



IRISH ASSOCIATION FOR QUATERNARY STUDIES

IQUA NEWSLETTER

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Edited by Ronnie Creighton

Introduction

This edition of the Newsletter contains a variety of items including a precis of the recent field trip to Co. Antrim and various aspects of Quaternary studies in Ireland. As always I renew my appeal for contributions to the Newsletter.

Ronnie Creighton

IGCP PROJECT 274 - UK and Irish Working Groups

Wye College 22-24 September 1990

The inaugural meeting of this project held in Amsterdam 1988 set as one of its objectives the integration of engineering and conservation issues into the project framework. The 1990 meeting of these Working Groups, organised by Dr. Simon Jennings (Polytechnic of North London), concentrated on the area of the coastline of East Sussex and Kent, with the object of 'highlighting some of the engineering/conservation "problems" experienced currently by this extensively managed, gravel coastline'. The meeting opened with a series of papers appropriate to the theme on the first day, these being concerned with the general principles of management and conservation in the coastal zone as well as with specific field sites in SE England.

The remaining period of the meeting was devoted to field excursions to a series of sites of Holocene interest. An impromptu visit to Broomhill with Dr. Michael Tooley was followed by an introduction to the Combe Haven Valley by Christine Smith. Dr. Simon Jennings provided detailed interpretations of a series of three disparate sites at Willingdon Levels, The Crumbles Shingle/Langney Point and Newhaven & Seaford, illustrating the Holocene coastal changes which have taken place in these areas and the means of investigation which can be used to attribute such changes, at least in part, to anthropogenic forcings. Jill Eddison introduced the groups to the Dungeness ridge and pit accumulation of flint gravels and anchored the discussion on the coastal environments from which they have evolved. The remainder of the field meeting was devoted to visits to Hacklinge and Marsh Lane, these being presented by Anthony Long who is carrying out research at these sites. Some new methods for the tracing of fossil river channel pathways were introduced at the latter site.

The meeting proved a most stimulating and useful exercise, with considerable reinterpretation of what are for the most part long-recorded sites. Their interpretation in the context of coastal management and conservation proves the more general principle that where specific management frameworks are required, a more all-embracing approach to the interpretation of available data on coastal form and processes is required.

The next meeting of the UK and Irish Working Groups under IGCP Project 274 will be held in Inverness, Scotland, organised by Calum Firth.

Michael Healy, University College, Cork.

IQUA Annual Field Trip 1990 - North Antrim

This year's field trip was held over the weekend of 6/7th October in North Antrim and was organised by Peter Wilson of the University of Ulster at Coleraine. Again it was a very interesting trip supplemented by an excellent guide-book. A very varied programme for the weekend was outlined at the opening talk on Friday evening. The meeting was supported by people from all parts of Ireland. The party braved very bad weather throughout the Saturday though thankfully it was not cold, though very wet and windy.

The trip started in Portstewart looking at Holocene sands and considering problems in the management of the dune systems there. Shore platforms and terraces between Portstewart and Portrush were next examined. Peat deposits were well exposed on the beach at Portrush. After lunch Brian Williams of the Archaeological Survey gave a lucid description of archaeological remains in North Antrim and particularly those around White Park Bay. Portballintrae was the next port of call where George Dardis described the Quaternary sediments and John McKenna discussed the shore platforms just to the west. As dusk fell to a stunning sunset some of the group took the opportunity to visit the Giant's Causeway.

Sunday was a much better day weatherwise and the group travelled east to see the deltaic deposits in the Carey Valley east of Ballycastle. Here George Dardis described the site and expressed views somewhat at variance with those of McCabe and Eyles who had published on it. Jim Mallory took the group up to the Tieve-bulliagh porcellanite axe factory near Cushendall. Subsequent to lunch on the Antrim Plateau, Roy Tomlinson from Queen's described the peat erosion in the Orra area. Next stop was Garry Bog north of Ballymoney where Mike Baillie and Jonathan Pilcher described their work on the tree remains on the bog. The final stop in mid-afternoon was at Vow in the Bann Valley, where a large glacial outwash sequence was seen in a gravel pit.

All in all then it was a very enjoyable trip. Many thanks go to Peter Wilson for all his work and success in getting a large number of contributors to present their scripts in good time for the production of the guide. Thanks also to all the individual contributors.

Ronnie Creighton

Terminology for Nature Conservation

"Area of Scientific Interest" (ASI) is the term used in Ireland for any site judged worthy of protection for its nature conservation importance. The ASI's include diverse areas - boglands, landscape features, fossil and mineral sites, habitats for wild flora and fauna, etc. I suggest that this term has disadvantages and is not the best term that could be used. I believe that it should be replaced by either "Natural Heritage Area" or "Nature Conservation Area", preferably the former. The conservation of natural features, particularly peatlands, is beset by attitudes, perceptions and misconceptions such as the following:

- (i) ASI's are for scientists alone, for an academically-oriented elite;
- (ii) non-scientists (the general public, "ordinary" people) are excluded; and
- (iii) those scientists who champion conservation are thereby opposed to development and in conflict with local people.

These views are often justifiable and are due, in my opinion, to lack of consultation and co-operation with local people; lack of respect and understanding of the views and culture of local people; lack of effort in the public relations area; a belief held by some conservation scientists that ASI's are for them alone (some ecologists believe that they should be allowed to work on (and slightly damage) protected bogs but local people should not! and in the terminology used.

For truly successful conservation of natural sites worthy of protection, conservation scientists firstly must accept that conservation is for every citizen, in particular it is for people in the areas local to sites, and is not just for scientists; secondly they must place far greater emphasis on consultation,

education and communication. A small step towards achieving these points is to change the terminology used. The term "Natural Heritage Area" or "Nature Conservation Area", particularly the former, have the following benefits:

- (i) no exclusion is implied;
- (ii) they are more understandable to non-scientists; and
- (iii) the word "heritage" is popular and appealing to many people, often giving a sense of pride.

Proposal: That the term "Area of Scientific Interest" be replaced by "Natural Heritage Area" or "Nature Conservation Area".

Donal Daly, Geological Survey of Ireland.

Review of the Wildlife Act, 1976

The Wildlife Service of the Office of Public Works is reviewing the Wildlife Act, 1976, and the publication of proposed amendments is likely in the near future. At present the Wildlife Act does not protect earth science Areas of Scientific Interest (ASI) unless, by chance, they are included in a biological ASI. At the opening of the I.Q.U.A. Symposium "Conservation of Earth Science Areas of Scientific Interest" in December 1989, Mr. Brendan Daly T.D., Minister of State at the Department of Finance, indicated that earth science areas would get the same legal protection as biological sites under the amended Act. If this happens can the Act continue to be called the Wildlife Act? I believe that earth scientists must be on their guard against this happening. The name of the Act should reflect the equality of status of earth science and biological ASI's. I suggest that it should be called "Natural Heritage Conservation Act" or "Nature Conservation Act".

Donal Daly, Geological Survey of Ireland.

Popularising Geology - A Success story from County Offaly.

Geologists regularly bemoan the difficulty of popularising geology. Events at Clara, County Offaly, suggest that there is hope, provided the right approach is adopted.

During the Clara Heather Festival in August, the Clara Development Association and the Dutch-Irish Peatland Geohydrology and Ecology Study Group organised guided walks on two days. The walks, which were preceded by short introductory talks, took place on the esker hills that surround Clara - the Eiscir Riada - and on Clara Bog. They were led by a total of 15 geologists, hydrogeologists, ecologists and members of the local community - the Clara-Ballycumber Eiscir Riada Group and the I.C.A. Prior to the walks there was national publicity and extensive local publicity. Leaflets were prepared and Iarnrod Eireann organised a special Festival Train from Dublin to Clara for an "all-in" fare of £18.50, which included the rail ticket, lunch, tea/coffee, literature and the walks and talks. Between both days a total of about 500 people took part; of these 80 came by train.

The events were very successful. One of the satisfying features was the involvement of and attendance by local people - about 50% came from the Clara area. The local newspapers gave wide coverage of the events, including editorial comments.

What lessons can be learned by geologists?

1. Involvement and co-operation with local community groups, such as the Clara Development Association and the I.C.A., is critical.
2. Good publicity - posters, contacts with the media - is essential.
3. The events should appeal to the "sense of pride" and "sense of place" of local people.

4. The walks and leaflets dealt not just with geology and hydrogeology but also with botany, ecology and local history; and the relationships between these were shown. This was an important aspect of the appeal of the events.

Donal Daly, Geological Survey of Ireland.

Adoption of Sites of Scientific Interest

Today, more than ever there is great pressure on sites of scientific interest threatening their very existence. This threat comes from development activity of all kinds. In Ireland legislation protects, albeit inadequately in many cases, National Monuments and wildlife sites. However those that may be termed 'earth science' sites, i.e. geological/geomorphological, receive little or no protection under the law. The IQUA Committee has been discussing this matter for some time, largely arising from the case of Rallyhetagh Bog in south Co. Dublin, to see what can be done in terms of lobbying, but also what can be done in a practical sense.

One practical idea is that of "adoption" of scientific sites by earth science associations with the view of protecting them as much as possible. This might be promoted in several different ways, but which really centre on bringing the site and its importance to the attention of the landowner, the local community and the local authority in the first instance. Echoing comments made by Donal Daly elsewhere in this Newsletter, a lot can be achieved by sensible discussions with local groups, as exemplified in the case of the Camaross pingoes in Co. Wexford. A further step might be the erection of a simple information board explaining the importance of the site. There would be costs involved in this which hopefully would be covered by sponsorship.

The IQUA Committee would like to hear Members' views on this whole issue, and particularly news of any sites which you feel would be worthy of inclusion in this scheme. In the absence of sound legislation only a limited amount can be achieved, but it is felt something should be done. Also in these "green" times, the public are more receptive on the matter of conservation and environment. Any thoughts, ideas, sites etc. should be passed on to Michael O'Connell as Hon. Secretary at the Dept. of Botany, University College, Galway.

Ronnie Creighton, Geological Survey of Ireland.

IQUA Annual Symposium on "Geomorphic Hazards in Quaternary Terrains."

The Annual Seminar this year will be held on Friday 30th November, 1990 in the usual venue of the Geological Survey of Ireland, Beggars Bush. The theme chosen is "Geomorphic Hazards in Quaternary Terrains" a theme which will enable papers to address the growing interest in questions of high magnitude/low frequency events such as mudflows, landslides and catastrophic flooding. The processes, impacts and management issues arising from these will be the focus of the seminar.

Among present offerings are papers dealing with the following aspects: catastrophic floods caused by sub glacial volcanic eruptions in Iceland, peat flows/flash flooding in Co. Leitrim, geomorphological changes associated with "Hurricane Charley" in Co. Wicklow.

Various other themes will also be addressed. It is also hoped to devote a session of the seminar to engineering aspects and management issues.

Further details concerning the event may be obtained from the Secretary of the Association or from Dr. John Sweeney, Department of Geography, St. Patrick's College, Maynooth.

John Sweeney, Dept. of Geography, Maynooth.

Journal News

In the last few months the arrival of two new journals, which will be devoted to palaeoecology, has been announced for early 1991

- (a) The Holocene: As the name implies this journal will carry papers relating to environmental change during the past 10000 years.
 Editor: Dr. J.A. Matthews, Department of Geology, University of Wales, CARDIFF CF1 3YE.
 Publisher: Edward Arnold (Hodder and Stoughton) Publishers.
 Subscription: Institutional: £75 (stg); personal £30 (stg).
- (b) Vegetation History and Archaeobotany:
 This journal aims to cover the entire field of vegetation history but with special emphasis on past human impact in the natural environment and also on the history of cultivated plants and the development of the cultural landscape.
 Editor-in-Chief: Prof. K.-E. Behre, Institut für historische, Küstenforschung, Viktoriastr 26/28, D-2940 Wilhelmshaven, GERMANY.
 Co-Editor: Prof. G. Jacobson, Orono/Maine, U.S.A.
 Publisher: Springer Verlag (but happily not the usual Springer prices; see subscription rate).
 Subscription: DM 248 (IR£95) guaranteed for first 4 years. Reduced personal subscription being negotiated.
- (c) Pollen ET Spores: having served the international palynological community well for several decades, has now ceased to publish. Papers dealing with human impact - which it carried with regularity especially in recent years - will probably now find a home in VEGETATION HISTORY AND ARCHAEOBOTANY.
- (d) Journal of Vegetation Science: (Ed. Prof. E. van der Maarel, Institute of Ecological Botany, Uppsala). This is devoted to vegetation science in the broadest sense. Four issues have already appeared; a wide range of topics are covered including vegetation history (see recent Irish publications). Again, this is a modestly priced journal [Institutional subscription: c. IR£195 or IR£139 (middle income countries) and personal subscription c. IR£140].

So, it certainly looks like exciting times ahead for palaeoecologists.

Michael O'Connell, Dept. of Botany, U.C.G.

Some recent publications on Quaternary research in Ireland:

Carter, R.W.G. 1990. The geomorphology of coastal dunes in Ireland. In Bakker, Th.W.M., Jungerius, P.D. & Klijn, J.A. Dunes of the European coasts Catena Supplement 18, 31-39.

Carter, R.W.G., Allen, J.R.L., Carr, A.P., Nicholls, R.J. & Orford, J.D. 1990. Coastal sedimentary environments of southern England, south Wales and southeast Ireland IAS Field Trip Guide A4.

Devoy, R. 1990. Sea level changes and Ireland. *Technology Ireland* 22(5), 24-30.

Foss, P.J. & Doyle, G.J. 1990. The history of *Erica erigena* R. Ross, an Irish plant with a disjunct European distribution. *Journal of Quaternary Science* 5, 1-16.

McCabe, A.M., Eyles, N., Haynes, J.R. & Bowen, D.Q. 1990. Biofacies and sediments in an emergent Late Pleistocene glaciomarine sequence, Skerries, east central Ireland. *Marine Geology* 94, 23-36.

Wilson, P. 1990. Clast size variations on talus: some observations from northwest Ireland. *Earth Surface Processes and Landforms* 15, 183-188.

Wilson, P. 1990. Characteristics and significance of protalus ramparts and fossil rock glaciers on Errigal Mountain, Co. Donegal. *Proceedings of the Royal Irish Academy* 90B, 1-21.

Wilson, P. 1990. Coastal dune chronology in the north of Ireland. In: Bakker, Th.W.M., Jungerius, P.D. & Klijn, J.A. *Dunes of the European coasts Catena Supplement* 18, 71-79.

Wilson, P. 1990. North Antrim and Londonderry Field Guide No. 13, Irish Association for Quaternary Studies.

Mitchell, F.J.G., 1990. The impact of grazing and human disturbance on the dynamics of woodland in S.W. Ireland. *Journal of Vegetation Science*, 1, 245-254.

Peter Wilson, University of Ulster at Coleraine.

The Geohydrology of two Midland Raised Bogs.

In 1989 the Wildlife Service and the Geological Survey in conjunction with the Dutch Department for Nature Conservation Environmental Protection and Wildlife Management and the Dutch National Forest Service initiated a joint Irish/Dutch project aimed at providing geohydrological models of Clara Bog and Raheenmore Bog both in County Offaly. The end purpose of the project is to enable the Wildlife Service to produce a management plan for the conservation of the two bogs which could also be applied to other raised bogs which come under their control.

Funding is joint between the Dutch and Irish with each side funding a team of students who are carrying out the research on the ground. Joint funding provides field equipment and facilities for common use.

The project is an ambitious one as it seeks to develop an understanding of the physical development and the geohydrological maintenance of these bog systems. In order to do this three broad areas of focus were recognised: geology, hydrogeology/hydrology and ecology. On the Irish side the work is being done by three Ph.D. students in the areas of geology, hydrogeology and ecology. On the Dutch side the work is being done by students for their undergraduate projects and M.Sc. students in geology, hydrology and ecology.

All of the students work from a field base in Clara which includes living space, office space with a pc (IBM P52) and a basic field laboratory. This is jointly funded by the Dutch and Irish groups.

Geology:

The main research in this area is being carried out by Mary Smyth who has registered as a Ph.D. student at U.C.G. jointly in the Department of Geology and the Applied Geophysics Unit. The aim of this part of the project is to construct a three dimensional interpretative model of the Quaternary deposits. The chief techniques in use are:

- (a) field geological mapping
- (b) geophysics
- (c) drilling.

The field mapping will identify the two dimensional distribution of the Quaternary sediments and identify their surface morphology. A preliminary outline map has been done (1989) by a student from the University of Amsterdam. Geophysics and drilling are being used to provide information on stratigraphy, thickness of units and rockhead morphology. The chief geophysical techniques being used are electrical resistivity (ER) and very low frequency resistivity (VLFR), and it is expected that some seismic work will be done. Drilling, which is being carried out by the Geological Survey is being done using a combination of shell and auger, continuous flight auger and rotary coring.

Hydrogeology:

The hydrogeological research is being carried out chiefly by Richard Henderson who has registered at Sligo Regional Technical College as a Ph.D. student. The aim of this part of the project is to construct two and three dimensional groundwater models of the bogs in question and in particular to examine the relationship of the groundwater in the bogs with that of the surrounding mineral material. The chief techniques being used include:

- (a) Well surveys
- (b) Piezometer installation and monitoring both on the bog and in the surrounding mineral material.
- (c) Regular water level measurements.
- (d) Permeability tests (falling head, slug and pumping tests) and storage coefficient calculation.
- (e) Hydrochemical measurements and hydrochemical facies determination.

The chief focus will be on vertical groundwater gradients controlling water movement, water fluxes in the marginal bog areas, water fluxes in the vicinity of the soaks at Clara, hydrochemical processes in the vicinity of the soaks, hydrochemical processes in the root zone and shallow zones, influence of groundwater in the esker gravels at Clara and the relationship between the peat and underlying geological materials.

Surface hydrology and Catchment Studies:

This aspect of the study is being carried out chiefly by students from the Agricultural University at Wageningen in the Netherlands but there is strong interrelationship between it and the Hydrological aspect.

The main focus is on:

- (a) rainfall measurements
- (b) evapotranspiration measurements/estimates
- (c) stream surveys
- (d) surface runoff measurement
- (e) soil moisture profiles.

Ecology:

The main focus of this aspect of the study is to relate vegetation patterns

to hydrological characteristics on the bog. The main work in this area is being carried out by Larissa Kelly who is registered as a Ph.D. student at Trinity College, Dublin.

The chief techniques being used are:

- (a) vegetation mapping
- (b) water measurement
- (c) Analysis of surface water chemistry
- (d) monitoring surface water level fluctuations
- (e) measuring surface movement.

The main thrust of the study will be to test for correlation between vegetation patterns and the other variables being measured. And if no correlation can be demonstrated to seek other variables.

This part of the study will have strong association with the study of surface hydrology and to a lesser extent with the hydrogeology.

The project which began late in 1989, with the Irish students beginning early in 1990, is set to run for three years. The first years work indicates that the project promises to be stimulating and fruitful. At the end of the three year period the project will have amassed a large body of data on raised bog systems of a type that has never yet been assembled. This data will be analysed and the first firmly based geohydrological models of raised bogs will be produced. These will then be used as the bases for conservation management programmes for other Irish raised bogs and will be applied in the Netherlands in attempts to reconstruct some of the almost totally destroyed raised bogs there. In addition the data produced may have engineering and other applications.

William P. Warren, Geological Survey of Ireland.

Miscellaneous:

IQUA congratulates Dr. Fraser Mitchell on his appointment to a lectureship in the Dept. of Botany, Trinity College, Dublin.