A Reconstruction of North Mayo's Late Quaternary Glacial Landscape Using AMS 14C Dating and Palaeoenvironmental Evidence

Martha Coleman

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Abstract

Six new AMS ^{14}C dates widen and strengthen the British-Irish Ice Sheet reconstruction along the North Mayo coast between ~19573 – 20691 cal. BP. Results concur with previous literature and brings evidence of late Quaternary glacial activity further west along the coast to Seal's Bed, 1km from Belderg. The dating of an articulated *Macoma calcarea* bivalve at Fiddauntawnanoneen Valley (19842 – 20328 cal. BP) infers an *in situ* depositional environment with little or no reworking. Dates are further enhanced by X-Ray Diffraction on mollusc samples and use of the new Marine13 calibration curve. The dominance of foraminifera, *Elphidium excavatum clavatum* and *Cassidulina reniforme,* both cold water species, reinforces the inferred Arctic conditions and previously hypothesised glaciomarine environment. Dating and palaeoenvironmental evidence points to a deglacial sequence correlating with the end of the Last Glacial Maximum. The previously inferred model of rapid sedimentation indicative of meltwater discharge during tidewater glacier conditions is agreed with by the results of this study. Previously only dated once, Fiddauntawnanoneen Valley provides substantial evidence for *in situ* depositional conditions due to the presence of dated articulated bivalves, no recrystallisation on mollusc samples dated, bedrock exposure indicating no break in sequence exposure and the presence of pristine foraminifera assemblages.

A Palaeolimnological Investigation of Lough Lugh at the Mythical Centre of Ireland

Seamús McGinley

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Abstract

Lough Lugh is a pond that lies at the heart of the ancient ceremonial complex on the Hill of Uisneach, the ancient mythological centre of Ireland. This presentation marks a continuation of the Discovery Programme's Late Iron Age Roman Ireland (LIARI) project (Schot et al., 2014) that used evidence from chironomid, pollen and loss-on–ignition (LOI) testing to reconstruct Lough Lugh's history. This presentation expands on the earlier chironomid data and introduces additional techniques including stable isotope ($\delta^{15}N$, $\delta^{13}C$ and C:N ratios) to analyse the lake sediments in order to develop a better understanding of the pond's history. The geochemical and chironomid evidence show a shift from open water to semi-terrestrial marsh conditions from the Early Holocene. There is an the abrupt shift to open lake conditions in the more recent past, indicating that Lough Lugh is likely an artificial/reconstituted pond, dug out at some time(s) since the start of human activity on the Hill. Drawing the palaeolimnological results together with the archaeological, historical, placename and folklore evidence we suggest that while the pond was probably dugout on multiple occasions, Lough Lugh may possibly have acquired a more prominent role in ceremonial activity at Uisneach in later prehistory.

Genetic diversity of ancient Scots pine (*Pinus sylvestris* L.) populations in Ireland and Scotland

Kathleen Crossen

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Abstract

Indigenous populations of Scots pine in the British Isles are now limited to north-west and central Scotland. However, palaeoecological evidence suggests that Scots pine was much more widely distributed in the past. According to fossil pollen and other plant macrofossil evidence, the species entered south-east England at least 10,000 years ago and expanded across Britain to west Ireland and north Scotland. Approximately 4000 years ago, a widespread decline was observed in pollen frequencies of Scots pine and indigenous populations have become limited to their current localities as a result. Previous research has investigated possible causes of the Holocene pine decline, however the results of this research has been inconclusive. I am carrying out a population genetic analysis of 2 ancient populations of Scots pine using DNA markers developed from the chloroplast genome. DNA markers are being amplified from fossil pollen grains preserved in lake sediment cores from County Donegal, northwest Ireland (where the indigenous populations are now extinct) and Loch Maree, northwest Scotland (where an indigenous population still exists). This research will help to determine when these populations last

had a common ancestor and what the genetic diversity is like between ancient populations, and whether the Irish and Scottish populations are each other's nearest relative, or have separate origins within the total diversity of European Scots pine. This may give some indication as to why the only native populations now survive in north-west and central Scotland.

While none of the indicators would warrant the conjecture of human presence and interference in the area by itself, the combined evidence is compelling. Based on the Drombeg radiocarbon dates and their associated large error (the earliest 1520 +/- 120 BC) the first presence of humans could be readjusted to about 2600 cal BC, 1100 years earlier than Drombeg suggests. The appearance of cultivated-type Poaceae pollen (> 50µm) in the upper zones certainly confirms the presence of human activity in the area at a later stage.

A distinct change in peat type, from a woody to *Phragmites* dominated peat is observed at 40cm (130cm below OD). It is yet unclear whether this change is related to a change in the local hydraulic regime or is results of a more widespread change in climatic conditions. However, it is interesting to note that its estimated timing coincides with Baillie's narrowest tree ring event at 2345 BC and the Hekla 4 eruption event (2310 +/- 20 BC). It is clear that the Tralong site has great potential in the area of identifying prehistoric human-environment interactions. The potential for the identification of established eruption events would not only further constrain the radiocarbon dates obtained but would also allow for the placement of the deposits within the wider European context.

4. IQUA/QRA Annual Fieldtrip 2015 to the South East of Ireland: 25th – 29th Sept 2015

This year the QRA is teaming up with IQUA to explore the **south east of Ireland** between the **25th and 29th of September**. We will visit classic sections in **Blackwater Harbour, Ely House, Kilmore Quay, Bannow, Courtmacsherry** and **Howes Strand**.

We will look at the remains of a pingo, visit corries and a cave with new excavation of Pleistocene layers. We will hear about deglaciation, peat initiation and vegetation change. We will wander through a Viking town and find out about the reconstruction of its environments thanks to insect analysis. We will even core an interglacial deposit.

If you would like to find out more about the trip including a detailed schedule as well as booking and information form, go to http://www.iqua.ie/field_meetings.html. You will also find options for booking a partial (weekend) and full attendance (Friday to Tuesday) on the trip, as described in the form.

5. IQUA Autumn Symposium 2015

Venue: Geological Survey of Ireland Lecture Theatre, Ballsbridge, Dublin 4.

Date: Friday 27th November 2015

"IQUA's **2015 Autumn Symposium** will take place on **Friday November 27th** in the Geological Society of Ireland's Lecture Theatre, Beggar's Bush, Dublin 4. This year's symposium theme is entitled, "**Extreme Events**" and is being organised in collaboration with **IGGy**.

Outline programme: *Wednesday 25th*, afternoon: IGGy Postgraduate Workshops; *Thursday 26th*: IGGy Scientific Workshop; and *Friday 27th*: IQUA Symposium. The IQUA symposium will feature a range of speakers from Ireland and the UK covering different aspects of Extreme Events.

Confirmed Speakers: IQUA symposium
Mike Baille (Queens): Catastrophic environmental events that show up in tree-ring chronologies.
Sara Benetti (UU): Deglaciation / reconstructing retreat of the British-Irish ice sheet
Sue Hamilton (UCL): Easter Island
Robin Edwards (TCD): Sea level change with relation to extreme events
Benjamin Geary (UCC): Submerged landscapes / Doggerland
Angela Cloke-Hayes (MIC): Holocene/Late Pleistocene short-term climate change in Mediterranean Sea
Emma Thomlinson (TCD): Volcanic ash and tephrochronology

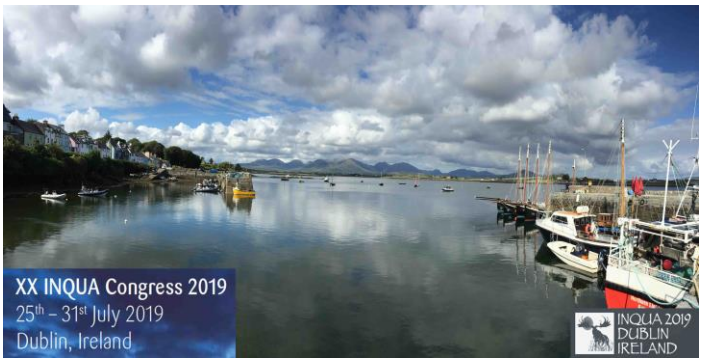
Post-Symposium Discussion:
Pete Coxon (TCD): INQUA

For more information contact **Xavier Pellicer** (xavier.pellicer@gsi.ie) (**IGGy**) or **Margaret Browne** (margaret.browne@mic.ul.ie) and **Donna Hawthorne** (hawthord@tcd.ie) (IQUA).

6. Notices and Awards

*** Successful bid for INQUA 2019 ***

XX INQUA 2019 – Life on the Edge – Dublin Ireland



It is now official –The next INQUA Congress will be in Dublin

The INQUA Final General Assembly were notified of the International Council's vote to award the 2019 INQUA Congress to Dublin, Ireland on Sunday August 2nd at the XIX INQUA Congress in Nagoya, Japan and the venue has been ratified.

This is a marvellous achievement for Ireland and for Irish Quaternary science and an outcome that is still hard to believe. The journey started 20 months ago at an IQUA meeting and we would like to thank everyone who has engaged with us to win this bid. The effort leading up to the bid production and at the Congress by IQUA members and by delegates and by our professional conference organiser was incredible.

The IQUA Executive had agreed to hear a proposal to prepare a bid to host the 20th INQUA Congress on Friday 24th 2014 in Kennedys Bar, Lincoln Place and the wheels were set in motion when a representative of the Convention Centre Dublin (CCD) visited Pete Coxon on the following Thursday to see how sound our plans might be. The bid required some earnest effort to have a chance of success and in March and April we put out a call for expressions of interest in being on the Provisional Local Organising Committee and the Scientific Programme Committee. At this stage a small group began to outline our 'intention to bid' document that was required by the INQUA Executive in July 2014. Gill Scott led the charge of sorting financial support (and this early work galvanised our intentions) whilst the author, Fraser Mitchell, Bettina Stefanini, Stephen McCarron and Keith Bennett took on the work of outlining a bid proper over a number of meetings. The 'intention' was notified to INQUA and we learnt there were 3 contenders: Rome, Italy; Zaragoza, Spain and Dublin.

A larger LOC meeting (with wine) was held in early October 2014 followed by three long and detailed meetings in early November as we took on the task of honing IQUA's plans and arranging to get advice and choosing a Professional Conference Organiser (PCO).

As IQUA required some advice on bidding for and organising an INQUA Congress they invited Tom Bradwell and Christian Schleuchter to visit Dublin, the IQUA Symposium and the CCD in late November. This meeting (to which some LOC members travelled considerable distances to on a weekend), our own experience and the selection of a PCO –Noel Mitchell of Keynote allowed us to step up the planning and start to formulate the bid proper that was due in April 2015.

Several of the LOC held 10 organisational meetings in Dublin during January and February of 2015 and Elaine Cullen, an expert cartographer and artist, began to try out some potential logo designs (this proved harder that it sounds). The logo was ready and agreed for the sending of a St. Patrick's Day card to all of the potential National Representatives ('the voters') and on the Quaternary listserver and we managed to get it translated into a dozen languages in two days thanks to our brilliant IQUA membership.

INQUA 2019
DUBLIN
IRELAND

The final bid document is now well known to all IQUA members and it was the product of a huge effort by Keynote and the active LOC membership to whom IQUA owe a great thanks. The Bid LOC would like to thank all those who submitted outlines and details for potential field trips to be associated with the Congress. Whilst unfortunately not all proposals could be included in a shortlist for the brochure, they remain of essential importance to the

Bid and the upcoming congress. The planning for fieldtrips will be very important given the recent experiences of INQUA Congress organisers.

The outline of the plan and its potential benefits to IQUA were presented at the IQUA AGM in Maynooth in late April 2015. The official bid was submitted to INQUA in April 2015 and we held a further 5 meetings to discuss who would represent us on the stall in Nagoya, t-shirts, logos, pencils (all brilliant –especially the t-shirt colour) and finally transporting all this material including the 50 copies of the glossy, heavy and valuable bid document (carrying two 25kg bags through the Nagoya tube system when it was 38C was unpleasant).

The INQUA Congress at Nagoya gave us a stall to present our bid and this was ingeniously decorated (including some beautiful loops on a large screen of Ireland and Quaternary sites…) and attended by IQUA representatives on the ground and particularly by Martha Coleman Noel Mitchell, Pete Coxon, Fraser Mitchell, Gayle McGlynn, Sabrina Renken, Donna Hawthorne, Alwynne McGeever, Maureen McHenry and Cathy Delaney Donna and Alwynne on the drums – what can I say?). There were many other supporters at the Congress too and mention should be made of those canvassing there on our behalf including Rory Flood, Maureen Vaughan, Sean Pyne-O'Donnell, Helen Roe and Iestyn Barr. Seriously backing us up on canvassing were people behind the scenes and Jasper Knight, Nicki Whitehouse and Henk Heijnis –thanks.

Many people contributed as much to the bid as the rest of us but were not in Japan and whilst I can't name them all sincere thanks go to Steve McCarron, Bettina Stefanini, Keith Bennett, Catherine Dalton, Ben Thebaudeau, Steve Davies and Henry Lamb who all contributed to the ideas and turned up to various meetings in Dublin.

The International Council meetings were held over three days –much of the business is formal reporting of INQUA activities but the crunch point was late on in the first IC meeting on Wednesday when each of the three bids had 4 minutes (yes… 4 minutes) to present their pitch for a Congress that attracts thousands of scientists. Fraser Mitchell had prepared a perfectly timed powerpoint presentation that highlighted Ireland's unique location and the talk was well-received (live image below).

Once the pitch was made all that remained was to retreat to the Shamrock Bar,in Fushimi (exit 6 from the tube if you're ever there) Nagoya, –they had already lent us some Irish flags for our stall –and discuss how to engage the many interested delegates who were visiting the bidding countries' stalls in droves during the poster sessions.

The actual vote was held at the IC meeting on the Saturday afternoon and about 33 National Representatives were present who were eligible to cast votes on the Presidency of INQUA, the INQUA Vice Presidents and the Congress bids. The tension on the latter vote was palpable –so much had gone into it. The Irish bid won over 50% of the votes on the first round making it the outright winner and a second vote unnecessary. The subsequent party was fun…

We hope the Congress will live up to our promises in the bid and we sincerely look forward to seeing everyone in Dublin in 2019 and involving as many of the island's Quaternary scientists in the organisation as possible.

Pete Coxon, August 2015

*** Dating and analysis awards 2015 ***

The official call for the postgraduate and general awards will go out before the end of September. The deadline for applications is 31st October The awards will have the same structure as in previous years and the final winners will be announced at theIQUA symposium on the 27th November 2015. An abstract of the research associated with the C14 award presented to Susan Stolze is outlined below and again shows the valuable contribution that these awards provide to IQUA researchers. The award is sponsored by IQUA and the CHRONO Centre, QUB and is open to IQUA members. Details will be sent through the mailing list and will be available on the website. Alternatively contact Bettina Stefanini (bettina.stefanini@nuim.ie)
Closing date 31st October 2015

Landscape Reconstruction at the Carrowkeel Megalithic Complex, County Sligo

Susann Stolze
Institute of Arctic and Alpine Research, University of Colorado Boulder, USA

The Bricklieve Mountains are host to the Carrowkeel megalithic complex which represents one of the major Neolithic passage tomb sites in Ireland. Palaeoecological research on lake sediments and peat deposits from the lowlands surrounding the Bricklieve Mountains and an upland valley conducted by the author and colleagues has yielded insights into the environmental change and degree and nature of human impact on the landscape during the Neolithic. However, so far little is known on the landscape character of the upland plateaus at the time of the dated usage of the Carrowkeel megalithic complex and the nearby Mullaghfarna hutsites.

To reconstruct the vegetation history of the area, peat cores were retrieved in proximity to the megalithic cairns and stone circles. The longest monolith obtained adjacent to cairn N shows a succession from white gravel to silt with an increasing organic component to peat. Pollen analysis suggests the occurrence of ferns and a few grassland taxa on the shallow minerogenic soil and the subsequent expansion of grassland dominated by *Plantago lanceolata*, grasses, and Fabaceae. The accumulation of deeper, organic rich soils and soil acidification supported the establishment of dry heath. The appearance of *Sphagnum* and testate amoebae mark the subsequent transition to wet heathland. First radiometric measurements, made possible by a research award by the Irish Quaternary Association, suggest that heathland began to develop around 2800 cal years BP, with increasing surface wetness occurring around 2400 cal years BP. These results suggest that a considerable change of the landscape character at Carrowkeel coincided with a widespread and prolonged cool and wet phase in the late Bronze Age between ca. 2800-2400 cal years BP. Further investigations to better constrain the timing and nature of environmental change in the area are currently ongoing.

7. Workshops, seminars, conferences & news

2015 International Paleolimnology Symposium (IPS)

Catherine Dalton,
MIC, University of Limerick

The International Paleolimnology Association (IPA) triennial symposium was hosted by Lanzhou University, Gansu, China August 4-7th 2015. The conference was positioned the week after the INQUA Congress in Nagoya Japan to enable Quaternary Scientists to attend both meetings. The Lanzhou meeting culminated in 308 registered participants. With a ratio of ~2:1 local versus international delegates the conference was highly successful in promoting paleolimnology in Asia. New initiatives at the IPS2015 included an Early Career Researcher (ECR) workshop organized by Virgina Panizzo (University of Nottingham) and Catherine Dalton (MIC-University of Limerick). Conference field excursions along the Silk Road and to the Tibetan Plateau were very well subscribed. Sites visited included the spectacular Danxia landforms in Zhangye (or Chinas rainbow mountains), the Mogao Grottoes (c.1000 sandstone caves with painted Buddhist murals), the Singing Sand (Minghsa) Mountains in the Gobi Desert, and Quinghai, an endorheic lake on the Tibetan Plateau. John Smol (Queens University Canada), Catherine Dalton and Ginnie Panizzo were re-elected as IPA Chair, Vice-Chair and Early Career Researcher Representative respectively. The 2018 IPS is being jointly organised with the International Association of Limnogeology (IAL) and will take place in Stockholm, the home of the Nobel Prize. The symposium will be co-organized by Umeä, Stockholm and Lund Universities.

Environmental Archaeology in Ireland – new blog and upcoming seminar

The Irish Archaeobotanical Discussion group and the Irish Wood Anatomy group have joined forces and are now known as the Environmental Archaeological group. To find out more about the group as well as their aims and fascinating work check out their new blog http://eaireland.blogspot.ie/. This blog was established by Environmental Archaeologists in Ireland (there are many working in third level institutions, in companies and as sole traders).

The EAI are organising an environmental archaeology seminar in spring 2016 in the Botanic Gardens, Glasnevin Dublin. The title of the seminar will be "Looking back, moving forward: 70 years of Environmental Archaeology in Ireland". More details on the, date, speakers and topics to be discussed will be posted on the blog soon.

8. Recent Publications

Coughlan, M. 2015. Record of anthropogenic impact in the Western Irish Sea mud belt" (http://www.sciencedirect.com/science/article/pii/S2213305415300060)

Dalton C, O'Dwyer B, Taylor D, de Eyto E, Jennings E, Chen G, Poole R, Dillane M, & McGinnity P. (2014). Anthropocene environmental change in an internationally important oligotrophic catchment on the Atlantic seaboard of western Europe. Anthropocene 5: 9–21.

Dunlop, P., Wilson, P., Cooper, M., Robertson, S. & Donald, A. 2015. *From rocks to ridges*: the *formation of upland landscapes in the north of Ireland*. Mountaineering Ireland, Dublin.

Els, A., Merlo, S. and Knight, J. 2015. Comparison of two satellite imaging platforms for evaluating sand dune migration in the Ubari Sand Sea (Libyan Fazzan). The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XL-7/W3, 2015, 36th International Symposium on Remote Sensing of Environment, 11–15 May 2015, Berlin, Germany, 1375-1380.

Evans, D.J.A., Brown, V.H., Roberts, D.H., Innes, J.B., Bickerdike, H.L., Vieli, A. & Wilson, P. 2015. Wasdale Head. In: McDougall, D.A. & Evans, D.J.A. (eds), *The Quaternary of the Lake District: Field Guide.* Quaternary Research Association, London, 213-238.

Harrison, S., Knight, J. and Rowan, A. 2015. The southernmost Quaternary niche glacier system in Great Britain. Journal of Quaternary Science, 30 (4), 325-334.

Holmes, J.A., Tindall, J., Roberts, N., Marshall, W., Marshall, J.D., Bingham, A., Feeser, I., O'Connell, M., Atkinson, T., Jourdan, A.-L., March, A. & Fisher, E.H. (2015) Lake isotope records of the 8200-year cooling event in western Ireland: comparison with model simulations. *Quaternary Science Reviews* http://www.sciencedirect.com/science/article/pii/S0277379115300366

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Knight, J. 2015. Anthropocene Futures: people, landscapes and resources. The Anthropocene Review, 2 (2), 152-158.

Kostick, C. and Ludlow, F. (2015) "The Dating of Volcanic Events and their Impacts upon European Climate and Society, 400-800 CE", *European Journal of Post-Classical Archaeologies*, 5, 7-30.

Matthews, J.A. & Wilson, P. 2015. Improved Schmidt-hammer exposure ages for active and relict pronival ramparts in southern Norway, and their palaeoenvironmental implications. *Geomorphology* 246, 7-21.

Moolla, R., Curtis, C. and Knight, J. 2015. Occupational exposure of diesel station workers to BTEX compounds at a bus depot. International Journal of Environmental Research and Public Health, 12, 4101-4115.

Praeg, D., McCarron, S. Dove, D. O'Cofaigh, C., Scott, G., Monteys, X., Facchin, L., Romeo, R., Coxon, P. (2015) Ice sheet extension to the Celtic Sea shelf edge at the Last Glacial Maximum, Quaternary Science Reviews, 111, p 107-112.

Sigl, M., Winstrup, M., McConnell, J.R., Welten, K.C., Plunkett, G., Ludlow, F., Büntgen, U., Caffee, M.,Chellman, N., Dahl-Jensen, D., Fischer, H., Kipfstuhl1, S., Kostick, C., Maselli, O.J., Mekhaldi, F., Mulvaney, R.,Muscheler, R., Pasteri, D.R., Pilcher, J.R., Salzer, M., Schüpbach, S., Steffensen, J.P., Vinther, B., Woodruff, T.E. (2015) "Timing and Climate Forcing of Volcanic Eruptions during the Past 2,500 years", *Nature*,doi:10.1038/nature14565. See pdf.

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Swindles, G.T., Holden, J., Raby, C., Turner, T.E., Blundell, A., Charman, D.J., Menberu, M.W. and Kløve, B. 2015.Testing peatland water-table depth transfer functions using high-resolution hydrological monitoring data. *Quaternary Science Reviews* 120, 107-117.

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Szpak, M.T., Monteys, X. O'Reilly, S.S., Lilley, M.K.S., Scott, G.A., Hart, K.M., McCarron, S.G., Kelleher, B.P. (2015) Occurrence, characteristics and formation mechanisms of methane generated micro-pockmarks in Dunmanus Bay, Ireland, Continental Shelf Research, 103, p 45–59.

Wilson, P. & Jarman, D. 2015. Rock slope failure in the Lake District. In: McDougall, D.A. & Evans, D.J.A. (eds), *The Quaternary of the Lake District: Field Guide.* Quaternary Research Association, London, 83-95.

Wilson, P. 2015. Gray Crag and The Knott rock slope failures. In: McDougall, D.A. & Evans, D.J.A. (eds), *The Quaternary of the Lake District: Field Guide.* Quaternary Research Association, London, 129-135.

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