Archaeobotany Workgroup, University of Leicester, 29/3/14
Minutes by Hayley McParland and Ruth Pelling

Attendees:
Leslie Bode (Nottingham), Julie-Anne Bouchard-Perron (Nottingham), Gill Campbell (EH), Danielle de Carle (Sheffield), Emily E Forster (Sheffield), Rachel Fosberry (OA East), Antony Gouldwell (Leicester), Zoe Hazell (English Heritage), Elizabeth Huckerby (retired), Angela Kreuz (Hessen Archäologie, Germany) Catherine Longford (Sheffield), Gemma Martin (Sheffield), Meriel McClatchie (Dublin), Hayley McParland (York), Don O'Meara (Wardell-Armstrong Archaeology), Liz Pearson (Worcestershire Archaeology), Ruth Pelling (EH), Karen Stewart (MOLA), Charles Turner (retired), Marijke van der Veen (Leicester), Michael Wallace (Sheffield), Sarah Wyles (WA)

The meeting started at 11:30 with a brief introduction by MvdV in which the following points were made:

What is a database and why use it?
What do we need to record and ask of our data?
Do we need a national database?
Who is entering the data?
Where is it located?
Who maintains quality control?

Presentation by Gill Campbell (GC)
OASIS, EAB and ABCD

GC gave a presentation on OASIS (http://oasis.ac.uk/pages/wiki/Main) with a brief update on EAB and ABCD. The version of EAB (Environmental Archaeology Bibliography) on ADS was last updated in 2008. A more recent version exists but following retirement of Allan Hall will not be updated further. It is possible that EH/York University between them can provide funding to put the updated version of EAB onto ADS, but it will not be subsequently updated. We need to think about alternatives for the future.

Online Access to the Index of Archaeological Investigations (OASIS or its replacement, HERALD) may provide a longer term solution to finding a centralised source of bibliographic information. OASIS is an inventory of archaeological investigations within which users upload project publication data as it is generated. The OASIS project aims to provide an on line archaeological grey literature produced mainly through developer funded excavation. The resulting information is validated by the relevant NMR and passed onto the ADS for inclusion in its on line catalogue ArchSearch. The development of HERALD will include a user survey for requirements – hopefully modifications will ensure some of the existing problems are dealt with.

Current limitations of OASIS

Uploading of reports is a recommendation not compulsorily, although growing numbers of local authorities are now making this a requirement of planning permission.

The major issue is the lack of 'signposting' to specialist reports, such that searches on archaeobotanical content, are not successful. Currently report might be uploaded, but only the site information is entered with no indication of included specialists' reports. GC demonstrated this by searching on 'plants' in 'Hampshire' and Roman which produced one archaeological report.

Once all records have been input, record is 'closed'. Archaeobotanical studies often take place *after* the fact as funding becomes available, meaning that extra records can not be added.

It is difficult to close and make public an OASIS record because it has to be signed off by curator, consultant etc. meaning there are delays in getting from intervention to dissemination. Completing the OASIS record is the last thing that happens and everyone is onto a new project and it ends up creating a backlog.

Possible Solutions

Improve 'signposting' so that all specialist reports will appear on searches – for example, ensuring all relevant specialist subjects included in a project (pottery, coins, animal bones, charred plants) are selected on a check list.

Enable specialist reports to be linked to any event.

Encourage OASIS to facilitate the addition of environmental (and finds) reports after a record is closed – or prevent a project from being signed off until all specialist reports are entered.

A way forward

GC had spoken to Tim Evans (ADS) and Keith May (EH) both prior to the seminar and subsequently. It is possibly that EH could fund a pilot study to explore the issue of lack of 'signposting'. Such a project could involve searching for intervention reports for a particular county and then establishing how many specialist reports are not appearing because they have not been 'signposted'.

ABCD

GC also discussed ABCD – the archaebobotanical database originally created by Philippa Tomlinson and Allan Hall and more recently updated by Allan Hall (now forming part of Allan Hall's archive since his retirement in 2013). For structure see paper in Circaea 10:1 (Tomlinson 1993, Volume 10 No. 1, 1993). The original database was developed after consultation with specialists by way of a questionnaire, and was therefore designed carefully with user requirements in mind. Usefully, the database was able to cope with changing nomenclature (e.g. Triticum dicoccon, Triticum dicoccum). The following relevant publications were cited:

Preston, C.D., Pearman, D.A and Hall, A.R. 2004 Archaeophytes in Britain. *Botanical Journal of the Linnean Society* **145**: 257-294.

Tomlinson, P. and Hall, A.R. 1996 'A review of the archaeological evidence for food plants from the British Isles: an example of the use of the Archaeobotanical Computer Database (ABCD)' *Internet Archaeology* **http://intarch.ac.uk/journal/issue1/tomlinson_index.html**

Discussion – Lessons learned from ABCD

MvdV – raised the issue that in ABCD data grouped and not entered sample by sample – so several ditch records for example, or multiple samples from the same context, would be amalgamated.

Dating is by context/feature rather than direct dates of contents – ABCD givens start and end data for each context group but not necessarily date of contents.

Funding of database maintenance is a major issue.

Things can become crystallised on a database and even when interpretations have changed, these are not often updated, including revision of dating or identification issues.

General Discussion:

RF asked if the Regional Reviews will produce a database. GC replied that they are broad brush, identifying research themes, gaps and future direction so the development of a detailed database was not involved.

CT stressed the importance of returning to the original archaebotanical reports/data. GC also stressed need to query and question the archaeological interpretation.

LP stressed the slowness of data entry into OASIS due to the need for multiple levels of approval.

Karen Stewart (MOLA)

http://www.museumoflondonarchaeology.org.uk/

KS discussed the MOLA database used for recording all site data including specialist data. MOLA use a large database based on Oracle, which has become large and complex through years of development. Data is based around a single unit of site code with context number. Currently it is stored on the MOLA server but hope to make it browser based in the future.

Environmental data is linked to a sample number, linked to a context. Assessment and analysis data is included. Linked to a GIS

Assessments

Assessments are broad brush, recording relative abundance of seeds and taxa diversity but not individual taxa other than in the comments.

Additional components of sample recorded include molluscs, fish bones, small mammal bones, fish scale etc.

Able to query records using preset standard queries – possible to plug in site code and retrieve all data typically needed e.g. Sample size, volumes of flot and residue etc.

Analysis

Analysis data is entered via drop down menus.

Currently taxa is entered by taxa code , plant part, identification level rather than botanical names – the group discussed improving this for the user, suggesting it would be easy to adapt so that taxa is entered by typing the first few letters as taxa names are already linked to the codes.

Taxa names are linked to an ecological table.

Dating – the database is being modified so that it will be possible to search by phase.

Discussion

The discussion focused around how feasible it would be to link into other databases. AK suggests this is almost always possible with some restructuring.

KS was asked more about typical MOLA assessments including recording time - tend to average 8-10 samples a day. At analysis level, MOLA look at 40-50% of samples, Wessex look at 25%-30% on average. This requires an adequate number of samples on site to enable this selection.

Because of the way it has evolved, the MOLA data is almost impossible to move to another database. Currently it holds 8-9,000 archaeological sites.

Problem with integrated relational databases: sites work on context number being main identifier, but archaeobotany requires sample number to be the main identifier making integration with main site data difficult.

Liz Pearson (Worcestershire County Council)

'Wading through the data - are we bogged down or finding a pathway through?'

As an example of the importance of grey literature LP referred to the Roman Rural Settlement Project (Cotswold Archaeology and Reading University) which has been analysing grey literature reports and the HER record for each area to plot the impact of developer funded archaeology. In Worcestershire there seem to be a lot of gaps despite a well established history of flotation sampling. By plotting the grey literature it was possible to demonstrate that this

gap is related to Roman activity and not simply a gap in the data. This analysis of grey literature is able to reflect real Roman settlement patterns, which published data alone would not provide.

The issues of OASIS raised by GC were stressed again – OASIS requires in putter to indicate which specialist reports are included, but this is not always done and therefore lacks visibility. Because it's called 'significant finds' the plant remains report may not be considered a main output and is not included. The need for better 'signposting' was stressed.

The Worcestershire HER was discussed. As it was difficult to extract environmental information, an index to environmental reports was created including archive and incoming reports. This was not recorded at taxa level, but was sufficiently detailed to enable a search for sites/types or reports by date, period, plant type etc, but also by geographic location etc. Results link to paper and material archives allowing the link to be made to reanalyse existing material. This is an excellent research resource. By keeping the data on the HER rather than in ADS, it prevents duplication. Parts of the HER are available via the Heritage Gateway (http://www.heritagegateway.org.uk/gateway/). There is reluctance to make the full range of data available via the internet as management by the HER team enables greater value of data held, and requires the continued employment of the HER team, which in turn enables the continued high quality and usefulness of the data held.

Ruth Pelling (EH)

WODAN wood and charcoal database

RP gave a brief demonstration of the WODAN wood and charcoal database, managed by Ingelise Stuijts (http://www.wodancharcoal.ie/). The WODAN charcoal database was developed through funding from the Heritage Council under the INSTAR programme (Grant 16679) as part of the Discovery Programme. The database was intended to store published and unpublished material (when accessible) and will be updated annually by incorporating new data. Currently there is no more funding for updating although it is stable.

Data is entered at site level (based on licence number), sample, taxa and fragment level.

A range of various analysis functions are built in including:

Marguerie/Hunot graph (displays age profile of each wood species)

Ludemann/Nelle query (estimates original size of a charcoal fragment based on its curvature)

The data is searchable by area, site name and taxa and clear notes are available throughout the database.

HM points out that the database was also demonstrated at MESO2010 archaeobotanical session by the development team. Clear improvements in presentation and facilitation are visible since 2010.

For a fuller discussion see

Stuijts, I, O'Donnell, L, Bunce, A, McAuley, J and Corns, A 2010 *Developing a wood and charcoal database for Ireland, 2010 Final report*. INSTAR 210 ref: AR01042

http://www.heritagecouncil.ie

Angela Kreuz (State Office for Cultural Heritage Hesse, HessenARCHÄOLOGIE, Wiesbaden, Germany)

The Archaeobotanical Database Program – ArboDat 2013 English Version

AK was our principal guest speaker and gave a detailed presentation on the database ArboDat, developed at Hessen and now widely used across parts of Europe (http://www.hessen-archaeologie.de/Archaobotanik/Datenbankprogramm/datenbankprogramm.html). The presentation started with standard excuses for not using a database, but importantly why a database is useful, particularly:

Standardised data archiving

Enables more sophisticated data manipulation.

Allows for regional, national and supra regional analysis or inventory of data.
Large data sets are the only opportunity to achieve convincing interpretation of data
Once database is in use and the user is familiar with its use there is a reduction in working time/costs.

ArboDat 2013

ArboDat 2013 is used widely in Germany, Swizerland, Austria, France and Belgium. ArboDat has been distributed among more then 30 working groups of Central Europe. The English Language version was launched in 2014 as a joint project with Elena Marinova and Wim van Neer from the Royal Belgian Institute of Natural Sciences in Brussels. The database is built in Access with a background structure consisting of 3 access files: The first contains fixed terms and definitions, the so-called structural data. They are classified thematically in Access tables and should include uniform terms for all users, available in different languages. The second contains the proper program. The third contains the actual results, for the archaeological sites, features, samples and identified plant remains. This tripartition has practical advantages for the separation and the combination of data pools as well as for program updates. Under normal working conditions the tripartition is not observable, and ArboDat acts as one "single" database.
The database is designed to simplify data entry and reduce time needed for data entry as well as for data evaluation as much as possible (e.g. shortcuts for entering repeated data such as site or feature; pre-set fields). ArboDat is not an interpretation tool, but terms that may be interpretative could be entered as remarks. Only raw data should be shared. The database does not identify "key sites", as this is a difficult task to fix what this could be. Instead, all types of sites can be included enabling a more representative interpretation. There are fields to indicate if the features investigated are archaeologically sound or not.

General notes

A detailed manual with explanations of the terms used, the way of entering and evaluating the data etc, is available. Pull down menus are incorporated e.g. for site type, archaeological period, feature type, botanical name and so on. The terms have been discussed and agreed upon by the German speaking user group from Germany, Austria and Swizerland.

Obligatory fields, are used for practical reasons of data evaluation, e.g. "archaeological dating" (at least to be entered 'unknown')
A "remarks" field is available at every level – e.g. at 'results' level it is possible to add comments on odd identifications etc.
The attention-field is used for entries pointing to special information for the determination of a taxon. It can be used individually, for example as a warning, not to enter a wrong botanical name. For example: The sign cf. within the attention field means, that the taxon for various reasons cannot be safely determined morphologically or anatomically. Therefore a cf. should be added for the species, for example *Bromus* cf. *secalinus* or *Pinus* cf. *sylvestris*. Another example: to avoid the entry of *Malus* spec., instead of the correct entry *Malus domestica/sylvestris* in case of seeds, a sign could be entered here. This field proves to be very practical, if different people enter data into the same database, to provide a correct and especially an identical data entry.

Data entry

Data is entered on four levels:

- Project identifier
- Feature
- Sample
- Botanical Results

Project – site code, map, geographical characteristics, excavator etc.
Feature – feature number and feature type I, remarks on feature, coordinates.
Links to other databases are possible via ***Project*** and ***Feature*** fields (example: http://www.monument.ufg.uni-kiel.de/projekte/koordination/die-spp-datenbank/).

Sample detail includes information about the sample type, sample volume, dry/wet, analysed fractions, phasing, absolutely dating, stratum, layer, depth from surface, remarks on sample, preservation conditions etc.
Botanical Results includes type of remains (fruit/seed, pollen, phytoliths, wood etc. as well as (limited) non-botanical material such as fish, bone, ceramics etc., state of preservation (charred, waterlogged etc.) as pull downs. Entered by taxon using a key code – linked to Latin name in pull down. Nomenclature stable according to 2 Floras. Decision was made to not worry about (rare) taxonomic upgrades as long as flora is referenced.
The taxa can be linked to ecological data via the button 'plant characteristics' within the data entry mask or the Access tables linked. Currently linked to Ellenberg numbers and includes German, English, French and Italian plant names as well as regional or individual information, e.g. for the usefulness of a taxon to enable geographical variation of ecological characteristics.

Data evaluation/analysis
The database includes a number of inbuilt functions. A number of pre-programmed analytical and report functions and 'advanced search capabilities' e.g. interactive evaluations, are particularly useful for the generation of reports. The function "Taxon Search" offers the possibility to search for a certain taxon within the database. Other evaluation possibilities help to calculate and list the number of pieces or weight, the frequency and the concentration. They are based on two interactive menus corresponding with all data of the database. The first selection menu is used to choose the archaeological periods, the sites, the feature- and sample types, while the second shows the botanical and other results, which can be selected or reduced there, e.g via ecological groupings such as "Crops".

Sorted fraction is linked to count, fragment number or weight with in built calculations, if samples have been analysed in part only. For charcoal this includes weight examined and weight not examined. So seed counts in e.g. a ¼ flot are calculated to give an estimated total of the whole sample. Both values - the actual counted and the estimated - can be listed by the evaluation functions.

Excel based export and enhanced data manipulation allows two different searches to be viewed side by side and to merge two tables of different length into one (pre-programmed function).

The input of relative abundance scores (e.g. +, ++, +++) has to be transferred into numbers (e.g. 5, 50, 100) and can be indicated by a checkmark and listed separately to be recognisable later.

Summary
Program provides archiving and duration capabilities but primarily facilitates the analysis of (large) datasets due to the standardised recording system offering an infrastructure providing an obligatory minimal entry standard and a facultative maximum standard. It comprises a variety of research facilities as well as a methodological and an administrational help. The project aims to expand to facilitate international data exchange. This has successfully been trialled several times, exchanging published and unpublished data (e.g. Kreuz et al. 2005; Kreuz et al. in press). ArboDat aims to facilitate teamwork beyond political borders. ArboDat enables flexible data management within each research group, providing the opportunity for integration and exchange of data with all users. The experience of users so far is that use of the database encourages research and exchange of ideas.

A group discussion raised the following points:
Cost
This was a long term project with long term investment, starting from a research project of Angela in the 1990s. Cost of the last update and set of functions was 30,000 Euro funded by the German Research Association DFG and the hessenARCHÄOLOGIE. The database is free to use however, although it does require installation of Microsoft Access (Microsoft Office package). Developed from windows XP onwards, also have a 64 bit and a 32 bit version. If someone wants to use it, then need to contact Angela and sign the user conditions.

Input/sharing of data before legal constraints on dissemination are lifted

Some concern was expressed about data being publically available before projects are completed and legal restrictions on data sharing are lifted. As the database is held on individual computers or networks rather than being a centrally held database, this is not an issue. Each specialist can choose whether or not to share their data, while still being able to record it in their own system while a project is on-going.

Terminology

The program is open access, and there are standard existing terminologies for site types etc.
Chronological details would need to be added to cover Britain.
Clapham Tutin and Warburg is already used for the English plant names in the database to cover the British flora.
Needs a UK database coordinator to arrange workshops together with the groups in Wiesbaden and Brussels and convene an ArboDat working group etc.

If additional terms were required for the British version (eg for periods or site types) English Heritage would require that terminology to follow the Forum for Information Standards in Heritage (FISH) standard terms.
http://fishforum.weebly.com/download-fish-terminology.html

Multiple interventions of sites

If excavations are revisited in another year the data is added to the existing site records, differentiated by the feature, coordinates, street name etc. and the year of excavation.
If several different commercial units undertake work on the same site or project it would be possible to avoid duplicates by using Historic Environment Records (HER) intervention /event ids.

A show of hands suggested that most people at the meeting were impressed with the programme and would welcome the chance to see more and explore the possibility of using it in the future. It was acknowledged that some work would be needed to make it compatible with existing recording systems, particularly if not Access based. RP and GC to investigate feasibility further and report back to the working group.

Next Meeting

The next meeting it planned for Worcestershire. RP to liaise with LP.
The AWG is extremely grateful to Marijke for hosting and for Angela for coming to speak to us.

The meeting finished at 4:30.

References

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http://intarch.ac.uk/journal/issue1/tomlinson_index.html

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