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Editor: Karen Molloy



Introduction

This edition of the Newsletter brings members up to date on the recent and forthcoming activities of IQUA. The Annual Symposium this year is in honour of the contribution Frank Mitchell made to the field of Quaternary Research in Ireland. This promises to be of interest to many people. The list of speakers and topics to be covered are included on page 4.

An account is also given of the recent Annual Field Meeting to South Central Mayo. This event was extremely well attended and the organisers would like to take this opportunity to thank all contributors and participants for making the weekend a success. The local communities in Turlough and Mayo Abbey are thanked for their hospitality at the experimental *fulacht fiadh* and at lunch on Saturday.

Membership of IQUA is expanding rapidly, we recently acquired 13 new ordinary and 11 new student members - welcome one and all.

Contributions for the next Newsletter - recent publications, accounts of new research projects, conferences attended etc. should reach me by March 31st.

IQUA Annual Field Meeting

South Central Mayo, 9th - 11th October, 1998

My report on this year's field trip has to contain many superlatives as it was indeed a most enjoyable meeting from many perspectives. The first superlative involves numbers attending. There were 60 registered overall with 50 on Saturday and 35 on Sunday. This must surely be a record for IQUA. This must go down in large measure to the pre-publicity and networking of Kevin Barton and Karen Molloy. The principal institutions represented were NUIG, GSI, Teagasc, TCD, GMIT, NUI, and OS. I would particularly like to mention and welcome the presence of interested people from the area. These included amateur archaeologists, botanists and environmentalists from the Turlough area and Mayo Abbey. They made us all very welcome on their home patch.

Saturday morning saw us assemble at Derryhick Church outside Turlough. On a beautiful morning we heard Christy Lawless our "local

expert" tell us the intriguing history of this strategic location and how St. Patrick was as much a politician as a religious figure. Christy then, from the vantage point of Derryhick Hill, introduced the group to the Turlough landscape laid out below. Here too Barry Long scanned the horizon for the multitude of different rock types to be seen. There was much musing over a huge stone here. People seemed happy enough that it had been cut from the rock some 130m away --Megalithic or what ? A hasty spin northeast brought us to the granite outcrops at Pontoon Bridge where Barry gave us a clear explanation of these rocks making up the Ox Mtns. granodiorite. Some members of the group were concentrating on not becoming further accident statistics as the cars whizzed past on the fast bend.

There was no chance of anyone in the long cavalcade of cars getting lost as Christy had put up "IQUA this way" signs at every key junction. We seemed to be going round and round but the signs always had the arrows pointing in the right direction!! Christy was surely exhaustive in his preparation and this was much appreciated. Another superlative definitely. On to Levallinree Lough where there was much chaos of parking cars and barking dogs - key elements of any IQUA trip. Here Christy demonstrated two things; first his great affection for his own neighbourhood, this part of Mayo; and secondly the huge amount of work he had done on the settlement history in the Turlough landscape. Around and in the lake there is a rich plethora of monuments for the archaeologist to examine. While he spoke others went on short "boat trips" to the nearest crannog. Expectant watchers on

the shore did not see any boating mishaps which would no doubt have given great amusement. His key interest is of course in *fulachta fiadh* and he described how, since 1984 he had discovered 151 of these within 3km. radius of Levallinree Lake. He felt they were for a wide range of uses besides the cooking of meats which would be demonstrated at the end of the day. Onwards to the next site, Barry then talked about the Dalradian rocks using the exposures at Garragh Hill. Here there were good examples of pegmatites. Mike Philcox ably demonstrated the uselessness of a Carboniferous geologist's hammer in trying to mash these rocks! They certainly needed something a bit more robust!

All the above was before lunch, another superlative perhaps. We then raced south on to the limestones for lunch at Mayo Abbey south of Balla. Lunch had been arranged in Malachy Byrne's pub. Well replenished and welcomed by Joe Brett, we saw a video about Mayo Abbey/Iona a part of the Mayo Millennium Project. All were impressed by the amount of community - driven work being done in this historic place. In the old famine church Carmel Joyce and Stephen Goldrick told us the fascinating story of the "Mayo of the Saxons". Across the road in an old enclosure Janice Fuller from NUIG described pollen work, and John Madden, also of NUIG described the potential of geophysics in unravelling the archaeology of the Mayo Abbey area. At this site Kevin Barton fought a losing battle with a herd of cattle in the next field. They insisted on constant heckling of the speakers next door!

The next superlative was one many will long remember. That was the demonstration of the

operation of a *fulacht fiadh* by Christy Lawless ably assisted by his wife and family. A large number of people had gathered in the descending gloom and rain to witness the cooking of legs of lamb as the ancients may have done it. It tasted delicious and was washed down with tea and coffee. Christy thanked the landowner James O'Hora for all his help in setting it all up. It had now been used on several occasions. In spite of the gloom it was a truly memorable moment, and brought to an end an excellent day in the field which went without a hitch. Mike Philcox thanked Christy and Barry for their great work and preparation for the trip.

After a nice meal in the Western Hotel, Claremorris, our day was not yet over as Michael O'Connell gave a talk on his recent trip to China. This commenced around 11.00pm and finished at midnight. This must be the latest IQUA talk of all time. It is also the first time I can remember where there was a bar with a prominent Guinness tap just to right of the speaker ! Unphased by this Michael gave an excellent talk on the loess of central China and the city of Sian. His photos were really good and his audience was in rapt attention in spite of the hour. At the end there was an important ceremony, another IQUA first I feel. Kevin Barton, with a straight face it has to be said, told of the exhaustive research undertaken to award Michael O'Connell honorary citizenship of Co. Mayo. The amount of work he did here was true witness to his innermost desires to belong to Mayo rather than Galway. The accreditation, authorised by the Mayo Foreign Affairs Dept. was then presented in the form of a car reg. plate "98 MO 'C 1". There is no doubt Michael will

treasure this exceptional honour!!

Sunday morning and another great day as we head south from Claremorris on to the karstic limestone terrains of south Mayo/east Galway. Again the sun shone as 19 cars traversed the countryside, driving bemused locals off the road as they made their way to church. Here the Coxons moved into action ably assisted by their young son Christopher, clearly a geomorphologist, palaeobotanist or hydrogeologist in the making. Catherine gave a clear exposition of the hydrology of the turloughs, their annual regime and the impact they have on land use of the area. Sites at Greaghans and Kilgassan were visited. Pete did some coring, getting sequences right down to the Lateglacial. The visit to the silica sand pit at Pollnahallia near Headford was fascinating, though the exposures here have changed a lot over the years. Pete, using excellent illustrations of borehole logs described the stratigraphy of the site and the assemblage of plant species which had been found dating from warmer Tertiary times. This site had a huge story still to tell and Pete was very enthusiastic as to the potential of the site.

After lunch in the Anglers Rest Hotel in Headford, a visit was made to the Corrandulla spring. Here Catherine spoke of the drainage to the Corrib and the postglacial history of Lough Corrib. The last site just outside Galway on Curraghmore Bog was the occasion of some vehicular drama as Pete Coxon leading the convoy suddenly veered off to the left onto a bog track, later admitting that he had not thought of how the cars would get back out, it being a very busy and fast stretch of road!

Citing earlier work of Catherine Delaney Pete spoke of the former extent of the lake, and cored the lake marls without bottoming them. The postscript to this site is that all cars successfully got back on to the road, I think!

Mike Philcox, as Chairman of IQUA, rapped the day up with a vote of thanks to all who had contributed. It had been a well-attended trip, organised with great attention to detail, and with fascinating things to see. Christy Lawless got due mention for his day. Kevin and Karen at the hub of things in Galway had done sterling work in getting it all organised. For particular mention was the quality of the field guide edited by Karen Molloy and Kevin Barton. It set new standards for IQUA with the use of colour graphics. It is no. 22 in the series and the guides have always been a great credit to IQUA and the energy of the editors and contributors to get them together in spite of all adversity over the years.

It has given me great pleasure to write this note on the trip. It indeed was one of superlatives in many ways. Having been on many trips with IQUA over the years I can happily say that this has been one of the most enjoyable. The numbers, the science, the organisation, the terrific group dynamic, the weather etc. all made it so. Many thanks to all concerned.

Ronnie Creighton, Geological Survey of Ireland

Forthcoming Events

IQUA Annual Symposium 1998

Frank Mitchell Symposium

The Irish Quaternary Association (IQUA) will

devote its annual one-day symposium to a series of talks in honour of the late Professor Frank Mitchell. Invited speakers will review Frank Mitchell's contributions to Tertiary and Pleistocene geology and glacial history, and archaeology, in the context of present research.

The symposium will be held on Friday, November 20th, at the Geological Survey of Ireland, Beggars Bush, Haddington Road, Dublin 4. Registration will be from 9.30-10.00 a.m. Lectures begin at 10.00 a.m and are expected to run until 5.30 or 6.00 p.m. There will be a small registration fee to cover the cost of the Abstracts volume and refreshments. No pre-booking is necessary.

Tea and coffee will be provided at morning and afternoon breaks, and at lunchtime. Café lunch, sandwiches and groceries are available locally, but, to avoid a queue and allow more time for chat, it is advisable to bring your own.

List of speakers

1. Pete Coxon – Tertiary landscapes and Pleistocene interglacials revisited
2. Jasper Knight* – Glacial landform and sediments in Ireland: a record of late Pleistocene environmental change
3. Michael O'Connell – Sixty years of Late-Glacial investigations in Ireland: a review of progress to date
4. Bill Watts – Vegetation history - pollen and macrofossils
5. Peter Woodman – A return to Frank Mitchell's 'Minimal Mesolithic'
6. Gabriel Cooney – Frank Mitchell's contribution to reading the prehistoric landscape
7. Michael Ryan – Settlement in late prehistory
8. Alan Hayden and Clare Walsh – A tattered agricultural palimpsest: excavations on

Valencia Island with Frank Mitchell

9. Breeda Tuite – A personal view of working with Frank Mitchell

* substituting for Marshall McCabe

For further information contact IQUA's Chairman, Dr Michael Philcox,

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Joint Geological Survey of Ireland/ Geotechnical Society of Ireland Meeting:

Underground exploration in City Areas

(The Use of Geophysical Methods)

by Pete Fenning

Earth Science Systems Ltd.

Venue: Geological Survey of Ireland,
Beggars Bush, Haddington
Road, Dublin 4.

Date: Tuesday 10 November 1998

Time: 6.30 p.m.

(Tea/Coffee available from 6.00 p.m.)

For further information contact Ronnie
Creighton 01-6041496

Abstract of recently completed PhD thesis

Dowling, L.A. 1997. *A palynological investigation of interglacial sediments in Cork Harbour, southern Ireland*. Unpublished PhD Thesis, University of Dublin (Trinity College).

This thesis was carried out as part of the northwest European SHELF project. The aims

of the project were: to retrieve multiple continuous cores through proven interglacial estuarine deposits beneath glacial diamicton in Cork Harbour, southwest Ireland; to establish the palaeobotany of the deposits; to relate this to other interglacial sites in Ireland; to attempt biostratigraphic correlation with established European stratigraphy; and to attempt correlation with the marine oxygen isotope record. The estuarine setting of the deposits makes them unique among Irish interglacial sites. Three cores were taken and the sediment recovered were subjected to palynological analysis (other palaeontological analyses, sediment analyses and dating of the sediment were carried out by other workers). The longest and highest resolution pollen diagram (ca. 10 cm intervals, over 18 m of interglacial material) records a late-glacial to late-temperate vegetation succession. Features include the failure to establish of mixed oak forest, a possible reversion of climate, domination of the pollen spectra by *Pinus* and *Alnus*, and a strong representation of *Taxus*. The other two diagrams record only the upper sections of the same vegetation succession. Regional comparison suggests that the biotic signature of the Cork Harbour deposits is similar to those of the Gortian deposits in Ireland. Floristically the Gortian group deposits are similar to Holsteinian deposits and dissimilar to Eemian deposits. *Pterocarya* in the Cork Harbour cores further reinforces the connection, and no pollen data from the Cork Harbour cores are contradictory. The Gortian group may represent one or more probable intra-Saalian (possible pre-Saalian) temperate stage(s). Hans Petter Sejrup and

Hendrick Heijnis dated samples from Cork Harbour by amino acid isoleucine epimerization and uranium-thorium disequilibrium methods, respectively. The amino acid dates suggest the deposits are most likely Oxygen Isotope Stage 7 in age (198 – 252 ka BP) and possibly Stage 9 (302 – 338 ka BP). Measurement of uranium-thorium disequilibrium yielded a minimum age estimate of Stage 5 (127 – 116 ka BP). If the Holsteinian *sensu stricto* is considered to be Stage 11 in age (352 – 428 ka BP; de Beaulieu and Reille 1995), then the Holsteinian character and younger age (Stage 9 at oldest) of the Cork Harbour deposits suggests that there may have been more than one Holsteinian-style temperate stage in Europe. It is also possible that the Cork Harbour deposits are Stage 7 in age, recording only one of the three temperate intervals within this stage

Research report

Summary of project to develop a forest soils classification and productivity coverage

Background

Forestry is now the fastest growing land use enterprise in Ireland, and there is considerable discussion arising over the location and development of new afforestation. The government plans to increase the national area under forestry from the current 8 to 17 percent, planting 700,000 hectares over the next 30 years. In particular, the soil base on which the afforestation programme is based is rapidly

changing with the decisive swing to farmer afforestation. Historically forestry has been regarded as the land use of last resort, resulting in only the most marginal of soils being planted. With the major increase to farmer planting, there has been a gradual shift to better land.

With this in mind the idea of assessing the area, extent and location of the soils suitable for farm forestry has grown and is now being realised with the inception of the *Project to Develop a Forest Soils Classification and Productivity Ranking*. This will aid in the assessment and planning of the national planting programme. The previous National Soil Survey programme extended to part or all of only 12 counties. This was focussed on the counties with the greatest extent of valuable and productive agricultural land. The counties, which are now the centres of the current farm forestry drive (especially those along the western seaboard), are not well covered by the original National Soils Survey. The current programme will therefore be focussed on counties where National Soil Survey maps are not available. A new forest soil classification is needed for all 26 counties, as well as a productivity coverage of same. This offers the best scientific basis to future planning and decision making on land use and forestry.

Objectives of the Study

Put simply, the aim of this research can be summarised as developing a productivity ranking for Irish soils suitable for forestry purposes. Owing to the lack of soil data in most counties much of this information will have to be inferred and derived from remote sensed imagery.

This involves developing a composite soil

coverage for the counties, which were not mapped by the National Soil Survey, and to refine the classification in those counties which were. The classification will break the different classes of soil down into a number of categories based on depth, drainage, chemical reaction (acid vs. base) and composition (mineral vs. organic).

Methods

The project is using GIS to undertake the mapping and analysis of much of the data. In the areas where 6" mapping of soils has been carried out, a 'Known Soils Coverage' will be digitised from the soils maps in Teagasc's archives. These include the published National Soils Survey County Series of maps (Carlow, Clare, Kildare, Laois, Limerick, Meath, Wexford and Westmeath), the part published counties (North Tipperary, West Cork, West Mayo and West Donegal) and, if possible, the unpublished counties where field mapping has been completed (Offaly and Waterford). Other large scale soils maps of small areas surveyed for specific research purposes will also be incorporated.

The FSCC for the 'unknown' soil areas (counties which have not had detailed soils surveys at 6" level) will be compiled using a number of sources with considerable emphasis being placed on remote sensing. The basic principle is to work from the known to the unknown soils filtering the information through the remote sensed imagery (Landsat TM), Orthophotography and the DTM for mapping and verification.

This procedure will involve direct and indirect

methods. Direct interpretation can be undertaken by extrapolation from known soils to similar soils across county boundaries. Orthophotography and satellite remote sensed imagery will be used to verify and validate the extent to which extrapolation can be used directly.

The indirect interpretation will take up the bulk of the mapping. It involves breaking large areas or regions into recognisable topographic units and overlaying these units with details of parent rock and Quaternary deposits. The Quaternary geology will comprise data mapped by the Geological Survey of Ireland (GSI) where possible. The relevant properties of the Quaternary deposits for the remaining areas will be mapped using aerial photography and field verification. This will run alongside the development of the topographic unit coverage. By compiling the Quaternary Geology and Topographic Unit Coverage data, a Soil Landscape Unit Classification (SLUC) can be derived. A Soil Landscape Unit is an area of similar topography and Quaternary deposit on which a suite of soils occur in a predictable pattern (*e.g.* in north Meath, where a Lower Palaeozoic Shale Hill Landscape Unit consists of a sequence or group of soils composed of a hilltop soil, a hillside soil and a valley bottom soil, which occur in a predictable pattern). This forms the basic building block for subdivision using remote sensed imagery.

Forest Productivity Coverage

A Forest Soils Productivity Coverage will be developed in conjunction to the Forest Soils Classification Coverage. Data from Coillte's database will be combined with the soils

coverage and analysed statistically to give an average productivity for each soil type. A productivity ranking will be assigned to every polygon in the Forest Productivity Coverage thus allowing an assessment of total potential forest productivity at local, regional and national level. The FSCC will not be expected to be as detailed in the differentiation of soils as actual field survey. However, a reliability index will accompany each section of the composite forest soils classification coverage to indicate the quality of information for each area in the forest soils coverage.

The project is funded by the Forest Service. It forms part of the basic Forest Inventory and Planning System (FIPS) which will form the IT core of Forest Service management. In information from this project will form the major part of the Indicative Forest Strategy document which is now required by the Department of the Environment. The Indicative Forest Strategy as planned for Ireland will incorporate a large number of digital datasets dealing with soils, forest productivity, agriculture, environment, topography, demography and economic factors. This will act as a decision support system for the Forest Service in guiding the location and character of new afforestation at county, regional and national level.

The 'Forest Soils Unit' is based at the Teagasc Research Centre at Kinsealy in Dublin and includes the following personnel. E-mail addresses have been included, should anyone require further information on the project.

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Recent Publications on Quaternary Research in Ireland

Barton, K. and Molloy, K. (eds) 1998. *South Central Mayo*. Field Guide No. 22, Irish Association for Quaternary Studies, Dublin.

Dowling, L. A., Sejrup, H.-P., Coxon, P. and Heijnis, H. 1998. Palynology, aminostratigraphy and U-series dating of marine Gortian interglacial sediments in Cork Harbour, southern Ireland. *Quaternary Science Reviews*, 17, 943- 960.

Knight, J. 1997. Morphological and morphometric analyses of drumlin bedforms in the Omagh basin, north central Ireland. *Geografiska Annaler*, 79A, 255-266.

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- Knight, J. and McCabe, A.M. 1997. Identification and significance of ice-flow-transverse subglacial ridges (Rogen moraines) in northern central Ireland. *Journal of Quaternary Science*, **12**, 519-524.
- McCabe, A.M. 1997. Geological constraints on geophysical models of relative sea-level change during deglaciation of the western Irish Sea Basin. *Journal of the Geological Society, London*, **154**, 601-604.
- McCabe, A.M. 1998. Striae at St. Mullin's Cave, County Kilkenny, southern Ireland: their origin and chronological significance. *Geomorphology*, **23**, 91-96.
- McCabe, A.M. and Clark, P.U. 1998. Ice-sheet variability around the North Atlantic Ocean during the last deglaciation. *Nature*, **392**, 373-377.
- Wintle, A.G., Clarke, M.L., Musson, F.M., Orford, J.D. and Devoy, R.J.N. 1998. Luminescence dating of recent dunes on Inch Spit, Dingle Bay, southwest Ireland. *Holocene*, **8**, 331-339.

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Contributions for the next IQUA Newsletter to be sent to: Dr Karen Molloy, IQUA Newsletter Editor, Palaeoenvironmental Research Unit, Department of Botany, NUI, Galway.
