

## The Palaeoenvironment in Wales

### Notes from the workshop held on 17<sup>th</sup> September 2010.

Chair of the session: Astrid Caseldine, University of Wales Trinity St David

Participants: Jenny Britnell (CPAT), David Browne (RCAHMW), Will Davies (Cadw), Emily La Trobe-Bateman (GAT), David Maynard (Landsker Archaeology Ltd.), Spencer Smith (RCAHMW), Sue Stallibrass (University of Liverpool), Mark Ward (Land and Marine Project Engineering Ltd) and 2 others.

#### 1) Review of Research Framework: General Discussion

The themes addressed by the previous Research Agenda paper were still considered generally applicable but that specific questions could be refined with further information and research. The themes were as follows:

*Environmental Context and Landscape Change*

*The development of agriculture and changing agricultural practices*

*Mining Activity and Industrialization*

*Urban studies*

*Climate Change*

*Alluviation in non-tidal river valleys*

*Coastal alluviation and sea-level change*

It was observed that where there were questions involving soils, pollen and archaeo-botanical remains there had been relatively extensive research whilst in contrast human and animal bones had been subjected to less widespread scrutiny. It was suggested that the latter had largely been dictated by the lack of diagnostic datasets from Welsh sites, stemming in part from poor levels of preservation although this was not a uniform phenomenon, citing the limestone regions of Clwyd and the Gower as areas where preservation was good

The question of whether research into agriculture should be included within the theme of environmental context and landscape change or kept as a separate theme was raised. Whilst acknowledging some degree of overlap between the two, environmental context and landscape change work has been dominated by the results of pollen analysis. The distinction was drawn between the broader, non site-specific evidence of land use produced by such data and the site-specific evidence for changing agricultural practices provided by bone and charred plant remains which provide much more detailed information about the nature of agriculture.

It was suggested that the medieval period was overlooked by the paper despite a range of potential avenues of research, citing butchery practises and identifying Welsh deer on English sites. Attention was drawn to the relative dearth of medieval sites encountered in development-led excavations, echoing a point made in the previous day's medieval

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seminar. It was noted that environmental material from the ringwork castle of Old Aberystwyth was restricted to residuals.

It was suggested that there was a similar paucity of Ice Age data, potentially retrievable from Welsh pollen cores and peat deposits and the contrasting predominance of Palaeolithic material, suggesting that targeted sampling in the vicinity of known settlements could remedy this (NB There are a number of pollen diagrams covering the Devensian Lateglacial). Similar work comparing pollen cores from pre-industrial and industrial post medieval environments was suggested as a further area of unexplored potential (NB There has been some limited work in this area).

The massive scope of potential work in Wales was generally agreed. It was pointed out that at least some of the lacunae highlighted by the discussion were the result of past pollen studies being carried out by research students with specific agendas, although the range of work being carried out at, amongst others, Liverpool University may be indicative of a more diverse agenda. This prompted a series of queries and suggestions for the employment of a range of other methods such as fungal spore analysis

### **2) The implementation and use of the Research Framework and the application of techniques**

The discussion then turned to the implementation and use of the Research Framework, particularly in relation to contract archaeology, and the need for the application of techniques to answer the questions identified. It was noted a wide range of techniques from charcoal counts to geochemical analysis, for example, could be incorporated into routine archaeological investigations whilst recognising that this would entail more money, time and the use of other specialists. Ideally, such methods could be embedded into contract archaeology and become a standard element of evaluation and rescue work. A forthcoming opportunity for such work was identified as the proposed Wrexham link road, which crosses a rabbit warren. As an example of a completed project of this nature, the collection of topsoil magnetic susceptibility samples at 50m intervals along the entire route of the Milford Haven to Tirley gas pipelines in the course of geophysical survey work was cited. This entailed negligible extra work and emphasises the potential of such large-scale linear projects for the collection of other types of data from an enormous range of environments. The unique opportunity of access provided by pipelines and motorways was also recognised as a near impossible ambition for independent research. The importance of obtaining such spatially referenced datasets echoed comments made in both the Early Medieval and Medieval discussion groups on the usefulness of the pipelines in collecting a continuous sample of archaeological data. It was also suggested that it should be possible to look beyond strictly archaeological research and use other existing scientific datasets such as geotechnical reports on floodplains indicating silting and water levels, information apparently utilised to some extent by the Gwynedd Archaeological Trust.

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Whilst undoubtedly a desirable ideal, the question of the 'leverage' required by planning archaeologists in order for more palaeoenvironmental work to be carried out in the course of development led projects was posed. This provoked a range of statements regarding the potential of various techniques, including bone and isotope analysis in the study of fishing, isotope analysis on charred cereal remains to detect manuring and the study of human remains to determine diet. The effectiveness of the widespread application of scientific methods to archaeology was neatly summarised by DB who, whilst noting the worthiness of a 'battery of techniques,' stressed the need for their considered and appropriate application.

It was observed that the high cost of DNA analysis and the substantial amounts of equipment required were probably prohibitive to its broader use at present but are likely to become less so as prices fall and the method becomes accepted as an accepted norm of archaeological practice. The possibility of exploiting datasets collected for non archaeological purposes by forging links with other disciplines such as biology was also raised.

It was asked whether the research agenda for DNA analysis under discussion was of local (Welsh) or broader scope with researchers such as Peter Rowley-Conway making significant progress outside Wales. Echoing previous comments on the application of archaeological science, the need to target work of this nature at specific questions was highlighted, the potential to distinguish domestic from wild animals being suggested as one possible avenue. The question of which datasets to sample of those retrieved by excavation was also raised.

The tendency of many methods of analysis to destroy their datasets, despite their potential alternative uses, was also highlighted. It was suggested that a holistic approach should perhaps be adopted for environmental sampling, with material being collected to address future questions with newly developed techniques. This broached the issue of standard papers and guidelines for sampling, further prompted by The Chair in challenging the purposes and stratagem of archaeologists when collecting samples. Attention was also drawn to the need to consider the potential value of sampling as a component of the total archaeological resource, as is the case for structures and finds.

The problems presented by the storage of material were then discussed, including limited space, non-standard containers and the decay or chemical degradation of samples in store. The future of such sets of samples, citing substantial backlogs of unanalysed material from Monmouth, was questioned. A similarly problematic resource was CPAT's Prestatyn samples with long-term storage and ownership identified as significant problems. Focusing on the beginning of the archaeological process, the need for the volumes of material to be recovered to be

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considered at the planning stages of excavations rather than creating unworkable surpluses was stressed. Other alternative approaches were suggested, the practice of Scandinavian museum conservators in monitoring environmental samples in the same way as objects was noted, whilst the possibility that material might be more efficiently and effectively stored on site, in situ, was proposed. As a counterpoint, the question of whether on site conditions were also susceptible to change was raised.

This led to some discussion of site monitoring, Comparison was drawn between established programmes of work in the Netherlands and Scandinavia and the absence of similar, specifically targeted projects in Wales. Whilst acknowledging budgetary limitations, this drew heavy criticism of Cadw's baseline monitoring of a sample of monuments for Glastir in being restricted to remote sensing with no fieldwork element. In Cadw's defence the ongoing development of a parallel monitoring system for scheduled sites to be based upon field monument warden data through changes in condition between previous visits and a new recording strategy was outlined. This was dismissed as irrelevant to the specific point of failing to address the broader problem of monitoring unscheduled monuments. It was suggested that damaged or deteriorating sites of this nature should be utilised as research subjects for postgraduates, noting the proportionately few opportunities for peat analysis offered in developer funded contexts.

The discussion then turned to a loosely related range of topics from the comparative study of urban and rural cemetery populations to the ethics of excavating and DNA testing material from these. The comparatively low standards of archaeological work commissioned by church authorities was noted.

### **3) Research Framework priorities, including new areas for consideration**

Climate change was seen as a wide reaching archaeological theme, with the human role in past climatic change particularly relevant at the present time and perhaps needing greater emphasis.

The study of shoreline archaeology and coastal erosion was seen as another area of focus with good environmental potential that needed emphasising at the present time. The potential of local community groups to monitor coastal sites was highlighted. One recent discovery by this mechanism being the Lydstep Footprints.

The importance of work carried out on natural resources such as copper mines was discussed and the huge potential for geochemical analyses of prehistoric material in Wales was emphasised. Several problems with geochemical analysis were raised, namely cost and interpretative difficulties. Work of this kind had been undertaken on Mynydd Myddfai in the course of the LNG pipeline.

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The need for environmental groups and organisations to be aware of the possible impact of management practices on the palaeo-environmental record as well as present environments was raised. This was illustrated by a case study involving river conservation. In an attempt to de-acidify the rivers and improve fish stocks, the Usk and Wye River Group had apparently saturated wide areas of Plynlimon peat bogs with lime. This posed the question of the effect this would have upon the palaeo-environmental materials contained within them and any meaningful subsequent analyses, the general consensus being that it would be deleterious.

Some potential applications of soil analysis, notably in identifying imported horticultural topsoil in Saxon burhs, were detailed. There was some discussion as to whether it was possible to determine the origin of imported soils, perhaps through specific contents such as night soil or seaweed. Suggested Welsh applications included investigating land-use in apparently undeveloped intra-mural areas of medieval walled towns.

Attention was drawn to some of the other themed discussions (namely maritime) having identified the need to incorporate cross boundary methods into sub-disciplines of archaeology. It was suggested that greater emphasis could be given to the potential contribution of environmental archaeology to the investigation of social organisation and belief systems.

The need for a pan-Wales database for palaeo-environmental datasets was discussed. This exists but needs updating and to be linked with the Trusts and National Monuments databases. The question was raised whether Oasis was used as a receptacle for related metadata: this is not the case at present.

There was some discussion about encouraging research in Wales and whether a Welsh branch of the Environmental Archaeology Association existed; it does not with communication between specialists in Wales only on an informal level. It was observed that there were some biases in the work carried out by researchers from outside Wales, with a tendency to concentrate on peat deposits, but it was pointed out that this was due to the long recognised wider significance, for example, of the peat bogs at Tregaron and Borth. As in other sessions it was felt that work in Wales needs to be promoted with the emphasis on Wales but in a broader context.