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A REVIEW OF THE EVIDENCE FOR MACROFOSSIL PLANT REMAINS FROM ARCHAEOLOGICAL DEPOSITS IN NORTHERN ENGLAND

ENVIRONMENTAL STUDIES REPORT

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ARCHAEOLOGICAL SCIENCE

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A Review of the Evidence for Macrofossil Plant Remains from Archaeological Deposits in Northern England

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Summary

The existing evidence for plant macrofossil remains (largely excluding wood and charcoal) from archaeological deposits in the northern counties of England is reviewed. The quality and quantity of the data available are considered, and some recommendations for future approaches to work in the region presented.

Keywords

Archaeobotany
Environmental Studies
Plant Remains
Research Strategy

Cover
Clubmoss (Diphasiastrum complanatum): fossil material from Anglo-Scandinavian deposits at 16-22 Coppergate, York (left), and modern reference material from Finland (right). This species has proved to be a chronological 'marker' for the period in York and seems to have been brought from Scandinavia for use in textile dyeing."

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'I come now to the finds in the black pit or pool. It measured 4½ feet across and 5 inches to 6 inches in depth, and was discovered near the margin of the fosse or swamp. In consequence of aqueous fermentation and subsequent pressure, the vegetable matter of which it is composed had assumed the appearance of compressed and lamellated peat. I had the contents of the pit conveyed home for closer examination, and found it mixed with white sand grains and fairly-sized rounded stones, and little square pieces of sandstone, the latter mostly blackened by the action of fire. This little pit seems to have served for the deposit of rubbish.

It contained matted layers of roots, stems, bark, and wood. Some of the branches showed the sharp edge of the knife or hatchet, some of the wood chippings were charred on one end. The bits of sandstone flags and boulders must have come from some improvised fireplace... In addition, it contained bones of domestic animals and cinders. Among the miscellaneous objects I have to name a broken tile, some black-ware with a peculiar metallic glaze, and rather heavy in weight; iron nails, lumps of burnt clay, and a large piece of tanned and dressed goat skin.'

C. Roeder (1900, 148-9), on the fill of a Roman pit at the New Police Station site, Bridgewater St., Manchester

1 Introduction

1.1 Purpose and content of this review

This review considers the nature, quantity, quality and significance of the evidence for macrofossil plant remains from archaeological deposits in the northern counties of England (following English Heritage's Northern Region area, these are all the English counties or districts north of and including Cheshire, Greater Manchester, South Yorkshire, N Lincolnshire and NE Lincolnshire). Note that, although wood and wood charcoal are considered at various points in this review, no detailed account of studies of these remains in the context of structures or artefacts is presented; a review of evidence for charcoal and small timber (such as roundwood) will be dealt with by Huntley (forthcoming). These two reviews are part of a series commissioned by English Heritage, via their former Ancient Monuments Laboratory, from its environmental archaeologists. It is hoped that they will subsequently form the basis for one of three regional *syntheses* of the various lines of bio- and geoarchaeological evidence. The initial 'material reviews'—for the northern counties, see also Kenward (forthcoming), Usai (2002; 2005), and Huntley (forthcoming), plus two further accouts, dealing with vertebrates and pollen—and the syntheses which will follow, them are intended to provide information and guidance for archaeologists of all kinds—but principally (a) curators concerned with archaeological interventions undertaken as part of the planning process within local development control, (b) field excavators (including those undertaking development-led projects), and (c) those with a research interest in archaeology and particularly environmental archaeology.

(Note that a first draft of this review was submitted to English Heritage in March 1997. Major updating was undertaken following the receipt of comments in July 2002; inevitably, the results of a wide range of projects undertaken in the region since that time are not included here.)

1.2 History of work in the region

The quotation above from Roeder's paper of 1900 comes from one of the earliest published accounts in which reference is made to plant remains from archaeological deposits in our region. His report on material from Roman deposits encountered in various small trenches in Manchester eloquently illustrates the scale and quality of most studies of plant remains in N England prior to the early 1970s. In particular, there are several unlikely identifications and no descriptions or illustrations of the fossils by which to judge their validity. It may be remarked, however, that Roeder's description of the broad nature of the deposits from which he recorded the plant remains is more detailed and interpretatively more useful than many subsequent archaeobotanical reports in which no information other than lists or tables of plant identifications are offered! Before the massive growth of 'environmental archaeology' in Britain during the 1970s, most studies of plant remains—even wood and wood charcoal—from archaeological sites in N England, as elsewhere in Britain, were at best casual. Indeed, most early reports on biological remains from excavations were brief. They often consisted of little more than 'spot identifications' of material—usually discrete items easily visible during excavation. A good example here is Metcalfe's archaeobotanical report for Wheeler's excavation at **Stanwick** *NYR*[1]. Also in this category are most of the records made for the region by Jessen and Helbæk (1944) in their wide-ranging survey of material, mainly from museum collections. For the most part this consists of identifications of very small numbers of cereal grain impressions on pottery or of 'spot finds' of grains collected during excavation; the sites concerned are listed in the gazetteer in Appendix 1, but are generally not referred to in the text.

In contrast to these early studies, the report on plant remains from a site in Hungate, York (**Hungate 50-1**), stands as something of a landmark, both nationally and regionally: as well as presenting data for a series of samples from occupation deposits, well beyond the 'spot find' status of much earlier material, it is an early example which illustrates the potential of 'waterlogged' urban archaeological deposits. Even this study dealt with only a few samples (from what were, from the standpoint of environmental archaeology, clearly very rich deposits) and the results are presented as lists in an appendix isolated from the rest of the report. (Moreover,

[1] NB All references in this review to published and unpublished reports on plant remains which are designated in this way are hyperlinked to a list presented in 'Site no.' order (following the nomenclature of the *Environmental Archaeology Bibliography*) in Appendix 1 (with a further list of sites/reports ordered by 'county' in Appendix 2). Unpublished reports may usually be distinguished by the presence in the hyperlinked 'site name' of a abbreviation for the report series, principally AML—*Ancient Monuments Laboratory Reports;* CfA—*Centre for Archaeology Reports*; DEAR—*Durham Environmental Archaeology Reports*; EAU—*Reports from the Environmental Archaeology Unit, York*; PRS—*Palaeoecology Research Services Reports*. Some other reports produced by other individuals or groups are marked as follows: ASUD (Archaeological Sevices, University of Durham); EAC (Environmental Archaeology Consultancy); EHy (Elizabeth Huckerby); HA (Headland Archaeology); LUAU (Lancaster University Archaeology Unit); OAN (Oxford Archaeology North). For an explanation of the three-letter codes used to designate counties and districts, see the introduction to Appendix 1.

a large number of the identifications are actually more tentative than might appear from a cursory reading of the report!)

Even as late as the early 1960s, little progress had been made towards what would today be considered an adequate archaeobotanical study of a substantial archaeological intervention. The report for **Brough on Humber 58-61** *EYR* is a model for a style of archaeological report and archaeobotanical investigation which could not, it is to be hoped, ever be emulated today—though it was not especially poor by the standards of the period at which the work was carried out (it was published in 1969). Not only is there no connexion between the three entirely free-standing reports on mosses, 'other plant macrofossil remains', and wood and wood charcoal, but also no connexion between the plant remains and the excavation report. Indeed, careful reading of the monograph fails to establish where most of the material was collected in terms of stratigraphical or geographical location, or to refine the date of the deposits concerned beyond 'Roman'. The material is essentially a series of spot samples, apparently from deposits forming outside the fort in the civilian settlement, though some appear to be from sand and shingle deposits (!). The plant remains reported are mainly from natural habitats: there are unusual— and perhaps questionable—records of charred and ?charred *vegetative* remains of *Galium aparine* L., *Iris pseudacorus* L. and *Ononis spinosa* L. (perhaps actually *Ulex*?). The greatest pity is that well-preserved material, presumably all of Roman date, and perhaps informative if studied using modern methods, was encountered during this extensive series of excavations along the course of a pipeline but very inadequately investigated (and now, presumably, lost for ever).

Systematic sampling and investigation of suites of plant and animal remains and of soils and sediments became much more prevalent during the 1970s, and the development of studies of plant remains alongside those of vertebrates and invertebrates can be seen, both regionally and nationally, as reflecting the enormous increase in excavation with the 'rescue' boom and the investment by the then Department of Ancient Monuments and Historic Buildings (latterly English Heritage) in a series of 'contract' posts in environmental archaeology in various Universities and Museums in England, funded through the former Ancient Monuments Laboratory. Two of these posts, for archaeobotanists at the Universities of Durham and York, were responsible—for more than two-and-a-half decades—for a very large proportion of all the archaeobotanical studies in the region. Besides the present authors, the following workers were employed through these contracts: at Durham, Dr Alison Donaldson and Prof. Marijke van der Veen, and at York, Dorian Williams. Between them, these five archaeobotanists have authored nearly 50% of the *published* reports currently listed for the northern counties in the *Archaeobotanical Computer Database* (ABCD) and a much higher proportion (nearly 76%) of the *unpublished* reports (according to data held in the *Environmental Archaeology Bibliography* (EAB), see below). Other workers who have made significant numbers of substantive contributions to published studies of plant macrofossils in the region include Drs David Bartley, James Greig, and Philippa Tomlinson.

Since the arrival in 1990 of 'PPG16' (the former Department of the Environment's *Planning Policy Guidance Note 16*), with its presumptions of preservation *in situ* wherever possible and of the financial onus for development-led excavation falling on

the developer, the nature of archaeobotanical work in the region, as nationally, has changed. Most excavations in the period since 1990 have been small-scale (by the standards of the preceding 'rescue' era, at least), often involving the archaeological investigation of only the uppermost parts of deeply-stratified sequences (especially in urban centres), or of very limited areas of sites. For perfectly good reasons, very many interventions have not progressed beyond an initial evaluation to which, in the better-managed projects, some form of evaluation of biological remains and sediments has been attached. The aim of these evaluations, which now form the bulk of the work undertaken within field-based environmental archaeology in England, is to establish the quantity and quality of preservation of plant and animal remains and their enclosing sediments to inform the planning process. For the most part, however, they can only provide some very basic data of limited value to those pursuing research questions and, since the results of such studies are almost always confined to unpublished reports required by the curatorial system and not disseminated beyond SMRs, they are effectively unavailable to the wider community of archaeologists and archaeological scientists. Sometimes there is sufficient justification for further excavation and recording, where important archaeology is under threat, and adequately funded post-excavation work on plant remains (*inter alia*) continues to provide some useful material for the study of broader issues in archaeobotany as well as assisting in the interpretation of the individual site. In this review we have tried as far as possible to acknowledge the so-called 'grey literature'; to have ignored it would have done a disservice to workers whose studies, even at the level of site evaluation, have generated new information which is otherwise 'buried'. A review of the pros and cons of development-led archaeology for studies of plant remains, which explores these themes in more depth, is provided by Kenward and Hall (2006b).

1.3 Types of plant remains and their modes of preservation

For the purpose of this review, the term 'plant macrofossil' includes all remains of plants other than pollen, spores, diatoms, and phytoliths (all of which will be considered for the northern region in a separate review) and, for the most part, also wood and wood chacoal (dealt with in part by Huntley, forthcoming). Although no longer generally considered by biologists to be plants, macroscopic fungi are also included here. To avoid tedious repetition, the terms 'plant remains' and 'macrofossils' are used extensively for 'macrofossil plant remains'; other archaeobotanical evidence (pollen, diatoms, and so forth) are referred to explicitly where appropriate. We have avoided the use of the term 'seeds' to stand for plant macrofossils except where we are explicitly discussing remains which were *actually* seeds, rather than fruits or some other plant parts; there is a lamentable tendency, even among archaeobotanists, to laxity in this regard, though we also acknowledge the difficulty of finding shorthand forms which expedite communication whilst maintaining botanical accuracy—see also Table 1, note [b].

The macrofossil plant remains pertinent to this review are summarised in Table 1, together with an indication of the ways in which they may be preserved. The three principal modes of preservation are:

charring (often termed 'carbonisation')—in which the plant material is reduced to carbon through the application of heat, but in an environment with insufficient oxygen to completely combust the tissue; charred remains are effectively resistant to chemical and biological degradation, but may suffer damage through physical processes; they do, of course, also very easily survive redeposition (see below);

mineral-replacement ('mineralisation')—in which plant tissues are impregnated with, and in the most extreme cases completely replaced by, salts such as calcium phosphate which render the structure resistant to decay or produce a 'fossil' in the conventional sense; the mechanism is considered in relation to some material from the region by McCobb *et al.* (2001); and

anoxic 'waterlogging'—in which the plant tissue is preserved because, it is presumed, the high water content of its burial environment prevents the normal decay processes from taking place—a situation familiar in the context of natural peat deposits where plant remains are preserved *en masse*, and actually form the peat itself.

In addition, evidence for macrofossil plant remains may survive in the form of impressions in pottery and other 'fictiles'. There are *very* few examples of this from our region: **Milfield sites**, near Wooler, and **Well House Farm 80**, at Newton, both *NHU*; **Sancton (Saxon Cemetery) 76-80**, near Market Weighton *EYR*; and **Thorpe Thewles AML 4372**, near Stockton-on-Tees *CLV*. Examples of 'silicified' cereal remains (Table 1, note [c]) in our region come from South Yorkshire (**North Bridge 93-4 EAU 97/16**, Doncaster), East Yorkshire (**Welton Wold**, near Brough, and **Goodmanham (NE of) EAU 2000/73** near Market Weighton), and North Yorkshire (**Wharram Percy (silica skeletons)**, near Malton, and **Market Pl (8/9 & 10) (The Arcade) EAU 2000/59**, Ripon).

The quantity of plant material that may be preserved at a given archaeological site varies very greatly. Where ground conditions have not been conducive to preservation by mineral-replacement or waterlogging, the only macrofossils which may survive are those preserved by charring. Indeed, few archaeological sites do not yield at least *some* charred material in the form of wood charcoal. So resistant to decay are fragments of wood charcoal or charred cereal grains that they may easily be reworked and care is needed in the interpretation of charred remains from deposits where there is any possibility of residuality (cf. van der Veen 1992).

Remains preserved by mineral-replacement are likely to occur only locally, where there have been suitable burial conditions, but they may be almost the only evidence for plants on 'dry' sites where, for example, former latrine pit fills have not been subjected to continuous waterlogging (e.g. **Church Close 84-5 (Anglo-Saxon)** in Hartlepool). In deeply stratified urban deposits, mineral-replaced and waterlogged remains often occur together, the proportions probably reflecting the degree to which waterlogging has occurred since deposition. Very typically, latrine pit fills may show 'concretion' of faecal material into hardened lumps, sometimes in the form of discrete 'stools' (e.g. A. Jones 1983), but more often as amorphous 'faecal concretions' (mentioned further in various places below). These are usually found to contain some unmineralised plant material such as wheat/rye (*Triticum/Secale*) 'bran' (and almost

invariably also eggs of parasitic nematodes, as described by A. Jones, *op. cit*.) when disaggregated with dilute mineral acid. Not surprisingly, assemblages of 'mineralised' remains tend to be dominated by food plants but they may include foodplant parts only rarely found preserved in other ways—such as the seed-coat (testa) and attachment scar (hilum) of large food legumes (pulses) such as field bean and pea. As with charred remains, some caution in interpretation may also be needed in the case of mineral-replaced macrofossils where they are not clearly in a primary deposit.

A further example of preservation of plant material by mineral-replacement is where corrosion products from a metal artefact have impregnated the plant tissue; there are several examples of this for our region, including some from burials, amongst them material from Thwing *EYR* (Watson 1993), where fragments of Anglian coffin timbers were preserved by iron corrosion from the coffin brackets, or at Iron Age Wetwang Slack *EYR* (Watson 1989), where wood was preserved in association with metalwork from a cemetery.

Waterlogging is the principal mode of preservation in natural peats, river silts, and lake sediments, and it is often the most important mechanism for preservation in some occupation deposits where local hydrological conditions and/or a high organic content maintain a high water content in the deposit and effect preservation, as discussed for urban context by Kenward and Hall (2006a). (Remains preserved by the other two mechanisms may, of course, be very well preserved in sediments where the principal mode of preservation is by waterlogging; indeed, the separation of material from the same deposit by preservation type is something of a nonsense and archaeobotanical interpretation requires consideration of all material in a sediment in reaching an understanding of how it formed and what its surviving plant remains signify.) Except where wholesale reworking of layers occurs as, for example, through pit-digging, or in some natural sedimentary deposits such as river silts, the problems of redeposition of waterlogged material are probably relatively unimportant, though certainly should not be ignored. A good—and cautionary—example of reworking of even delicate plant remains is represented by some grave fills at the Augustinian Friary in Hull (**Magistrates Courts (Hull) 94 & 99 EAU 2000/25** and **Magistrates Courts (Hull) 94 & 99 EAU 2000/33**), where material with the character of stable manure appeared to have been redeposited in association with some plant remains contemporaneous with the burials. Dating of single entities by Accelerator Mass Spectrometry (AMS) of radiocarbon provides one way of checking cases where such reworking is suspected.

Another phenomenon which requires discussion here is the contamination of ancient plant assemblages by younger remains. Most commonly this is encountered on rural sites on land under arable cultivation where processing of samples often results in the recovery of quantities of uncharred modern roots and often also some uncharred weed seeds. The latter—introduced into archaeological layers through the agency of soil organisms such as earthworms—are usually recognisable as contaminants, especially when germination occurs. More serious than this is the 'contamination' of earlier layers by charred remains from later periods. In some cases, these may be modern cereal grains, and perhaps also chaff, arising from stubble burning, and these may be relatively easy to spot, but in other cases material from a later phase of

occupation may have become incorporated into an earlier deposit. Examples revealed through dating by AMS are discussed by van der Veen (1992).
One result of the variable effects of preservation is, of course, that the nature of the record for macrofossil plant remains is not evenly distributed in either time or space. We are thus faced with a difficulty in making valid comparisons across a region or between different cultural periods simply because the evidence is 'patchy'—as for any class of biological material or, indeed, for any cultural remains.

Another difficulty lies in the degree to which we can predict the survival of plant remains. Low concentrations of plant material—whatever their mode of preservation—may be very difficult or impossible to detect in the field and are only revealed by some form of sieving (see next section). More than this, of course, *the more precise nature* of the remains in a deposit certainly requires proper investigation. Thus, whilst we may be able with some confidence to predict that the fossil plant assemblage in a ditch where there is clearly waterlogged preservation will contain the kinds of plants that live in or by a body of standing or slow-flowing water, we will not, without closer inspection, know whether material from nearby occupation is also represented, or whether there are remains representing activities (such as the retting of fibre crops) which made use of the water body itself. Of course, such deposits rarely if ever offer much evidence to the naked eye of the presence of charred remains within the matrix.

1.4 Field and laboratory methodology

Although it is not appropriate to discuss sampling and laboratory methods in detail here, a brief outline may be valuable for those to whom the work of archaeobotanists remains arcane. Aspects of sampling in the field are considered further below—this seemingly contrary approach is adopted here deliberately so that sample types can be introduced in the context of how plant remains from them are treated in the laboratory and to emphasise the implications this has for the kind of material collected.

Samples for archaeobotanical study vary greatly in size and nature. Sometimes they comprise material discovered during excavation which clearly consists of (or includes) plant remains for which, at simplest, an identification (or a confirmation of such) is required. This category of 'spot' finds could be said to include artefacts of plant origin or, as in the case of the moss caulking of the Brigg (and some of the Ferriby) boats, material associated with artefacts. In the early years of archaeobotany, samples of this kind were often the only ones collected. However, with the advent of more rigorous methods in archaeology, generally, in the latter half of the 20th century, programmes of sampling of whole sediment began to be adopted, though with great variations in scale and intensity. There is never a justification for *not* collecting spot samples if they would otherwise be lost to view (e.g. by including them in a large sample), but care needs to be exercised so that the remains do not suffer because they are inappropriately packaged. They should be treated as delicate small finds which may be damaged by compression in a non-rigid container, by attrition if allowed to move about in too large a container without packing, or through desiccation, whatever their mode of preservation.

Two main kinds of *whole sediment* sample are examined for plant remains. The first, loosely termed 'bulk-sieving' or 'bulk' samples ('BS' in the terminology of Dobney *et al.* 1992) or 'flotation samples' (English Heritage 2002) tend to be of the order of 10-50 litres (15-75 kg) in size and are typically employed at sites where it is anticipated that the plant material will principally be thinly-dispersed remains preserved by charring. Processing in the field or the laboratory, usually using some kind of 'sieving tank', leads to the separation of a 'flot' or 'washover' of less dense material (amongst which the fossil remains are expected to be present), from the denser 'residue' or 'retent' (which should largely consist of the mineral fraction of the sediment). Unfortunately efficient separation is not always achieved—especially in cases where charred material has become impregnated with iron salts or is coated with clay or silt, and is thus much denser than it would otherwise be—and both washovers and residues therefore generally need to be checked. Mineral-replaced remains will also tend to be left in the residue and they may be completely missed if residues are not scanned by someone who can recognise these often rather unprepossessing remains for what they are.

Bulk samples have sometimes also been employed for the investigation of deposits rich in waterlogged plant remains, notably in the large-scale excavation at 16-22 Coppergate, York, where this technique provided an opportunity to extract and study a wide diversity of remains. The strategy was adopted primarily for collection of smaller bones, especially those of fish, birds and small mammals, but also yielded many small artefacts and huge quantities of plant material, and permitted an examination of the general nature the sieved deposits—at least for the fractions larger than 1 mm. Such a large mesh size would have been inappropriate for sieving samples where small concentrations of charred remains were anticipated, but the use of the 0.3 or 0.5 mm meshes demanded for the collection of charred material would have resulted in impossibly large quantities of fine particles being retained from the Coppergate samples. The experience at this site reminds us that plant remains, of course, are not the only fossils present in the ground at most sites and that sampling and sieving strategies need to be tailored so as to optimise the recovery of information from as many sources as are likely to be productive.

The other main kind of sample is variously known as a 'general biological analysis' (GBA) sample (as in the scheme of Dobney *et al.* 1992) or 'large specialist sample' (in the terminology of English Heritage (2002)). It tends to be of the order of 10 litres (10-20 kg, depending on density) in size and is the routine sample for parallel studies of plant and invertebrate macrofossils. Again, sieving is used to disaggregate the sediment—typically starting with assessment of a subsample of 1-3(-5) kg—but for the purposes of concentrating insect remains 'paraffin flotation' (Kenward *et al.* 1980) is employed. This results in a 'flot' in which some plant remains (and indeed non-insect invertebrate remains such as snails) may well be present, though the bulk of the plant fossils will be in the residue. How this residue is examined will depend on what is present and economical expenditure of effort involves the adoption of different techniques for samples of different character. Thus, where there is a mass of uncharred and unmineralised material, it is easiest to sieve the residue into fractions (typically 0.3, 1, and 2 mm, with 4 and 10 mm sieves used where there is coarser material) and to examine some or all of each fraction, the material remaining wet. In cases where there is only a small amount of uncharred material, this can be

decanted off by a simple ‘washover’ and examined wet. GBA samples containing only charred plant remains may, likewise, be sieved in their entirety or subjected to a washover, but here it is usually easiest to dry the separated material before it is examined microscopically. Decisions about how to handle individual samples cannot always be made until a preliminary examination takes place, so—where material is to change hands between workers—good communication between those processing samples and those carrying out the subsequent archaeobotanical work is essential as, indeed, is good communication between all those ‘specialists’ who may have an interest in the samples in question, so that ‘drastic’ measures such as drying do not prevent later studies from being made!

No detailed account of the mechanisms of identification or interpretation seem necessary here, other than to stress the need for accurately identified modern reference material and a good working knowledge of the regional flora and of taxa likely to be encountered as ‘exotics’—in the form both of living plants and macrofossils. The execution of an adequate archaeobotanical assessment or evaluation is unlikely to be achieved by an inexperienced worker in the absence of guidance from someone familiar with the kind of material or site being investigated. ‘Waterlogged’ urban occupation deposits, with their often bewildering array of remains and diverse modes of preservation, are particularly challenging to the tyro, whilst assemblages largely consisting of charred cereal remains present quite other difficulties.

To return briefly to the field, some discussion of sampling is necessary at this point—and we are considering here categories of sample *other* than spot finds: dirt which it is hoped will yield interpretatively useful assemblages of plant, and probably other biological remains. It is probably fair to say that no very coherent consensus exists about how sampling should proceed, though English Heritage’s recent (2002) guidelines for sampling for environmental archaeology represent a brave attempt. In terms of *what* to sample, there are numerous schools of thought. Perhaps the most extreme considers strictly random sampling to be the only viable course. This may be appropriate for the collection of samples from large and (apparently) homogeneous deposits where a grid can be applied and samples collected randomly. It is *entirely inappropriate* for most complex occupation sites where there are huge differences spatially in the nature of the deposits. In this context—and because the precise bioarchaeological content of a deposit is never actually known until after processing—the collection of a sample from a deposit that is clearly secondary in nature but whose position is irrevocably determined by the selection of a point fitting the random distribution of sampling points is perhaps somewhat less absurd than the *non-collection* (because it does *not* happen to be ‘in the right place’) of a sample from a primary deposit which is, on the basis of observations in the field, clearly very likely to provide useful archaeological information.

‘Judgement’ sampling is thus, in practice, the most widely adopted strategy, but even here difficult decisions have to be made. The interpretation of deposits cannot always be made in the field—indeed, one of the advantages of undertaking bioarchaeological studies is to enhance interpretation!—and the precision with which dating of deposits can be achieved is also often only clear at a much later stage in the post-excavation process, so there is a good case to be made for taking samples

of *most layers* where it is suspected preservation of remains has occurred. (A compromise position is seen in the strategy of Buxton and Howard-Davis (2000) at an excavation at the Roman fort at Ribchester (*Bremetenacum*) *LAN*, where (p. 349) 'samples were taken from every fifth appropriate context, plus any others felt to be 'different' or 'interesting'.'

Adopting a phase of 'assessment', in which a selection of the samples is examined in an attempt to judge the overall nature of the material, then permits decisions about analysis to be much better informed. Naturally workers differ in their view of what constitutes an adequate assessment, and to some extent this will depend on the nature of the material and on the complexity of the archaeological deposits. A corpus of 50 samples from a complex multi-period site with extensive waterlogging might require assessment of at last a small subsample from all 50 samples to provide an adequate survey of feature type and phase combinations. Contrariwise, for 50 samples from a series of pits and postholes from a single late prehistoric round-house, examination of perhaps 5-10 might be sufficient (although experience shows that preservation of remains on such sites may be very 'patchy' and selection of samples for assessment will rarely guarantee that both richer and less rich deposits will be represented).

All this said, since the content of plant (or any other fossil) remains in archaeological deposits cannot be accurately known until material is sieved and examined under the microscope, perhaps the safest approach to sampling is to adopt the dictum 'if in doubt, sample', remembering that archaeological excavation is essentially destructive and that once sediment has been removed to the spoil heap it is (usually) of no further use for the recovery of biological remains. Prime candidates for sampling are deposits identified (in the field, at least) as use-phase fills of features, but many other deposits whose 'mixed' or secondary nature cannot be discerned at the point of excavation are worth sampling too, even if it proves subsequently that they were of more limited value. This is where an informed programme of assessment permits a decision to investigate or discard samples of such layers bioarchaeologically to be made on inspection in the laboratory with a basic archaeological matrix and some dating to hand.

As to the storage of samples, it should be remembered that uncharred material will decay rapidly when exposed to light and air and so sediments with known or suspect waterlogged remains require storage in cool, dark conditions. A very practicable system initially introduced in N England is the use of lidded square or rectangular plastic 10 litre tubs into which sediment can easily be shovelled. Experience of this kind of storage over more than a decade suggests one major modification: the enclosure of the sample in a plastic bag, perhaps ideally a black non-biodegradable 'dustbin-liner', for example, within the tub. The use of a bag increases the likelihood that a high humidity regime will be maintained (especially important where the sediment does not fill the tub), and the use of a *black* bag should help to limit the growth of organisms on the sediment surface where tubs have, unavoidably, to be stored in warm, light conditions for long periods. Note that storage of plastic tubs in sunlight results in brittle plastic within a season or two and is to be avoided for financial as well as practical reasons! Although either trowelled sediment or blocks of whole sediment can be put into tubs, the latter are perhaps to be preferred in

providing an opportunity to observe both the gross and finer structure and composition of the material in the laboratory—something which may be highly desirable for all those undertaking subsequent analyses. A second-hand field or laboratory description of a sediment rarely conveys a better impression than that gained by direct observation.

1.5 Contribution of studies of plant macrofossils to archaeology

Macrofossil plant remains are one of the groups of fossils most frequently investigated within the remit of 'environmental archaeology' or 'bioarchaeology'. Along with vertebrate remains, they are preserved in some form or other in at least *some* contexts on most archaeological sites in the region under consideration—even if only as decay-resistant charred cereals, cereal chaff, and associated weed seeds, or, more commonly, as wood charcoal. As discussed above, preservation by means other than charring is often restricted to particular kinds of sites or to certain contexts within sites, and interpretatively useful assemblages of plant remains may only be recovered from one or a few deposits at any one site.

At the simplest level, plant macrofossils provide information about plants growing in the vicinity of the deposits in which they have been preserved—as, for example, in natural peats and lake sediments. Indeed, fen and bog peats are composed almost entirely of the plants growing on the former mire surface and often contain few fossils from plants growing further away. Deposits such as river silts and ditchfills, on the other hand, may contain remains representing a rather larger range of habitats and a larger geographical area; in the case of alluvial sediments, the potential for transportation (including reworking) over very large distances must be borne in mind.

However, on most sites where there is evidence from artefacts or structures (or their traces) for human occupation, activity by the inhabitants will usually have led to the importation and use of plant materials for a variety of purposes—fuel, building, food, medicine, craft uses, and so on (see the thematic section below). Analyses of plant remains from what can be termed loosely 'occupation deposits' almost always involves discussion of the separation of these two strands of evidence: that relating to the natural, semi-natural, or human-made flora and vegetation ('environmental' or 'palaeoecological') *versus* what might be called the 'ethnobotanical' or 'economic' evidence. Here, the use of other biological remains, together with conventional archaeological evidence, is vitally important in weighing up the considering the merits of one explanation or another for the presence of the plant remains observed. A good example of this concerns the identification of stable manure, where plant remains taken in isolation may be of ambiguous interpretative value: allied with evidence from insect remains, a very much firmer interpretation can be achieved (Kenward and Hall 1997). Similarly, an 'indicator group' of plant and insect remains can be recognised for aspects of textile working (Hall 2003a), or for leather production through vegetable tanning (Hall and Kenward 2003).

2 Structure of this review

The format of the core of this review follows the same pattern as for the other 'material' reviews. A brief summary of the geography and geology of the region is followed by a chronological section in which the evidence is considered according to the archaeological period assigned to the deposits from which it has been recovered; subdivisions in this section, used to reduce the indigestibility of the 'bleeding chunks' of narrative, relate to geographical location and site type. As far as possible period 'summaries' attempt to draw out themes from the mass of largely disconnected and heterogeneous material in each major chronological section. An overtly thematic section follows this, in which a wide range of archaeological topics which can be addressed by studies of macrofossil plant remains is presented. Inevitably there is a certain amount of repetition of detail as a result of this approach, but it has been felt desirable to offer two approaches to the corpus of information with which the review is concerned. The concluding sections deal with priorities for the future, taking into account past and current methodologies in the field and the laboratory. A summary of recommendations aimed at a number of target groups, including archaeological curators, is also presented.

3 Data sources

The starting point for organising the information for the review has been the *Environmental Archaeology Bibliography*, compiled initially in the early 1990s by Philippa Tomlinson and colleagues at the former Environmental Archaeology Unit, York, at the request of, and with funding from, English Heritage (Hall and Tomlinson 1996; and online: *EAB*). This computer database of reports on all aspects of bio- and geoarchaeology relating to interventions throughout the British Isles has subsequently been maintained by ARH and, as a result of input related specifically to the compilation of this review, probably includes references to almost all relevant published and unpublished reports for the northern region of England. Besides bibliographic references, and certain information about each site, such as country, county, National Grid co-ordinates, and archaeological dating of the deposits discussed, the database records the type of material reported and the size of the report (on a simple three-point scale). By means of appropriate 'queries' it is possible to find all sites for which there are published (or, indeed, unpublished) reports on plant macrofossil remains and to order them by county, grid reference, or other criteria.

The sources for data on which this review is based therefore comprise:

(a) *published* reports on plant macrofossil remains in 'period', 'county', and other archaeological journals, in archaeological science journals, and in excavation reports published as monographs or books;
(b) *unpublished* reports on plant remains, primarily *Ancient Monuments Laboratory Reports*, *Centre for Archaeology Reports*, *Durham Environmental Archaeology Reports*, or *Reports from the Environmental Archaeology Unit, York*; and, to a very modest extent
(c) unpublished data held by the authors of this review.

The reports under (a) and (b) naturally vary hugely in their level of detail, some being little more than summaries, whether published or not. No attempt has been made to include a reference in this text to every unpublished report, but it must be stressed that so much information is, and is likely to remain, unpublished, that this source cannot be ignored in any comprehensive review, so all reports dealing with plant macrofossils in the region known to the authors are included in Appendix 1, even where they have been superseded by a later unpublished report or a conventional publication of some kind (especially as it is quite common for data contained in the earlier report or reports about a site not to reach the final publication).

Another point which has been borne in mind during the preparation of this review is that 'negative evidence'—reports in which deposits are shown to have few or no identifiable remains—are considered as interpretatively and strategically important in providing a guide to archaeobotanical potential which may be relevant to future work carried out through the planning process. For the most part, therefore, reports which describe only trivial results of plant macrofossil analysis are not considered in the body of the review, though they appear in Appendix 1.

Three other particular groups of published reports have also been largely excluded from the body of this review. The first are those which deal with analyses of plant remains from natural deposits where no overt evidence for human activity was recorded. They include records of both post-glacial and earlier date from peats, lake sediments, river channel fills, and so on. Many of the sites investigated by the North-West Wetlands Survey, for instance, provided opportunities to study plant macrofossils in parallel with pollen and spores, and there are some parallel studies from the Humberhead Levels (e.g. those reported by Smith, 2002). The macrofossil remains from such deposits help to elucidate local environmental change, to complement the more regional picture emerging from pollen analysis. They are therefore integral to reconstructing past vegetation, climate and hydrological change, but beyond the scope of a review of this kind.

The second group of reports which have not been drawn upon for this review but which involved study of macrofossil plant remains are those concerned specifically with wood and charcoal, including wooden artefacts. These are in part the subject of a separate review (Huntley, forthcoming). Lastly, reports on mineral-replaced organic material associated with metal artefacts—typically metalwork in graves—are not reviewed. Most, though not necessarily all, also fall under the 'wood' category in any case.

Returning to the material used for this review, one *caveat* which must be mentioned here is that, of course, the size and quality of reports varies enormously. In general, and as mentioned above, the earliest reports on biological remains from archaeological deposits (mainly those published prior to about 1975) were little more than notes on a few identifications of 'spot finds' (usually charcoal!)—at that time, systematic sampling in the field and recovery in the laboratory were rare. With the great upsurge of 'rescue' archaeology through the late 1970s, the scale and rigour of 'environmental' work increased dramatically, as did the volume of data collected. This led to the consignment of much of the basic information pertaining to bio- and geoarchaeological studies to microfiche with often little more than a brief résumé in

the text. The *Archaeobotanical Computer Database* (*ABCD*), compiled initially by Philippa Tomlinson between 1989 and 1992, goes some way to meeting this problem, by drawing together data concerning plant macrofossils from published sources in a form which can be easily extracted and analysed. Published records of plant remains from sites in N England held in the *ABCD* have been comprehensively checked for this review, and many data not available during the initial compilation have been added. (Like the *EAB*, the *ABCD* is under active curation by *ARH*.)

Naturally it has not been possible to read and digest every word written on the subject in hand. As far as possible, every relevant report has been consulted and a brief précis of its contents entered into the database that has been used for the compilation of much of the text (and particularly the chronological section). As mentioned above, no attempt has been made to consider every report in the narrative; the choice of reports and sites for inclusion has depended on the archaeobotanical contribution they make, taking into account the degree of confidence which it is felt can be placed on the dating and integrity of the deposits from which the material has been recorded (where such an assessment can be made—see below). However, as indicated previously, no apology is made for including unpublished material: there are about four times as many unpublished reports as published reports on plant remains for the N England region (this statistic *excludes* unpublished reports which have subsequently made their way into print). Very few reports of any kind appearing after the end of 2002 have been included, but the database used to prepare the report is being maintained, with all new material being added as it comes to the ARH's attention.

Much the most frustrating problem encountered during this compilation has been the difficulty of establishing the date and context type of much of the material presented in archaeobotanical reports. For many studies, particularly those undertaken within contract archaeology, such information may not be available at the time the archaeobotanical (or other 'environmental') report is prepared and there may be a tacit assumption on the part of the specialist that such information will be added when their report is integrated into the final report to the developer. It was not possible, within the constraints of this project, to pursue dating and context information for more than a very few cases where this information was lacking in the report consulted. (It is, of course, also quite likely that dating or context interpretation will, in any case, change; indeed, there should also be a stage during the development of the archaeological narrative in which the results of the environmental study *itself* lead to some adjustment of this narrative.) On the positive side, attention to dating, and especially the employment of dating by AMS, appears often to be taken more seriously than formerly, perhaps partly because interventions are so limited in extent that dating by artefacts is less readily achieved.

4 Political, geological and topographical background to the region

Following local government re-organisation in the period 1995-8, the administrative units comprising English Heritage's Northern Region are as shown in Table 2. The occurrence of these changes after the initial period of compilation of the

Environmental Archaeology Bibliography has meant that three 'counties' are now recorded for each site (see also the introduction to Appendix 1).

4.1 Geology and topography (for more detail see Usai 2005, and, with respect to drift geology, Huddart and Glasser 2002)

The Northern Region of England presents landscapes with a wide variety of relief and geology—both 'solid' (bedrock) and 'drift' (superficial deposits)—which have, of course, influenced settlement at all periods. Within the country of England as a whole, the northern counties contain the highest land (in the Lake District and N Pennines), and the highest sea cliffs (NE Yorkshire/S Cleveland), as well as the largest natural lakes. The largest river catchment, that of the Humber-Ouse-Trent system, extends through a greater part of the south-eastern quarter of the region, the freshwater input from the Humber being the largest of any British estuary to the North Sea.

Major upland areas are represented by:

(i) Pennine Hills, which form a central spine extending from the Scottish border through eastern Cumbria and western Northumberland, through the western parts of Co. Durham, North Yorkshire and South Yorkshire, N Lancashire, and the eastern extremities of Cheshire and Greater Manchester. Most of the former county of West Yorkshire is situated on the Pennines. The rocks forming the Pennines are mostly moderately hard Carboniferous limestones and sandstones exhibiting a generally rather rounded topography.

(ii) Lakeland Fells of central Cumbria, where relatively hard Palaeozoic rocks rise to 978m on Scafell Pike (the highest point in England); these hills have steep craggy topography, with abundant evidence for glaciation during the Devensian (last) glacial period, in particular in the form of deeply incised 'U'-shaped valleys and extensive, deep, ribbon-shaped lakes.

(ii) North York Moors in the NE part of North Yorkshire (and the south-eastern parts of the former county of Cleveland). Here, relatively soft Jurassic sandstones have been worn to produce a rather flat-topped landscape of heather moorland and a largely N-S trending pattern of drainage from the southerly-placed watershed to the N end of the massif. The moors are not thought to have been subjected to glaciation during the Devensian, though the deeply-incised Newtondale (which cuts through a large part of the eastern moors) seems likely to represent a glacial meltwater channel.

All these areas are characterised by thin soils which are (except for areas of limestone, mainly in the Pennines) acidic and today support moorland vegetation dominated by grasses with a poor grazing value, with heather abundant in many parts; there are also extensive areas of blanket peat on parts of the Pennines and the N York Moors.

The only other major 'hilly' area, but one of much more subdued relief is the Yorkshire Wolds, formed of chalk in the SE of the region (and extending in a narrow

ridge into the Lincolnshire Wolds through N Lincolnshire to the S of the Humber). The highest point on the Wolds is at 243m and the topography is characterised in many parts by rather steep-sided, dry valleys generally regarded as not having been glaciated during the Devensian. Most of the Wolds is given over to arable farming or grazing with few areas not in use for agriculture.

Smaller areas of higher relief are the Howardian Hills, forming a 'bridge' linking the Wolds and the North York Moors, and flanked by the Vales of York and Pickering, and the Delamere Forest/Alderley Edge area in Cheshire, NE of Chester, where Triassic sandstones form quite imposing bluffs, despite the relatively soft nature of the bedrock.

Major lowland areas, where the bedrock is usually deeply buried by drift—both alluvium and, in many parts, formerly extensive peats—include the coastal plains of Northumberland, Co. Durham, Cumbria (including the Solway Plain), Lancashire and Merseyside, as well as the Holderness District NE of Hull in the SE of the region. The Vales of York and Pickering form the largest continuous areas of lowland valley (with major areas of peatland in the southern part of the Vale of York in the area known as the Humberhead Levels), and other extensive lowlands are located in the Cheshire Plain (running into the SE of Greater Manchester and the E of Merseyside).

5 Chronological survey

This section reviews the evidence for macrofossil plant remains through archaeological time under a series of necessarily somewhat arbitrarily-defined period headings. Inevitably the greatest constraint on any chronological approach of this kind is the difficulty of dating so much archaeological material accurately—both in terms of the practicalities of field archaeology and in the nature of the formation of deposits. Naturally, the dating indicated here is the best that could be found or deciphered from the reports examined but it is often no better than 'Bronze Age' or 'Roman', for example.

Whilst the location of sites in relation to the larger modern settlements has been included in the text, with the county only being added in cases where no large, well-known town can be cited, the relevant counties (for the period since the last major re-organisation in 1995-8) are to be found in the gazetteer of sites in Appendices 1 (in site number order) and 2 (in 'county' order). Note that, as mentioned above, the extensive studies of plant macrofossils from naturally-formed Holocene (post-glacial) deposits, undertaken as part of the English Heritage-funded *North West Wetlands Survey*, are not considered in this section (not least because they are from sequences often spanning several cultural periods, and usually representing a good part of the Holocene); they are discussed further briefly in the themtic section below.

5.1 Early hunter-gatherers: the Upper Palaeolithic (c. 500 - 10 ka BP1)

Given the maximum extent of the Devensian (last glaciation) ice sheet over much of our area—see, for example figs. 5.2 (p. 92) and 5.16 (p. 115) of Huddart and Glasser (2002)—and the effects of the intense cold of periglacial environments experienced

in those areas not actually glaciated, it is not surprising that deposits of Pleistocene (*sensu stricto*) date are few and largely limited to locations where protection from subsequent erosion was assured. Thus caves provide the bulk of the palaeoenvironmental evidence, mainly in the form of pollen and vertebrate remains. A rare example of survival of subaerial organic deposits from an interglacial period is the raft of peat at Hutton Henry *DUR* whose content of pollen was investigated by Beaumont *et al.* (1969); it was dated to the last (Ipswichian) interglacial.

Obviously there are many parts of the north of England where deposits of latest Upper Palaeolithic date carrying a palaeoenvironmental record survive: the late-glacial sequences of most of the larger lakes and the basal parts of many peatland sites, for example. These are better considered with regard to their record of pollen (to be considered in a separate review), however, since plant macrofossils are rarely studied in any detail from such deposits (often only via the 'washings' from samples prepared for pollen analysis). One exception here is the sequence at **Farm Wood Quarry 57**, at Chelford, near Alderley Edge *CHE*, where deposits formed during an early Devensian interstadial were studied. Plant macrofossils included abundant trunks of birch (*Betula*), cones and trunks of pine (*Pinus sylvestris* L.) and cones and needles of spruce (*Picea abies* (L.) Karsten), as well as wood and a large upright stump of this last species—a tree which would have been familiar to Palaeolithic peoples in lowland northern England at this period but which did not recolonise following the main period of Devensian glaciation (and which was presumably not seen in the country again until it was reintroduced, perhaps in the mid 16th century CE).

For the latest part of the Upper Palaeolithic, the late-glacial and earliest post-glacial, the sequences of deposits at Church Moss, Davenham, near Northwich *CHE* (**Church Moss 95**), provided both plant and insect macrofossils and pollen in peat sediments forming perhaps as early as the middle of the Late-Glacial Interstadial (pollen zone II) and continuing unbroken through the succeeding Loch Lomond Interstadial and early Flandrian. The plant macrofossils provided the basis for interpreting local environments as a context for the study of insect remains, which themselves offered an opportunity to investigate climatic change (particularly temperature), and reinforced the evidence for a disparity between colonisation/succession rates of insects and plants during periods of dramatic climatic change of the kind represented here.

'Open' sites of this period where artefacts survive in context with plant remains are very rare in N England: one is at Messingham, near Scunthorpe *NLI*, where a peat bed within cover sands, dated to 10,280±120 bp, was examined by Paul Buckland (**Messingham 1**; **Messingham 2**) and more recently by Carrott *et al.* (**Messingham EAU 97/48**—presumably part of the same deposit but at a different location within the same general area). Although analyses of pollen and insects were carried out in the earlier studies, no formal examination of the macrofossil plant remains in the peats was made; Buckland noted the presence of abundant moss (*Drepanocladus*) fragments and sedge (*Carex*) nutlets, however, with a single leaf of dwarf willow, *Salix herbacea* L. (only tentatively identified in his earlier account), in accord with the invertebrate evidence for a very cold climate obtaining at the time the deposit formed. In the latest study, samples of peat from each of two trenches were examined; the

strongly humified material consisted mainly of the moss *Scorpidium scorpioides* (Hedw.) Limpr., with sedge nutlets and herbaceous detritus, and a little *Drepanocladus* in one sample (in which some of the sedge nutlets were charred, though whether this was the result of human activity or a natural fire on a drying peat surface could not be ascertained).

5.1.1 Summary and future prospects

Given the effects of repeated glaciations, prospects for future study of plant macrofossils from deposits of this early date in the northern region are clearly limited and so every opportunity to investigate deposits relevant to the Palaeolithic period should be grasped, especially where material associated with human occupation is discovered.

5.2 Later hunter-gatherers: the Mesolithic (c. 10 - 5.5 ka BP) (Fig 1)

By contrast with the Palaeolithic, the Mesolithic period in the northern region is represented by some of the most important sites, in both archaeological and palaeoenvironmental terms, in the British Isles (if not within a much wider context). Most notable are those at the eastern end of the Vale of Pickering between Seamer and Flixton *NYR*. Here, Mesolithic peoples lived at least seasonally on the shores of lakes which represent the remnants of the former Lake Pickering, a body of water formed by the damming of glacial meltwaters in the Vale by a ridge of glacial material to the east. Although intensively investigated over many years, most of the palaeoenvironmental studies at the various sites in this area have focussed on pollen analyses and studies of vertebrate remains. Plant macrofossils, though forming the matrix of peats and often present in other sediments in these early Holocene sequences, have largely been unrecorded (except in terms of the peat lithology), perhaps because it was felt that they would shed little light on human activity or add substantially to the evidence for environment from other sources. Clark (Star Carr 49-50) makes somewhat casual mention of some plant remains in respect of possible plant use by Mesolithic occupants of site—a few weed and aquatic taxa (sometimes perhaps serving as food), fungi (perhaps for tinder, cf. Corner's discussion in Star Carr (preliminary report)) and birch bark rolls (though these form naturally where birch bark decays and falls from a trunk or branch). Even the hazel nuts reported in the monograph (p. 60) appear to have been nibbled by water-voles or squirrels and may have been intrusive into the early Mesolithic deposits that are of primary archaeological interest.

A more recent attempt to extract evidence for plant use at Star Carr—in the form of charred remains—involved processing 2000 litres of sediment, but no charred remains were recovered (Star Carr Site VP D and Star Carr Site VP E). Other recent investigations (Star Carr 85 & 89), however, have established the presence of charcoal, both macroscopic and microscopic, in deposits interpreted as lying at the centre of the lake and at its margins. This has largely proved to be stem and leaf material of reed, *Phragmites australis* (Cav.) Trin. ex Steudel. The results of Hather's detailed analysis of this material are used to support the contention that burning of

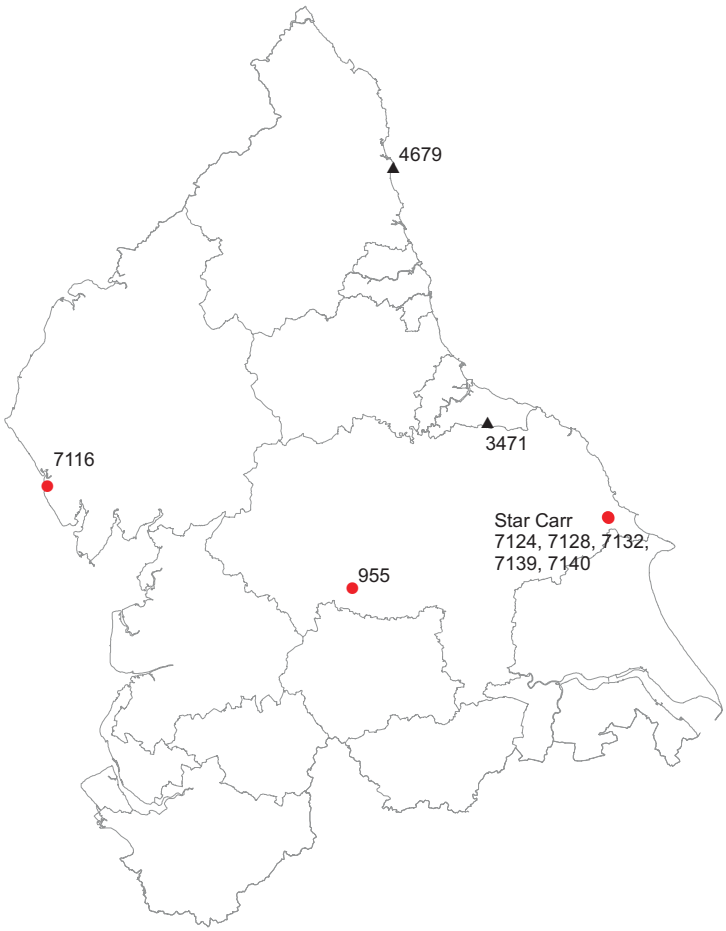

Fig 1: Sites with archaeobotanical studies of material of Mesolithic and ?Mesolithic date (shown as triangles) referred to in the text and for which reliable grid references could be found

Key: 955—Blubberhouses Moor 59; 3471—Highcliff Nab DEAR 9/96; 4679—Low Hauxley DEAR 6/95; 7116—Williamsons Moss 1; 7124—Star Carr 85 & 89; 7128—Star Carr (preliminary report); 7132—Star Carr 49-50; 7139—Star Carr Site VP D; Star Carr Site VP E (7140)

the reedswamp perhaps took place in March or April, though it should be noted that there is some ambiguity about the 'age profile of the reed leaf fragments'. Thus at one point (p. 185) we are assured that 'most [of the reed remains] represent fragments of mature leaf or one of three different tissue types derived from the culm', whilst elsewhere, and specifically in the conclusions (p. 196), it is asserted that 'the immature nature of most of the tissues of *Phragmites australis* indicates that the reeds were burnt while they were still juvenile, early in the year'. Other charred material included fruits of sedges and saw-sedge (*Cladium*), and bud-scales of *Populus* (probably aspen, *P. tremula* L.), with some willow/aspen/poplar wood charcoal, the remains from woody plants being taken as evidence for burning of overhanging trees. The main value of these remains from the five sequences investigated, together with those that were uncharred (essentially all taxa growing in or by the lake) lies in mitigating to some extent what Dark (**Star Carr 85 & 89**, p. 112)

describes as the limitations of studies focussed solely on pollen analysis, in helping to distinguish ‘between changes in the local wetland vegetation and those on [adjacent] dry land’. Use of analyses of microscopic charcoal and loss on ignition (to record influx of mineral sediment) were critical at this site in showing—when combined with the evidence for macroscopic charcoal—that the burning of reedswamp vegetation (by humans rather than through a natural fire) occurred at two phases, the first at around 10920 BP (using the revised chronology of Dark 2000). Then at about 10740, by which time the reedswamp had recovered, a second phase of local burning took place.

Another reconsideration of the Star Carr evidence, though not one involving further sampling and analysis of sediments, is Pitts’s (1979) multivariate approach to the lithics, from which he postulated (p. 33) that ‘Star Carr was not a total settlement, but a specialized industrial complex’ devoted to the working of antlers and hides. According to Pitts, the waterside location provided a ready supply of water for processing both kinds of raw material and some of the plants identified as macrofossils during the original excavations might have served in the tanning process for the hides—two of the mosses, the bracket fungi and (perhaps most convincingly) the birch bark. It would be interesting to know (from the ethnographic literature) whether hides can be cleaned and preserved in open bodies of water rather than the kinds of closed pits, tanks or other vessels that were usual in the historical period. Pitts also revisited briefly the question as to whether some of the remains recorded as macrofossils may have served as food though this essentially remains as open as when it was discussed by Clark (1954) and then by Mellars (1976).

Problems of interpreting material that might be entirely naturally deposited and, in fact, have no bearing on human activity are exemplified at another site: **Williamsons Moss 1** in the Eskmeals area, *CUM*. Here material interpreted as a brushwood timber lattice and earth platform included birch bark which might have been used as flooring, evidence which is described by the excavator as ‘without precedent in the British Mesolithic’. No formal analyses of macroscopic plant remains appear to have been undertaken in connection with these deposits, however.

At Low Hauxley, on the Northumberland coast (**Low Hauxley DEAR 6/95**), peats and an old ground surface of presumed Mesolithic date underlying a Bronze Age cairn contained plant remains which offered no evidence for human activity, except perhaps in the case of some wood charcoal; the peats were formed by aquatic or subterrestrial deposition.

Considerable archaeological evidence has accrued for Mesolithic activity on the North York Moors, though most of the environmental evidence relevant to a study of this period in that area is, again, palynological. At a few sites, macroscopic wood charcoal has been studied, as for example at White Gill, Westerdale Moor *NYR* (Dimbleby 1988)—where the material was mostly oak (*Quercus*), but also included some alder (*Alnus*) and in one case also hazel (*Corylus*) and birch (*Betula*)—whilst not far away, at two sites near Guisborough *CLV* (**Highcliff Nab DEAR 9/96** and **Highcliff Nab 95**), wood charcoal (including, at the former site, that of heather, *Calluna vulgaris* (L.) Hull) together with some peat, was the only plant material

recovered during programmes of bulk-sieving of Mesolithic deposits. Charcoal is typically associated with later Mesolithic pre-*Ulmus* (elm)-decline disturbances ('PUDD's of Simmons *et al.* 1989) detected in the pollen records, but of course much of the material (certainly the 'MI' category, <180 µm, of Simmons and Innes 1996) is usually too small to be identifiable except as charcoal.

On the Pennine Hills, evidence of Mesolithic activity is known from many sites (for a recent survey, see Spikins 1999), though evidence of macrofossil plant remains is sparse. At **Blubberhouses Moor 59**, west of Harrogate *NYR*, for example, charcoal of oak and ?birch and '6 grammes' of charred hazel nutshell fragments were recorded.

As is the case for the latest part of the Palaeolithic period, there is an abundance of 'natural' deposits recording environments during the Mesolithic—in both lowland and upland areas, though rarely at 'middle altitudes'. Again, studies of plant macrofossils are few and for the most part, of course, they record assemblages of fossils mainly representing wetland habitats. Examples from open sections are from **Ripon Quarry 98**, from the Ure valley on the eastern flanks of the Pennines near Ripon *NYR*, where a largely wetland flora was investigated. In the east of the region, peats encountered in the upper reaches of the Hull valley at **West Beck EAU 96/10**, near Driffield *EYR*, were, as is often the case, dominated by evidence for alder carr (fen woodland).

No doubt there is also much evidence for the Mesolithic period buried under later alluvial deposits in the major river valleys of the area, some of which—like that from relatively shallow deposits at the eastern end of the Vale of Pickering—will carry artefactual material in association with a palaeoenvironmental record, though this is unlikely to be recovered unless opportunities for large, open-area (and probably deep!) excavations arise. Current exploitation of gravel in the area to the S of Wykeham, E of Scarborough, is allowing sections in late-glacial and early Holocene river deposits, often with organic deposits, to be explored, though without an overt archaeological context.

5.2.1 Summary and future prospects

Well-preserved deposits of Mesolithic date have been encountered in several areas and much is likely to be available as a buried resource for the future (though the decay of peats at the classic Vale of Pickering sites through recent land drainage must give rise to concerns that in this area, at least, long-term survival is by no means guaranteed). As the recent example of Howick *NHU* (Waddington 2003) demonstrates, however, Mesolithic occupation in the region is not confined to wetland margins and survival of uncharred plant material is not guaranteed at this period. Given the national, if not international importance of the Mesolithic in Northern England, and particularly in the light of our very poor understanding of the way in which plants may have been exploited by these early peoples, any newly discovered occupation sites should be subjected to careful sampling and investigation of plant (and other) macrofossils, though the evidence for direct plant use seems unlikely to be very easy to establish. Archaeobotanical examination of deposits like those revealed at Williamsons Moss (Eskmeals), where occupation

surfaces are thought to be present and waterlogged survival is good should be a *sine qua non* of post-excavation.

5.3 The rise of agriculture: the Neolithic and earlier Bronze Age (5.5 - 3.25 ka BP)

5.3.1 Neolithic (Fig 2 and Table 3)

Evidence for plant remains from occupation sites of Neolithic date has generally been very sparse in the northern region of England (cf. Table 3), though a number of interventions in the past decade or two has yielded rather more substantial quantities of material, not least because of the institution of more rigorous programmes of sampling and sieving of deposits from occupation sites. The tendency has been for such sites to be located on free-draining substrates in which fossil material other than that preserved by charring is absent. Obviously, as for the preceding early prehistoric periods, many wetland sites record palaeoenvironmental evidence for the Neolithic *implicitly* in peat sequences, though none of the main areas of lowland wetland has evidence of Neolithic activity to match that seen in the Somerset Levels, for example.

One feature of many Neolithic occupation sites is the presence, often in quantity, of charred hazel nutshell (a phenomenon noted by Moffett *et al*. (1989) for sites in S England and Wales). From the site in our region with perhaps the largest corpus of material of this date (**A1 Walshford-Dishforth DEAR 4/93**, at Roecliffe, near Boroughbridge *NYR*), material from 84 samples from the fills of shallow pits and ?post-holes included abundant charred hazel nutshell fragments—in one case as much as 1 kg from a bulk sample. These were accompanied in the overall assemblage by many charred crab apples (*Malus sylvestris* Miller) and small amounts of cereals, as well as seeds of blackberry (*Rubus fruticosus* agg.), elderberry (*Sambucus nigra* L.), sloe (or blackthorn, *Prunus spinosa* L.), rose (*Rosa*) and hawthorn (*Crataegus*), giving some indication of one aspect of the food-base of the people (comprising, as expected, both cultivated crops and wild-collected foods). In the one sample with abundant cereal grains, most were hulled (and in some cases naked) barley (*Hordeum*), with some emmer wheat (*Triticum dicoccon* Schrank), and there were also some emmer glume-bases. 'Tubers' of the 'onion couch' grass (*Arrhenatherum elatius* ssp. *bulbosum* (Willd.) Schübler & Martens.), abundant in two samples at this site, may represent burnt grassy material perhaps from fuel. It was concluded that the pits contained refuse rather than stored materials.

At Caythorpe *EYR*, at the E end of the Yorkshire Wolds (**Caythorpe Pipeline**), abundant charred hazel nutshell was recorded in seven of nine (?storage) pits of Neolithic and Bronze Age date; two Neolithic pits yielded considerable amounts of charred cereal grain, dominated by ?emmer wheat, plus a few grains of barley (and even traces of bread wheat, *Triticum 'aestivum'*[2], grains and a single fragment of chaff of this type of wheat in one of the pits); there were also moderate numbers of apple/pear (*Malus/Pyrus*) pips and whole fruits of crab apple.

[2] There is great variation in the way in which wheat identifications are made and presented in reports., cf. Table 3.

Abundant hazel nutshell (together with one grain of 6-row naked barley (*Hordeum vulgare* L.), one of oats (*Avena*), and one unidentified cereal grain, plus a few weed seeds) was recorded at **Thirlings 73-81**, near Wooler *NHU*. Nearby, at **Coupland Enclosure (Milfield basin)**, bulk samples of 20-30 litres from three pit fills and a primary dump deposit revealed the regular occurrence of charred hazel nutshell with some modest numbers of emmer glume-bases and spikelet forks, as well as a few emmer grains, a single ?spelt (*Triticum* cf. s*pelta* L.) glume-base, and even a tentatively identified bread wheat grain, along with traces of barley grains. There was an early date for these cereals (cal. approx 3.8-4k BCE). On the basis of this evidence, combined with that from pollen analyses of deposits in the vicinity, the archaeobotanist concerned (JPH) argued for the Milfield basin as a Neolithic 'bread basket'. Clearly the fossil evidence is somewhat localised, since examination of 110 litres of deposits from two other excavations in the area (considered together under **Milfield Basin ASUD 678**), resulted in no more than one charred grass caryopsis from the first site and a few charred hazel nutshell fragments from the second. Elsewhere in Northumberland, a site at **Sandyford Quarry Field 97**, near Bolam Lake, to the W of Morpeth, yielded some nutshell from two early Neolithic pitfills together with single charred cereal grains identified as emmer, ?wheat and cereal, with a very few other remains.

Sites with considerable quantities of charred cereals but little other plant material include those at **Brandesburton ASUD 662** in N Holderness (*EYR*), where an evaluation of a late Neolithic buried soil and a pit fill yielded 'large numbers' of well preserved grains and chaff, mainly barley with some wheat (probably emmer), other contexts producing only a little poorly preserved grain or proving barren. ('Large' in this case meant 10 'indet.' cereal grains and one wheat glume base—emphasising a basic problem of translating quantitative information for the purposes of assessments and evaluations and the difficulty of interpreting the significance of remains in a particular assemblage; for another worker, perhaps more familiar with prehistoric grain assemblages, such a group would probably be termed 'small' or 'interpretatively limited'.)

More typical of the quantities of plant material from Neolithic sites in northern England are the following, all from the eastern side of the region (in no particular order):

> Apple/pear seeds, with hazel nut and barley, were found in trace amounts at **Nosterfield 95 DEAR 13/96**, near Ripon *NYR*. From the first of three later studies arising from excavations in the vicinity, **Nosterfield 97 HA (I)**, most samples, which were from the fills of (?cooking) pits, yielded at least a little charcoal and other charred material (rare barley grains, two thought to be naked barley, and one wheat grain). About half the contexts yielded hazel nutshell and one feature fill produced abundant roundwood charcoal and some spines which were thought to be gorse, *Ulex*, an unusually early record for the use of this plant. From **Nosterfield 97 HA (II)**, a series of five BS samples yielded charcoal and a single charred flax (*Linum usitatissimum* L.) seed, an early record for *this* plant. At a fourth excavation in this area, **Thornborough 99 HA**, 31 bulk samples (whose context was not recorded in the evaluation report, produced a single barley grain,

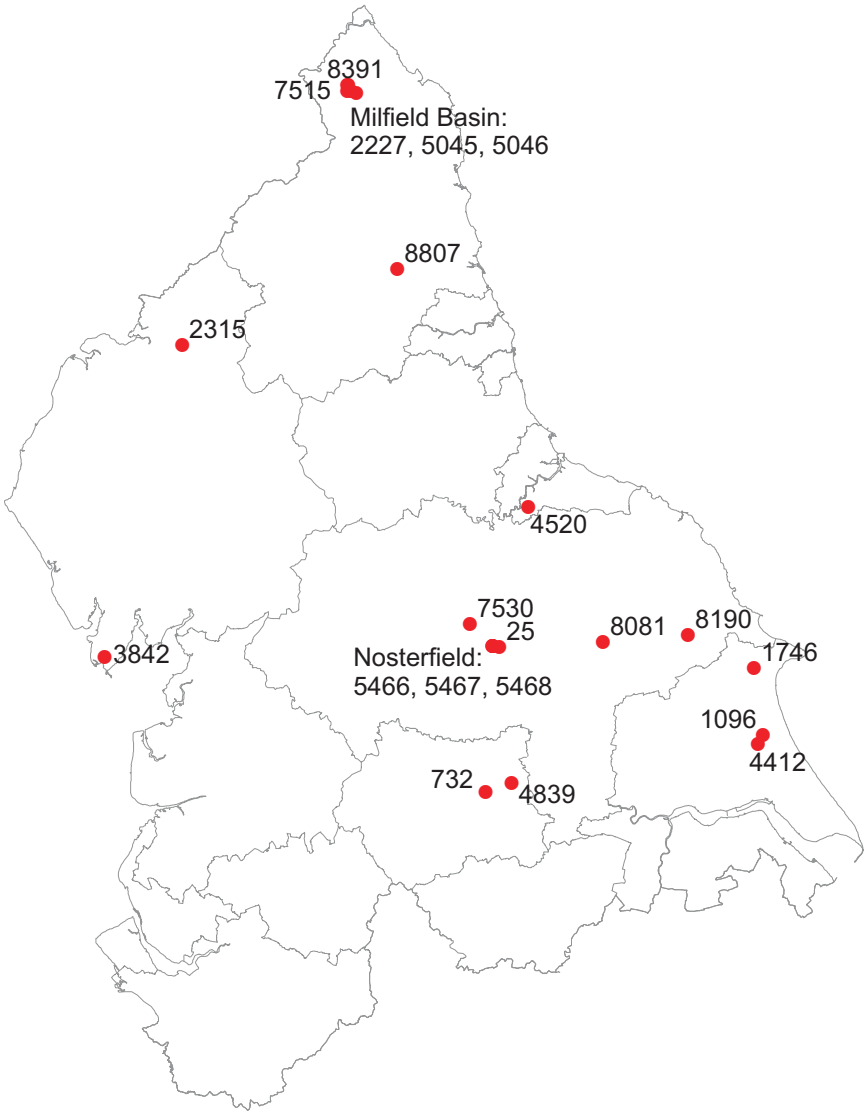

Fig 2: Sites with archaeobotanical studies of material of Neolithic date referred to in the text and for which reliable grid references could be found

Key: 25—A1 Walshford-Dishforth DEAR 4/93; 732—Bell Hill EAC 76/01; 1096—Brandesburton ASUD 662; 1746—Caythorpe Pipeline; 2227—Coupland Enclosure (Milfield basin); 2315—Crosby By-pass DEAR 35/94; 3842—Holbeck Park Ave OAN; 4412—Leven-Brandesburton EAU 94/15; 4520—Little Maltby Farm DEAR 47/97; 4839—Manor Farm (A1-M1) 92-8; 5045—Milfield Basin ASUD 678; 5046—Milfield sites; 5466—Nosterfield 95 DEAR 13/96; 5467—Nosterfield 97 HA (I); 5468—Nosterfield 97 HA (II); 7515—Thirlings 73-81; 7530—Thornborough 99 HA; 8081—Wath Quarry EAU 2001/34; 8190—West Heslerton 78-82; 8391—Whitton Hill 82-3; 8807—Sandyford Quarry Field 97

a little wood charcoal, and two charred rhizome fragments (the last perhaps representing the charring of turves).

A very little charred hazel nut, with oak charcoal and modern (uncharred) weed seeds were recorded at **Leven-Brandesburton EAU 94/15** in Holderness *EYR*.

A trace of charred hazel nutshell was recorded at **West Heslerton 78-82**, NE of Malton *NYR*.

At **Whitton Hill 82-3**, near Wooler *NHU*, five samples of various sizes yielded only traces of barley (including one naked 6-row grain) and ?spelt chaff, a single emmer grain, and a few charred hazel nutshell fragments.

At **Cottage Farm CfA 95/2001**, Sewerby, near Bridlington *EYR* (not shown in Fig 2), extensive evaluation of samples associated with Neolithic occupation (171 were examined) yielded what were thought to be early records for pea (*Pisum*) as well as some hulled barley, ?emmer, and bread wheat and hazelnut and crab apple remains (50 of the samples contained at least some plant material). Radiocarbon dating of some of the fossils subsequently revealed that the peas were probably all medieval in date (and doubt was cast on date of the bread wheat), though the nutshell was Neolithic and the apple remains are also likely to be so. This points an important moral for the study of plant remains from what were in this case shallow deposits revealed just beneath the modern plough soil and where there was no evidence from artefacts from manuring to indicate the presence of material of late date.

From **Little Maltby Farm DEAR 47/97**, Ingleby Barwick, near Stockton-on-Tees *CLV*, samples from a series of features associated with occupation yielded only traces of charred hazel nutshell and sloe stones and some charcoal.

At an excavation at **Wath Quarry EAU 2001/34** near Pickering *NYR*, on the southern edge of the North York Moors, three samples from mid-late Neolithic pit and ditch fills yielded only a little charred hazel nutshell.

From a site near Leeds, at Stourton (**Bell Hill EAC 76/01**) *WYR* two fills of a pit yielded moderate amounts of charred cereal grains, including wheat and barley, and some charred hazelnut.

There appear to be few records of Neolithic material from west of the Pennines (cf. Fig 2). Some material from **Crosby By-pass DEAR 35/94**, near Carlisle, originally thought to be of this date has subsequently proved to be Bronze Age (see below) on dating some of the grain by radiocarbon assay. Further west, at **Holbeck Park Ave OAN**, Barrow-in-Furness *CUM*, some samples, totalling 80 litres and examined as part of an evaluation of a single feature fill deposit, yielded some charred hazel nutshell, one charred wheat grain, and quantities of wood charcoal.

In a completely different depositional and archaeological context, Gilbertson reports some evidence from worked timbers of Neolithic date at **Skipsea Withow Mere (a)**, on the N coast of Holderness *EYR*, whilst at the same site (**Skipsea Withow Mere (b)**; **Withow Gap EAU 94/37**), there was evidence from plant remains (and a variety of other sources) for the palaeo-environmental history of this former mere and, via the 'worked wood' for the activities of beaver (*Castor fiber* L.; see McAvoy 1995). On the west coast, at **Storrs Moss 65-7**, near Carnforth *LAN*, some worked wood, apparently of Neolithic date, within 'zone VII' peats, included alder, alder buckthorn (*Frangula alnus* L.), oak, willow (*Salix*) and pine (*Pinus*, presumably *P. sylvestris* L.)

and there were local concentrations of hazel nutshell. The other macrofossil remains noted were from wetland taxa contributing to the growing peats.
As was the case for the Mesolithic period, many archaeological deposits from the Neolithic are likely to be buried within the major valley systems of the region by later alluvium. Their recovery is very much a matter of good luck, as, for example, at a site close to the heart of York (in St Paul's Green, Holgate), where trenching for services revealed a sequence of well-preserved peats, including 'brown-moss'-dominated material (probably filling a depression in the York moraine) from which a Neolithic polished limestone axe was recovered. Sadly, no provision for study of the organic deposits could be made under the terms of the planning consent in operation and the long-term survival of the pats (given the intrusion into them of service trenches back-filled with crushed limestone) is not assured. Another example of these kinds of small-scale prehistoric peats whose existence could not be predicted from the nature of overlying sediments comes from a site in suburban Hull (**Saltshouse Rd 91 EAU 91/26**), where a peat forming the lowermost deposit in the trench yielded woody and herbaceous detritus including oak and alder wood, alder cones and fruits, oak buds and seeds of holly and rowan; altogether these remains appeared to represent a natural flora including woodland, grassland and wetland taxa, suggesting the peat formed in a shallow pond or fen carr. Radiocarbon dating indicated a later Neolithic or early Bronze Age date.

In summary, we have a growing body of evidence for plant use in the Neolithic but the number of sites and quantities of material are still vanishingly small and it is surely justified to sample rigorously on any site where material of this date is known or suspected, especially where deposits with waterlogged preservation are located in the vicinity of Neolithic occupation.

5.3.2 Early Bronze Age (and unspecified Bronze Age) (Fig 3 and Table 4)

In terms of quantity and quality of material, the Bronze Age, and especially the earlier part, is hardly better served than the preceding Neolithic. Using a broad chronological definition, there are more sites of this date for which published archaeobotanical studies have been undertaken to the W of the Pennines, but almost all of them (whatever the part of the region) relate to excavations of funerary monuments and are virtually all concerned with charcoal (e.g. at **Broomrigg 48-9**, between Carlisle and Penrith *CUM*), although occasionally other material is reported, as for example at **Allerwash 72**, near Hexham *NHU*, where one seed and some stem/leaf remains of rush (*Juncus*) were found with some oak charcoal in the fill of an Early Bronze Age cist, around the skeleton and a dagger (though the mode of preservation of the rush remains is not explicitly stated in the published report). At **Crawley Edge 75-7**, Weardale *DUR*, material from an urn in one of two early Bronze Age cairns, and from soil beneath one cairn, comprised only oak charcoal, apparently mostly from branches up to 100 mm diameter.

More recently, excavations at a site encountered along the route of the British Petroleum Teesside-Saltend Ethylene Pipeline (TSEP) near Hull—**Low Farm EAU 2002/08**— involved examination of a pit fill dated by radiocarbon assay of uncharred seeds of *Sambucus* and *Rubus* spp. to the early Bronze Age (cal. 1690 to 1450 BCE, Beta-161365), The assemblage mainly comprised aquatics and damp ground taxa,

indicating (along with insect remains) a landscape which was dominated by human activity, presumably through agriculture, and probably including grazing, but with no evidence for arable cultivation.

Results from studies at some other sites of late Neolithic to early Bronze Age date include the following:

From **West Heslerton (draft plant report)**, near Malton *NYR*, 'large quantities of hazelnut shell were recovered from a Beaker pit in area 2DC (context 156), along with several barley grains'.

At **Cheviot Quarry EAU 2000/78**, Milfield, near Wooler *NHU* (not shown in Fig 3 but close to the other Milfield Basin sites), an evaluation of 35 contexts of prehistoric date, perhaps mainly late Neolithic to early Bronze Age, found that 'apart from [some] charcoal and a little charred hazel nutshell, plants likely to be connected with ancient human occupation were confined to a total of three charred cereal and ?cereal grains' (the amount of sediment processed for any sample varying from 2 to about 45 kg).

Material from a variety of contexts, including pit hearths, associated with two burnt mounds dated to the 4th millennium BP at **Titlington Mount 92-3**, Hedgeley, near Alnwick *NHU* was very sparse and all charred; there were the merest traces of barley and wheat with a little hazel nutshell.

The following studies were made of material dated no more closely than 'Bronze Age':

From the south-east part of the region:

Excavations at **Manor Farm (A1-M1) 92-8**, near Garforth *WYR*, yielded one barrow ditch fill with traces of spelt and ?emmer grains.

At **Bell Hill EAC 76/01**, near Stourton, Leeds, nine BS samples from the fills of three ring ditches and a pit yielded low densities of charred grain, mostly unidentified but including some wheat; charred hazel nutshell was also recorded.

From a site on the Yorkshire Wolds at **Cowlam Wold Barrows 68** *EYR* unidentified charcoal and charred hazel nutshell was recovered from various contexts (including those from previous excavations at the site in the 19th and early 20th centuries).

A 'natural' peat deposit at **North Duffield EAU 94/34**, in the Derwent Valley SE of York gave evidence from plant macrofossils for woodland, evidence rarely recorded other than via pollen analysis of peat sequences. Organic deposits from several metres beneath the modern surface at St George's Fields, York (near the modern confluence of the rivers Ouse and Foss), also provided a Bronze Age date (unpublished report); these peats were rich in wood and other remains and probably represent debris collecting in a riverside swamp. They indicate the depth

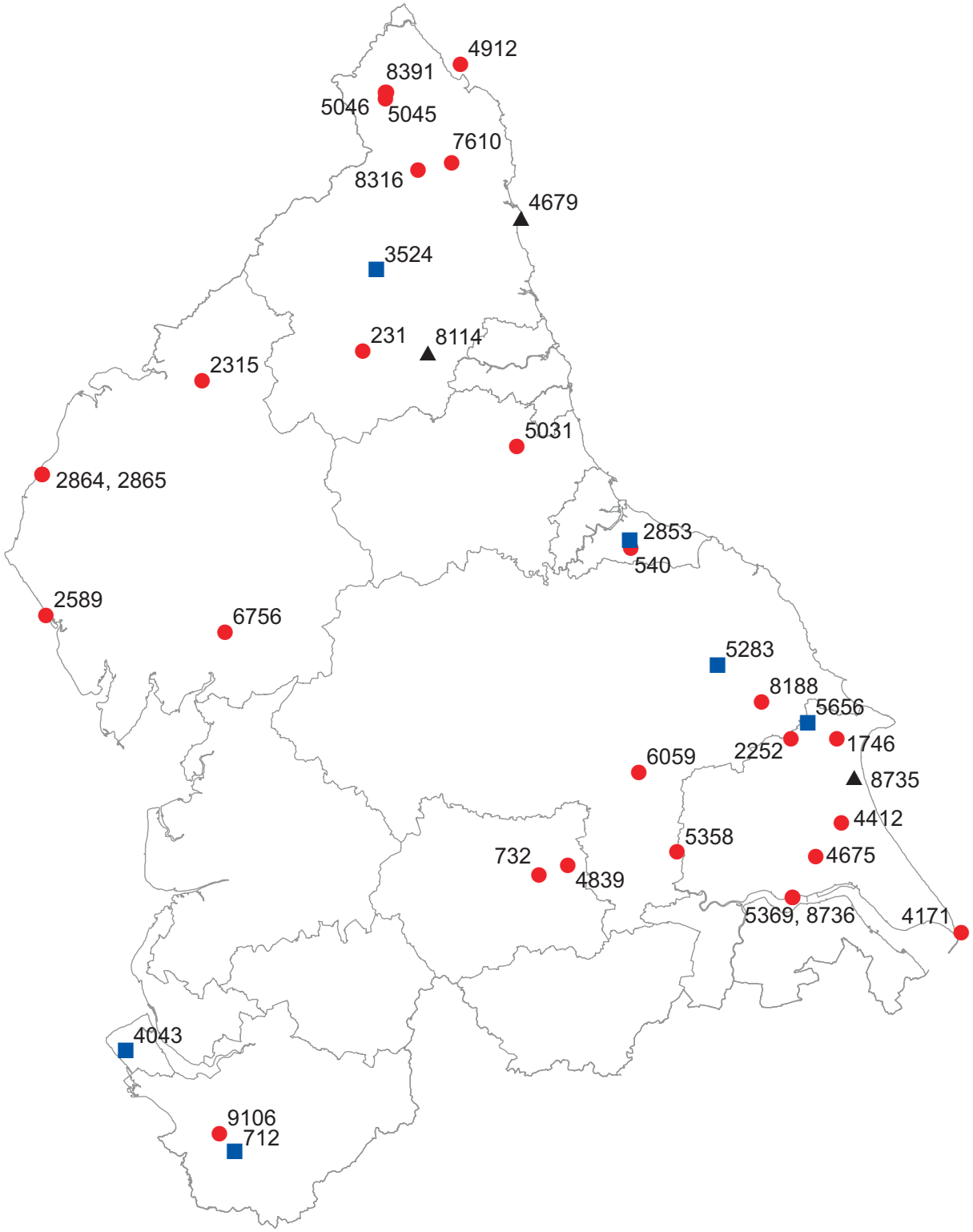

Fig 3: Sites with archaeobotanical studies of material of Bronze Age date (blue squares: specifically late *Bronze Age) referred to in the text and for which reliable grid references could be found; sites marked with a black triangle have relevant material only tentatively dated to the Bronze Age*

Key: 231—Allerwash 72; 540—Barnaby Side DEAR 24/96; 712—Beeston Castle 68-85; 732—Bell Hill EAC 76/01; 1746—Caythorpe Pipeline; 2252—Cowlam Wold Barrows 68; 2315—Crosby By-pass DEAR 35/94; 2589—Drigg LUAU; 2853—Eston Nab 84-7; 2864—Ewanrigg 83-7; 2865—Ewanrigg AML 85/88; 3524—Hallshill 81-6; 4043—Irby CfA 31/2002; 4171—Kilnsea Boat 96; 4412—Leven-Brandesburton EAU 94/15; 4675—Low Farm EAU 2002/08; 4679—Low Hauxley DEAR 6/95; 4839—Manor Farm (A1-M1) 92-8; 4912—Marygate (Lindisfarne) ASUD 926; 5031—Milburngate 83; 5045—Milfield Basin ASUD 678; 5046—Milfield sites; 5283—Newbridge Quarry EAU 2000/27; 5358—North Duffield EAU 94/34; 5369—North Ferriby Boats (artefacts); 5656—Paddock Hill (Octon) AML 14/93; 6059—Rawcliffe Moor EAU 96/27; 6756—Sparrowmire Fam LUAU; 7610—Titlington Mount 92-3; 8114—Well House Farm 80; 8188—West Heslerton (draft plant report); 8316—Wether Hill CfA 19/2001; 8391—Whitton Hill 82-3; 8735—Round Hill 1880-1; 8736—North Ferriby Boat No 3 63; 9106—Brook House Farm (Cheshire)

at which much early prehistoric archaeology may be buried within alluvial systems in the region.

From the north-east of the region:

A site at **Barnaby Side DEAR 24/96**, near Guisborough *CLV*, revealed a Bronze Age barrow subsequently cut by an Iron Age field boundary or palisade. Four bulk samples from features associated directly with the barrow produced heather and gorse charcoal, possibly a result of clearance prior to and during the building of the barrow.

At **Marygate (Lindisfarne) ASUD 926**, off the Northumberland coast, material from one slot fill was carried forward to analysis following assessment; the one 13 litre sample gave a rather rich assemblage of charred grain and some oat floret bases, two flax seeds, grass caryopses and weed seeds. There were also traces of hazel nutshell. The grains were mainly oats with a little barley, wheat and ?bread wheat, though the largest group were those which remained unidentifiable. This represents an early record for bread wheat, though the possibility that it is a contaminant cannot be ruled out, as observed by van der Veen (1992) in the context of later prehistoric sites in NE England.

Material associated with a Bronze Age food vessel at **Wether Hill CfA 19/2001** comprised a single grain of barley from the fill and 15 grains or impressions, mostly barley (including hulled grains) from potsherds. On the basis of the position of the grains within the fabric of the sherds, it is concluded that a likely use of the grain was a tempering for what was a clay of poor firing quality.

From the north-west of the region:

At **Drigg LUAU**, on the south-west coast of Cumbria, six bulk samples from a burnt mound in a cliff section containing peaty deposits yielded abundant uncharred blackberry (*Rubus fruticosus* agg.) and rush (*Juncus*) seeds; a monolith from the section produced some unidentified grass (Gramineae) caryopses and more blackberry seeds.

At a site at **Sparrowmire Fam LUAU**, near Kendal *CUM*, there were only traces of remains of no real interpretative value from 20 litres of deposits associated with a Bronze Age burnt mound. The wood charcoal present was mainly oak and there were two unidentified cereal grains. The presence of oospores of freshwater algae (Characeae) was consistent with deposition of water (or of sediment from a lake or pond?).

At **Crosby By-pass DEAR 35/94**, near Carlisle, large numbers of samples yielded only a very little poorly preserved grain and chaff (including barley).

5.3.3 Summary and future prospects

Sites with evidence for Neolithic and earlier Bronze Age occupation are scattered across the region but have mostly yielded only rather a few macrofossil plant remains, mainly charred nutshell and cereal grains, as tends to be the case nationally. This partly reflects the kinds of sites investigated—those with evidence for funerary or other monuments tend not to accumulate the same quantities of ethnobotanically significant remains as sites with domestic occupation. Clearly deposits of this date remain a very high priority for study since the evidence is so patchy, both spatially and with regard to site type.

5.4 Diversification and intensification: later Bronze Age and Iron Age (c. 3.25 - 1.9 ka BP)

5.4.1 Later Bronze Age and Bronze Age/Iron Age material

Most of the plant material from occupation sites with evidence for Bronze Age activity in the region comes from contexts dated to the later part of the period (or has been broadly dated as Late Bronze Age/early Iron Age, see below). The largest study undertaken, at least in terms of the quantity of material processed, must be that at **Beeston Castle 68-85**, between Chester and Nantwich *CHE*, where 23 samples (totalling 710.5 litres) of pit fill deposits of late Bronze Age date were examined. They yielded low concentrations of charred remains (no taxon achieved an estimated mean concentration greater than two ‘items’ per litre), including—most ‘abundantly’—grains and glume-bases identified as emmer/spelt, emmer, and spelt, with a few grains of barley and a variety of weed seeds.

At **Ewanrigg 83-7**, near Maryport *CUM*, a series of cremation pits and a ?storage pit (dated 1400-1000 BCE) were studied. The plant remains from the latter comprised large numbers of hulled 6-row barley grains and with some culm nodes (the ‘knees’ of the flowering stalks), perhaps from charred straw lining the pit; there were also moderate numbers of ?spelt wheat glume-bases (an early date for this taxon, if spelt is, indeed, the type of wheat concerned).

At **Paddock Hill (Octon) AML 14/93**, on the Yorkshire Wolds, near Driffield, seven samples from various deposits associated with a ring fort of late Bronze Age date gave evidence of several cereals: emmer, spelt, and bread-type wheats and 6-row

barley. From the chaff, emmer seems to have been the commonest wheat present, but spelt glume-bases were also recovered.
A third site of late Bronze Age date yielding *relatively* large amounts of plant material is **Eston Nab 84-7**, near Middlesbrough, where three samples from the fills of palisade trenches produced a total of 63 items of which 28 were charred hazel nutshell fragments; there were traces of wheat and barley grains and chaff, though preservation was poor. Of six wheat glume-bases, three were determined as emmer; there were also remains of a few weeds of cultivated and waste places.

At a well-dated 'archaeological' site (**Milburngate 83**), in Durham City, dated to about 1300 BCE, there was evidence from plant macrofossils for natural woodland, evidence normally only recorded via pollen analysis of peat sequences.

An example of material of later Bronze Age date with evidence for beaver activity comes from **Briarfield Nurseries 98** (Wells and Hodgkinson 2001)/**Briarfield Nurseries (beaver)** (Wells *et al.* 2000), near Poulton-le-Fylde *LAN*; here, six fragments of hazel wood were recovered (the longest piece carrying evidence of beaver chewing at one end), along with two 'stakes' (one alder, one hazel), and also some hazelnuts.

As noted above, there are a few sites where the plant material recovered is dated broadly to the period of transition from the Bronze to the Iron Ages. Some of the richest material is that from Hallshill, near E Woodburn *NHU* (**Hallshill 81-6**), where a total of 252 litres of sediment, representing 21 samples from 11 posthole fills, one area of burning, and nine pit fills, was examined by van der Veen. Dating of grain by AMS gave general agreement with dating of charcoal by conventional radiocarbon assay, placing occupation early in the 1st millennium BCE. With the exception of the assemblage from the sample from the 'burning area', all were dominated by chaff (though the mean concentration of plant remains was less than eight items per litre, the richest assemblage reaching only 17 items per litre); there were only a few grains and weed seeds. The cereal grains included 6-row barley (?both hulled and naked), emmer, and spelt; flax and hazelnut were also recorded. The chaff mostly comprised glumes of emmer and unidentified wheat with some spelt glumes and brittle rachis fragments. Of particular interest in the study of changing crop husbandry in the late prehistoric period, the AMS dating of spelt indicated that it had been introduced to this area 'at the very beginning of the first millennium BC' (van der Veen 1992, 53).
At **Coxhoe**, near Durham City (location on Fig 4) , another site for which dating is broad ('1st millennium BC'), four samples of gully and ditch fills totalling 67 litres produced 11 glume-bases, four attributable to spelt (some perhaps emmer), single grains of wheat and barley, five identified just as 'Cereal' and two *Danthonia* caryopses.

Near York, an excavation necessitated by the laying of a large water pipeline revealed evidence for Bronze Age to Iron Age occupation at **Rawcliffe Moor EAU 96/27** (sites of this date are extremely scarce in the Vale of York). Apart from wood charcoal, plant remains were very sparse in the 11 bulk samples examined during an evaluation exercise, however, and the few weed seeds present may well have been of recent origin (the features sampled lay just beneath the modern ploughsoil). There were traces of charred hazel nutshell and sloe fruitstone fragments from one sample

and a few poorly preserved charred cereal grains were recorded. Unfortunately no closer dating of the deposits can be divined from the report.
At **Newbridge Quarry EAU 2000/27**, near Pickering *NYR*, material from three posthole fills and one pit fill was examined. One sample yielded a few charred barley grains, some rachis fragments and charred herbaceous detritus (rush/grass?); the need for more work on the plant remains was indicated but this has not so far been carried out.

From the SW area, at **Brook House Farm (Cheshire)** (shown on Fig 4), material dated stratigraphically to the late Bronze to late Iron Age included some bread wheat which proved on AMS dating to be medieval, whilst the glume wheats were dated to the 1st millennium BC (there were very low concentrations of grain from clayey sediments which posed severe problems for extraction, but these seemed to be genuinely low concentrations of grain, and with the merest traces of chaff.

5.4.2 Pre-Roman Iron Age (Fig 4 and Table 5)

5.4.2.1 Earlier Iron Age

Some of the earliest material for this period will have been considered in the preceding section—for sites where dating extends across the Bronze Age/Iron Age boundary. There are perhaps only a very few sites for which plant remains dated specifically to the Early Iron Age have been reported. At Sutton Common, near Askern *SYR* (**Sutton Common 87-93**), material from waterlogged layers with the enclosure ditch of one of two enigmatic D-shaped enclosures of Early Iron Age date gave assemblages essentially composed of wetland taxa with no very strong evidence for human activity. Samples giving assemblages of charred remains were examined from the ditch of the smaller enclosure and from the fills of seven post-holes, post-pipes or pits from the larger enclosure. A grain-rich sample from the smaller enclosure ditch yielded abundant spelt grains and glume-bases and even whole spikelets. With these were small numbers of emmer grains, glume-bases and whole spikelets, and a roughly similar number of specimens in each morphological category that could not be identified more closely than ‘spelt/emmer’. The presence of abundant awns (including tips) was taken to indicate an unthreshed, or at least unwinnowed, crop. There were traces of hulled barley grains and some weeds, the more abundant of which were brome caryopses with some black bindweed (*Bilderdykia convolvulus* (L.) Dumort.—presumably those that were difficult to remove by winnowing or sieving). The state of preservation of this material was described as excellent ‘and even some partially charred material survived’ (p. 248). Assemblages of charred remains from the larger enclosure were small (though the lack of information concerning sample size in the published report means that concentrations cannot be estimated). Here hulled barley and spelt predominated, with smaller numbers of tentatively identified bread wheat grains, some ?naked barley grains, and some wheat identified as ‘cf. *monococcum/dicoccum*’.

More recent work (in press) has produced some modest-sized assemblages of grain and chaff, probably including both emmer and spelt wheats, from many postholes from within the eastern-most (larger) enclosure, perhaps representing deliberately placed deposits of charred cereals; some other samples, particularly those

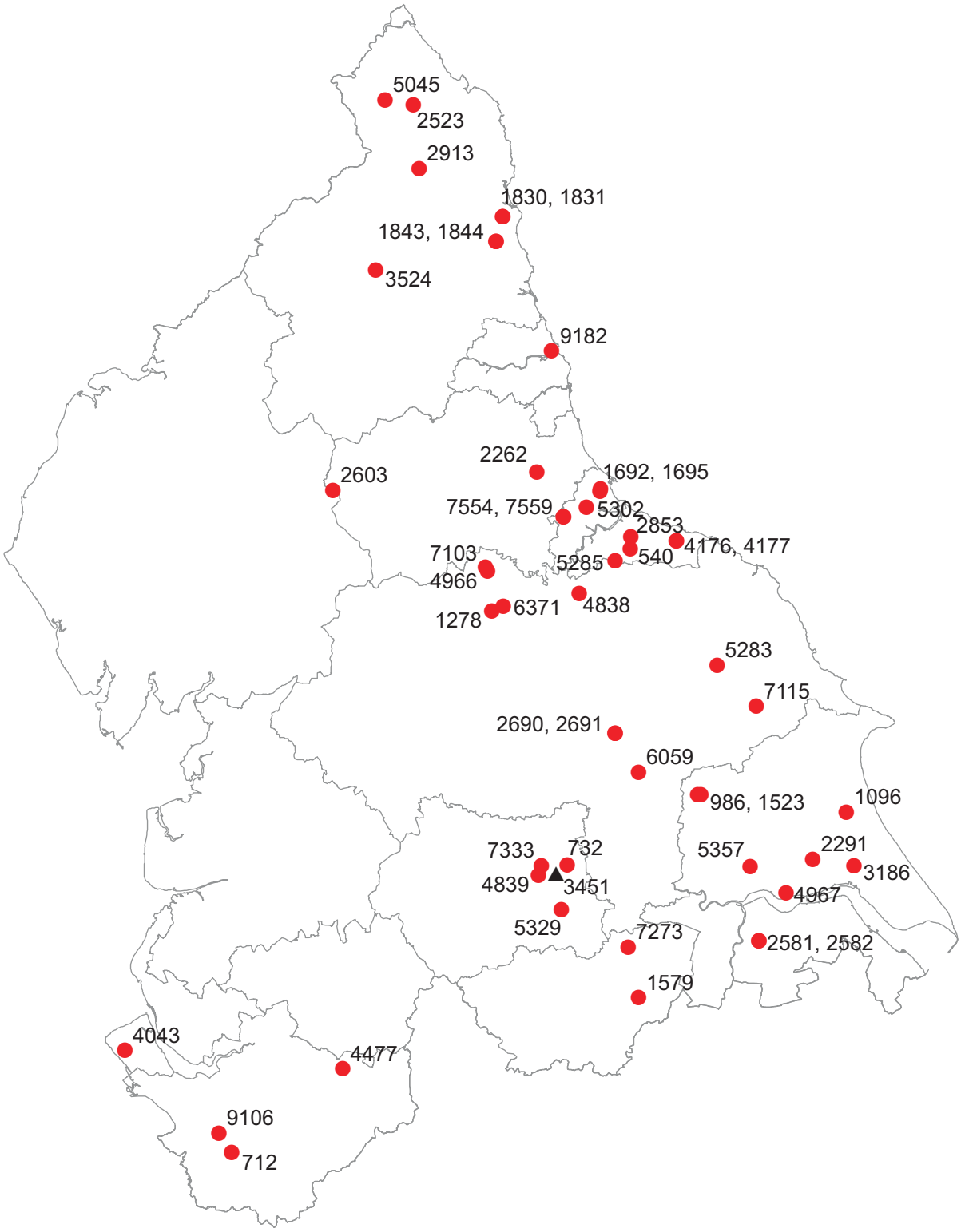

Fig 4: Sites with archaeobotanical studies of material of Iron Age (and ?Iron Age—marked with black triangles) date referred to in the text and for which reliable grid references could be found

Key: 540—Barnaby Side DEAR 24/96; 712—Beeston Castle 68-85; 732—Bell Hill EAC 76/01; 986—Bolton Hall EAU 2002/04; 1096—Brandesburton ASUD 662; 1278—Brough St

Giles (IA) 88-90; 1523—Carberry Hall Farm EAU 2002/05;1579—Carr Lodge Farm 2000 EAC 24/02; 1692—Catcote 87; 1695—Catcote School (nr) ASUD 669; 1830—Chester House (dating); 1831—Chester House 85; 1843—Chevington Chapel DEAR 1/98; 1844—Chevington Chapel DEAR 14/98; 2262—Coxhoe; 2291—Creyke Beck DEAR 21/98; 2523—Dod Law West; 2581—Dragonby (woad); 2582—Dragonby 64-73; 2603—Dubby Sike 84; 2690—Easingwold By-pass 93 EAU 93/32; 2691—Easingwold By-pass 93 EAU 94/36; 2853—Eston Nab 84-7; 2913—Fawdon Dene ASUD 756; 3186—Ganstead (S of) EAU 2002/09; 3451—Grims Ditch South (A1-M1) 92-8; 3524—Hallshill 81-6; 4043—Irby CfA 31/2002; 4176—Kilton Thorpe Ln 2001 ASUD 846; 4177—Kilton Thorpe Ln 2001 ASUD 847; 4477—Lindow Moss (body); 4838—Manor Cottage ASUD 792; 4839—Manor Farm (A1-M1) 92-8; 4966—Melsonby 92-5; 4967—Melton (South Lawn) 94; 5045—Milfield Basin ASUD 678; 5283—Newbridge Quarry EAU 2000/27; 5285—Nunthorpe-Newby 2000 EAC 65/01; 5302—Newton Bewley 98 ASUD 729; 5329—Normanton Golf Course 98 HA; 5357—North Cave EAU 97/37; 6059—Rawcliffe Moor EAU 96/27; 6371—Scorton Quarry DEAR 32/96 (also location for 6370—Scorton Quarry 96 HA); 7103—Stanwick; 7115—Staple Howe 51-6; 7273—Sutton Common ARCUS 181 (also location for: 7271—Sutton Common 87-93 and 7272—Sutton Common 87); 7333—Swillington Common (A1-M1) 92-8; 7554—Thorpe Thewles 80-2; 7559—Thorpe Thewles AML 4372; 9106—Brook House Farm (Cheshire); 9182—South Shields Fort 92-4 & 99 (prehistoric)

associated with remains of earthworks, seemed to suggest the presence of remains originating in turves (ARH, unpublished data).

At **Eston Nab 84-7**, near Middlesbrough, four samples from contexts associated with a fortified enclosure of 5th century BCE date were examined. They yielded assemblages very different from those from the Bronze Age deposits (see above)—there were no cereals but rather plants of somewhat acidic, poor grassland with wet patches (perhaps from the natural vegetation, burnt prior to building the bank and ditch rampart—the presence of many blinks (*Montia fontana* L.) and heath grass (*Danthonia decumbens* (L.) DC. in Lam. & DC.) propagules may be evidence of turf or turves, though this is not explicitly considered by the author of the report). Evidence for domestic occupation at this time at the site is thus lacking, at least from the plant remains and the assemblage was thought to reflect local vegetation.

To the south-west, at **Scorton Quarry 96 HA**, near Catterick *NYR*, the fills of pennannular ditches of round houses in an enclosure were examined by means of 23 bulk samples. The charred material was mainly barley, poorly preserved, a few of the grains being recorded as being hulled; there were occasional rachis internodes and lemma bases of barley, too, some forming the basis of a tentative identification of 6-row barley. Also noted were some oat grains and wheat, the latter with the typical form of spelt (and there was a large concentration of spelt glume bases from one ditch fill, amongst which about 1% were smaller and likely to be emmer, although it is not clear whether morphological characters were considered in the identification). Other remains included probable arable weeds, but also remains of sedge, spike-rush (*Eleoecharis*), heath grass and rushes, all of which might have been imported with peat/turves (though the *Danthonia* is discussed by the report's author as if it were a weed of cereal fields). Another investigation at this mineral extraction site involved examination of three samples of the fills of a curvilinear ditch at **Scorton Quarry DEAR 32/96.** Two samples yielded moderate concentrations of charred

cereal grains and some chaff (spelt glume-bases and unidentifiable wheat) with a few weed seeds.

Some of sites the encountered along two 'linear developments' (the BP Teesside-Saltend Ethylene Pipeline (TSEP), and the A1-M1 Link road SE of Leeds) have produced archaeobotanical evidence from deposits dated to the earlier parts of the Iron Age. Towards the southern end of the TSEP, at a site at **Bolton Hall EAU 2002/04**, between Pocklington and Stamford Bridge *EYR*, a sample from the fill of large pit/ditch terminal was AMS-dated (using alder twig material) to 400-200 cal. BCE (Beta-61364). The plant remains overall indicated natural wetland (perhaps alder-willow scrub) with duckweed (*Lemna*) pointing to areas of open water, but also with some evidence for dry ground vegetation, perhaps grassland (the abundant dung beetles present were certainly thought to indicate grazing land).

Dated tentatively to the early to mid Iron Age, some material from **Grims Ditch South (A1-M1) 92-8**, near Garforth *WYR*, from the fills of large ditch (a sample totalling 5 litres of sediment) provided modest-sized assemblages of uncharred remains with a few charred grains; the plant taxa were mainly aquatics, but with some *Montia*, tormentil (*Potentilla erecta* (L.) Räuschel), heather and bracken, perhaps pointing to material used as litter (or arriving in turves), if not part of the vegetation within the catchment of the ditch.

5.4.2.2 Material dated broadly to the Iron Age (Table 6)

A very large number of the Iron Age sites for which material has been recovered do not have (at least explicitly in the archaeobotanical reports) any closer dating, so it is necessary to consider them *en bloc*. It should be clear which sites warrant refinement of dating by some means.

The site at **Beeston Castle 68-85**, between Nantwich and Chester *CHE*, is perhaps the one for which the largest volume of material has been examined: a total of 2874 litres of sediment from post-hole fills, post-pipe fills and post-packing deposits was assigned to this period. Although large numbers of remains were recorded *in toto*, calculation of the mean concentrations reveals that the most abundant taxa (grains and chaff determined as emmer/spelt) were only present at between three and four items per litre of sediment processed. This is not an artefact of calculating an average, since examination of the data published on microfiche reveals that the plant remains were rather evenly distributed through the 85 samples that were bulk-sieved. (Indeed, since it was often the case that only a proportion of washover/residue was sorted and the numbers of remains were multiplied up accordingly, the figures given in the report are, if anything, likely to be a slight over-estimate.)

The combined data for the Beeston Castle samples show that, as well as emmer/spelt grains and glume-bases, there were smaller numbers of grains and glume-bases specifically identified to these two wheat species. Relatively (!) moderate numbers of grains were determined as wheat/barley, and there were some bread wheat/spelt and bread wheat grains, some oats (though probably mostly wild forms), and a small range of weed seeds. The similarity of this assemblage to the material from the Bronze Age deposits might warrant caution—as counselled by the

original authors of the report on the Beeston Castle material—in accepting these as Iron Age rather than as material reworked from earlier Bronze Age deposits (especially given the nature of the archaeological contexts under investigation). At **Easingwold By-pass 93 EAU 93/32**, some 20 km N of York (*NYR*), evidence for plant remains other than charcoal was even more sparse: from 94 samples from mostly fills of pits, post-holes and ditches associated with occupation, at a site where iron-working was clearly practised, cereals were virtually absent (one context yielded a few caryopses which could not be identified further), though there was one concentration of uncharred elder seeds which was subsequently dated as Iron Age. From a further site broadly dated to the Iron Age, at **Staple Howe 51-6**, on the scarp ridge of the Chalk Wolds near Malton *NYR*, charred cereals were recorded in small quantity with charcoal from deposits in the palisade trench and from a burnt floor layer of a feature described as a quarried hollow: the grains were identified as bread wheat ('*T. aestivum* L. ssp. *compactum* (Host) Thell.' according to Metcalfe, who examined the material).

A wide range of other sites (all encountered as a result of developer-funded interventions and mostly only investigated archaeobotanically via evaluations) has provided material broadly dated to the Iron Age. For the farthest NE of the region, we can cite the following from Northumberland:

> From **Fawdon Dene ASUD 756**, in the Cheviots, between Wooler and Rothbury, 13 of the 31 samples from deposits associated with two palisaded enclosures produced charred seeds, the remaining 18 only yielding charcoal; from the former group there were small numbers of grains of barley and wheat (including ?spelt), hazel nutshell fragments and a few sedge nutlets.
>
> In SE Northumberland, at **Chevington Chapel DEAR 1/98** and **Chevington Chapel DEAR 14/98**, various deposits of Iron Age date produced small numbers of cereal grains and a single spelt glume; quantities of *Danthonia* caryopses from one pit fill may represent material originating in turves.

Further south, in Teesside:

> From a site at **Catcote School (nr) ASUD 669**, Hartlepool, one of two samples from ditch fills apparently associated with an Iron Age building produced traces of hulled barley, spelt glume-bases, and some 'indet.' cereal grains.
>
> At **Newton Bewley 98 ASUD 729**, near Middlesbrough, five samples of 5.8-21 litres yielded moderate concentrations of charred grain, mainly 'indet.', but with traces of emmer, some hulled barley, and 'wheat', with a few weeds.
>
> Also near Middlesbrough, at **Nunthorpe-Newby 2000 EAC 65/01**, 44 samples of 1.5-30 litres from 25 fills of ring ditches, postholes, and pits gave assemblages (in this case from the inner ring ditch fills) comprising charred spelt chaff and a few weed seeds, but also sedge nutlets; seeds of *Montia* were present in at least two cases (though their possible significance was not mentioned in the report).

Near Loftus, between Redcar and Whitby *CLV*, excavations reported in **Kilton Thorpe Ln 2001 ASUD 846** were investigated via a single context selected from those initially subjected to assessment; the sample of 7.8 litres proved to be charcoal-rich, with moderate-sized concentrations of spelt grain and a few barley chaff fragments (and one barley grain) with some 'weeds' including abundant nutlets of a dock (*Rumex obtusifolius* L.) and a few *Danthonia* caryopses. Further work **(Kilton Thorpe Ln 2001 ASUD 847**) was concerned with material from the fills of two curvilinear ditches. The two samples (of 13.5 and 13.3 litres) produced modest numbers of charred grains and 'weed' seeds with *Montia* and *Danthonia* among the commoner remains, though even these were not abundant.

A site at **Barnaby Side DEAR 24/96**, near Guisborough *CLV*, yielded evidence of an Iron Age field boundary or palisade. One bulk sample from this feature produced burnt heather and peat-like material, not surprising at a site quite close to moorland, but no seeds. It therefore possibly related to a field boundary rather than to a palisade around a settlement.

From a site on the 'TSEP' in N Yorkshire:

At **Manor Cottage ASUD 792**, by East Rounton, near Northallerton, samples varying in size from 4.4 to 82.2 litres from six contexts associated with Iron Age roundhouses produced modest-sized assemblages of charred plant remains and a few uncharred (?contaminant) fossils. For the most part, the charred material consisted of cereal grains, but with some spelt glume-bases and small grass caryopses, mainly *Danthonia,* and sedge nutlets. These were interpreted as crop weeds reflecting 'the nature of ploughing and landscape disturbance while charred wetland species imply cultivation on the nearby wet ground of the valley floor'. An alternative interpretation is that these remains arrived with cut vegetation carried on turves or with plant litter.

In the SE of the region:

At **Creyke Beck DEAR 21/98**, near Cottingham, on the NW edge of Hull (*EYR*), 14 samples of 2-25 litres from the fills of various negative features associated with 'houses' produced a few charred cereal remains (grain and chaff, including barley and spelt) and other plants at very low concentrations; there was perhaps a 'turf' component in a deposit relating to one of the houses.

From a site at **Carr Lodge Farm 2000 EAC 24/02**, at Loversall, near Doncaster *SYR*, one of 13 samples, mainly from enclosure ditch fills, was dated to the Iron Age. It contained some ?hawthorn (*Crataegus*) seeds, perhaps related to the presence of a hedgeline in the vicinity (and consistent with evidence for 'woody' remains from some of the other samples).

Between Wakefield and Pontefract *WYR*, a site at **Normanton Golf Course 98 HA**, provided three samples from the fill of a pit in the centre of an Iron Age enclosure (which might have served a ritual purpose). The charred remains in the fills were mainly barley and wheat grains, the barley exhibiting a ratio of 1:1 of twisted to straight grains, suggesting to the authors the possible presence of both

2-row and 6-row barleys. The wheat grains had the form of spelt, and there were many spelt chaff fragments. Also recorded were traces of charred hazel nutshell and weeds. For samples of 10 litres, these exhibited (unusually) some very high concentrations of grain.

5.4.2.3 Later Iron Age

For archaeological deposits assigned to the later part of the Iron Age, the volume of data for plant remains is very much larger and a considerable proportion of the sites concerned have been the subject of a study by van der Veen (1992), who has produced the only published work of synthesis of archaeobotanical data for a particular period (in this case from late Bronze Age to the end of the Roman period) for any part of the region. The reader is referred to this study for a large amount of detail which can only be discussed very briefly here. One particularly valuable methodological aspect of this synthesis is the care with which van der Veen pursued the dating of the material and thereby the contexts from which it came: a programme of AMS dating was used to show that the grain and chaff from these sites consistently gave dates 100-200 years younger than those obtained for charcoal (and in some cases the discrepancy was as much as one or two millennia!). This probably reflects both the inherent likelihood that charcoal will be 'too old' because it has come from trees already a century or more in age when cut and burnt (whilst individual grains and chaff fragments can never be more than one year old), and the greater likelihood of reworking of charcoal compared with cereal remains—though van der Veen also acknowledges the potential for dates which are 'too young' from grain which has been introduced into the deposits later through, for example, earthworm activity (and see also comments in connexion with **Cottage Farm CfA 95/2001**, Sewerby, above).

From the point of view of our understanding of later prehistoric economy in northern Britain, van der Veen's study appears squarely to rebut Piggott's (1958) description of the 'Stanwick' economy (of the later Iron Age in Northern England) 'as a predominantly pastoral, or even nomadic, one' (van der Veen 1991, 446), so that 'the native population of northern Britain [or at least northern *England*!] can no longer be described as a uniform bunch of 'cowboys' roaming the hills, but should perhaps now be considered as a diverse complex of separate tribes, each with its own agricultural strategies' (*ibid*, 449). This, and some other aspects of the interpretation of the charred assemblages from van der Veen's sites are considered in the thematic review, below.

The two occupation sites in van der Veen's study whose chronology begins earliest (2nd and 3rd centuries BCE, respectively) are **Chester House 85**, near Acklington *NHU* and **Thorpe Thewles 80-2**, near Stockton-on-Tees *CLV*. At the former site, the entire fill of each of the cut features encountered was sampled and results for 14 contexts reported; from these 14 samples, totalling 890 litres, there was sparse evidence for hulled barley and a single spelt grain, chaff of both spelt and emmer, and barley rachis fragments; charred hazel nutshell was also recorded. The interpretative problems raised through conflicts in dating wood charcoal and emmer chaff at Chester House were subsequently reviewed by the original authors (**Chester House (dating)**), whilst AMS dating of the single grain of bread/club wheat recovered as modern is considered by van der Veen (1992, 56).

By contrast, at Thorpe Thewles, where a large enclosed settlement with linear features (ditches and gullies) and pits and postholes was excavated, extensive sampling was undertaken (73 'random' samples, 28 'judgement' samples, and 28 from a 'masking layer'), though the deposits sampled were all secondary; in all, 3556 litres were processed. The samples yielded small amounts (low concentrations) of grain with much wheat chaff and weeds dominating: the most abundant taxon, heath grass (*Danthonia decumbens*), had a mean concentration of less than 1.5 per litre, the next most abundant, spelt glume-bases, being present at a mean concentration of less than one per litre. Spelt and 6-row barley were the dominant cereals, with traces of emmer; more than half the cereal grains were unidentifiable. Of the chaff, most was spelt (with narrower glume-bases than is usual to judge from the literature for S Britain and NW Europe) or wheat *sensu lato*, but there were also a few barley rachis fragments. The proportions of weeds:chaff:grain suggested to van der Veen a self-sufficient economy. AMS dating of grains showed that spelt had become the principal wheat crop by ~300 BCE, whilst a grain of bread wheat from one assemblage proved to be a 13th century CE intrusion.

The non-crop plants at Thorpe Thewles are of particular interest since neither of the most abundant taxa in this category, *Danthonia decumbens* and *Montia fontana* ssp. *chondrosperma* (Fenzl) Walters (ranked at 1 and 4, respectively, amongst the taxa as a whole), seem *likely—pace* van der Veen's very emphatic opinion to the contrary—to be crop weeds in a conventional sense; viewed from the standpoint of their present-day ecology, they are surely plants more likely to grow in pasture than on tilled soils. Following earlier authors like Hillman (1981, 146), van der Veen explains the presence of these and other 'grassland' plants mainly in terms of changing ecology (i.e. that they were previously more likely to be part of the plant community of an arable field where ploughing was less destructive and drainage less effective than in later periods), but also alludes to the possibility that this component of prehistoric plant assemblages might sometimes have originated in hay or animal dung. One source which she does not seem to have considered, however, is turf. The use of turf in the past in building, roofing and as a low-grade source of fuel has received rather little attention in the palaeoethnobotanical literature, yet it could account for a significant proportion of the plant remains from short-grassland communities recorded on archaeological sites, and the deliberate or accidental charring of plant material in sods (depending on the way the material was used) might easily account for the presence of certain charred remains in occupation deposits (as well as for the importation of quantities of mineral sediment). This will be discussed further in the thematic section below and is also the subject of a study by Hall (2003b); an archaeological example which argues against the view that plants like sedges and heath garss were arable weeds is also discussed below, with respect to work at West Heslerton.

Four sites considered by van der Veen for which the occupation chronology starts a little later in the Iron Age than at Chester House and Thorpe Thewles but which, like them, run on (temporally if not culturally) into the early Roman period, are **Murton High Crags**, nr Berwick-upon-Tweed, and **Dod Law West**, near Wooler, both in Northumberland, and **Stanwick 84-9**, near Catterick, and **Rock Castle 87**, near Richmond, both in N Yorkshire. The first two have chronologies (so far as plant remains are concerned) spanning the period 200 BCE-200 CE, whilst the Stanwick

material is dated *c.* 100 BCE-100 CE, and that from Rock Castle to 100 BCE-150 CE.

The site at Murton was a hill fort, from which trench fills, pit fills, and deposits from walls were sampled. The 68 litres of sediment examined via 10 samples gave rather small numbers of charred cereals and a variety of 'weeds' (and again perhaps also some material from turves?); hulled barley was dominant with a few (10) grains of wheat. Chaff of barley and wheat was quite common, the latter being mostly from emmer, but with some spelt (spelt had generally superseded emmer in the southern parts of the region by this period, but dating by AMS of emmer and spelt grains showed that the two crops were being used at the same time at this site).

Hulled 6-row barley dominated the small assemblage from Dod Law, another hill fort. Samples here were from a ground surface under the inner rampart, rubbish deposits between and against the ramparts, the ramparts *per se*, and from a charcoal-rich deposit—12 samples totalling 308 litres. There were a few naked barley grains and a mixture of emmer and spelt wheat present as chaff; hazelnut, rose and *Rubus*, presumably all 'wild-collected', were also recorded. Again, AMS dating of emmer and spelt grains showed that the two crops were being used at the same time at this site.

The 1984-9 excavations at Stanwick, one of the most important Iron Age sites in N England, revealed occupation deposits from which 112 samples were taken mainly from post-pits and layers (all well-defined contexts being sampled). A subset of 32 was chosen for van der Veen's study, totalling 431 litres of sediment. Here, weed seeds were dominant with smaller quantities of cereal grains and chaff; the barley present was the 6-row form, the only wheat being spelt. There were again some possible wild foods (hazel, elder, rose). The 'weeds' were principally *Danthonia* and *Bromus mollis/secalinus* (or *B. secalinus/hordeaceus ssp. hordeaceus*, following the taxonomy used in this review), the former, at least possibly originating in turves, as discussed above.

The site at Rock Castle was interpreted as a farmstead. Samples came from fills of ditches, gullies, post-holes, a slot and a pit and a total of 13 contexts was investigated; in all, 23 samples were bulk-sieved and 598 litres processed. The tally of charred seeds and other remains recovered was 6391, though with the most abundant crop taxon not reaching a mean concentration of one item per litre. Of these, 531 were cereal grains—about one quarter wheat and the same proportion barley, with the rest too poorly preserved to be identified further. The wheat determined to species was virtually all spelt, the barley probably all the 6-row hulled form. There was much wheat chaff, almost all spelt where identifiable, but also some bread/club wheat rachis from the later parts of sequence. The assemblage of 'weeds' was again dominated by *Danthonia decumbens* (the most abundant taxon overall, with more than two caryopses per litre) and there were some charred remains of heather; perhaps the use of heathland resources is indicated. Rock Castle is considered by van der Veen probably to have been a producer site. Dating of the occupation proved somewhat problematic, however, with rather older dates for charcoal than for cereal grains (though this is easily explained if the charcoal came from wood which was already well grown when burnt—or, indeed, if it was reworked). Interestingly (and in contrast to the evidence from Chester House and Thorpe

Thewles, see above), AMS dates on bread/club wheat from Rock Castle were consistent with those from spelt and represent the first record of free-threshing wheat in the area.

A further site close to Stanwick and Rock Castle but not studied as part of van der Veen's major investigation was from deposits associated with an Iron Age hoard discovered in the mid-19th century near Melsonby. Plant remains from 31 contexts from feature fills of various kinds dated to the mid 4th century BCE to late 1st century CE (**Melsonby 92-5**) were present in concentrations that were even lower than from the nearby sites, though many of the same kinds of taxa were present. The cereals grown here seem principally to have been spelt and 6-row hulled barley. As before, the 'weed' component included taxa such as *Montia* and *Danthonia* which may, rather, represent the burning of turves—some further evidence for which may be the several 'tubers/rhizomes' (26 specimens in all).

Van der Veen has also studied material from pre-Roman Iron Age levels at the Roman fort at South Shields *T&W* (**South Shields Fort 92-4 & 99 (prehistoric)**). Here there was extensive sampling: from all excavated features, and at 5m intervals from each of principal soil horizons. Two burnt layers were sampled on a 1m grid, linear sub-soil features at approximately 1m, and samples were also taken from 'hollows' identified within the roundhouse investigated. AMS dating of spelt grains and chaff from the two burnt layers put the date firmly in the period between about 400 and 150 BCE.

Overall, the content of 'seeds' from these deposits was rather high at 11.9 per litre (range 0.1-87.9), the two burnt layers providing the bulk of the evidence. The large dataset permitted the use by the author of correspondence analysis to identify differences between samples on basis of species composition (but taking out species occurring in less than 10% of samples and samples with fewer than 50 identifications). This led to the identification of three groups: those with abundant spelt grain and little else, those samples from one of the burnt layers (9740) with high proportions of glume bases of spelt and remains of *Danthonia* and *Carex*, as well as rachis segments and grains of barley; with this latter group were some other samples (including some of those from the second burnt layer, 9730); the third group comprised the remainder (in fact most) of the samples from 9730, which were characterised by a high weed seed content. Van der Veen argues that the high content of larger-seeded weeds (and here the taxa concerned are likely to be weeds *sensu stricto*) indicates this represents hand-cleaned residues. However, the presence of small-seeded weeds suggested another possibility: an origin in thatch and bedding, and the possibility of material trickling from the roof into the fire which destroyed the structure is entertained.

Grid sampling of Contexts 9730 and 9740 showed that the latter clearly consisted of homogeneous material built up over a short time (and represented what was interpreted as the fine-sieving of a spelt wheat crop). Context 9730, on the other hand, contained material of mixed origin with some spatial patterning; indeed, the occurrence of heather, bracken and cereal culm nodes in places in this deposit is seen as possible evidence for areas of bedding and/or collapsed roofing. Even coverage over the whole area of the house might have indicated roofing, whilst

spatial patterning may evidence bedding, but collapse of part of the external wall onto the floor may have sealed floor deposits and prevented them from burning as may have been the case where an area of unburnt daub was found in one part of house. One further aspect of the spatial patterning concerned the remains of foodplants which were rather scattered but perhaps showing some concentration around and at a distance from the hearth—snack foods? Lastly, van der Veen considers the wheat and barley crops represented by the grain, chaff and weed seeds at this site as having been handled separately, rather than being different crops used for different purposes (or arriving in different ways).

Of the other later Iron Age sites yielding charred plant assemblages in the region, the following should be mentioned **Dubby Sike 84**, **Scotch Corner 95**, **Brough St Giles (IA) 88-90**, **Catcote 87** and **Dragonby 64-73**.

At the first of these, Dubby Sike, in Upper Teesdale *DUR*, no cereal remains were found in the samples from deposits associated with stone buildings dated by radiocarbon to the period from the 4th century BCE to the 1st century CE. The most abundant remains were charred heather leaves and flowers and small grass fruits; also recorded were cloudberry (*Rubus chamaemorus* L.) and crowberry (*Empetrum*) seeds and sedge nutlets, an assemblage consistent with the location of the site in an upland setting. It was suggested that there was only seasonal occupation at this settlement. Though not discussed in the published report, it might be speculated, again, whether some of the remains are not consistent with the burning of turves.

At Scotch Corner, near Richmond *NYR*, 1st century CE round houses and enclosure ditches were investigated archaeobotanically through 11 bulk samples. Spelt glumes and brome (*Bromus*) 'seeds' were predominant and there were also some hulled barley grains (common in only one sample); the wheat included spelt, emmer and ?bread wheats, and rye (*Secale cereale* L.) was also present (an early record for this cereal). Weeds other than brome were rare, sedge and heath grass (*Danthonia*) remains being the most frequent. A single charred flax seed was recorded.

The source, in archaeological terms, of the material from Iron Age levels at Brough St Giles, also near Richmond, is not clear, but a total of 105 litres of sediment was processed. As with other sites of this period in our region, there were rather a lot of *Danthonia* caryopses (and also sedge nutlets), which perhaps suggest the presence of material from turves, though again these remains are interpreted in the published report as crop weeds. As far as crops themselves are concerned, there were small numbers of wheat and barley grains and a little chaff, including spelt.

At **Catcote 87**, near Hartlepool, two gully fills productive of charred material were investigated via two samples (total 33 litres) which yielded moderate numbers of charred remains: moderate concentrations of unidentifiable cereal grains with some wheat and barley. One of the samples also gave moderate amounts of chaff—mainly wheat glume-bases, with some floret-bases, perhaps from parching of glume-wheats (there was a single glume-base identified as spelt). Both samples yielded a few charred weed seeds. A few of the wheat grains were clearly of a compact type of bread wheat; this type is rare for sites of this period. Further material from this site is currently under investigation.

The bulk of the late Iron Age plant material from Dragonby, near Scunthorpe, in the far SE of the region, was charred (though some uncharred material was also present, see below). Unfortunately the history of sampling, processing and sorting of the material (which came from two phases, *c.* 100 BCE-10 CE and *c.* 10-45 CE) means that there is a bias in recovery, in particular at the expense of cereal chaff and smaller weed seeds, so full comparison with assemblages from other sites is obviated. Most of the cereal grains recovered were not identifiable further, though there were a few spelt grains and glume-bases—as might be expected at this period—and a few 6-row hulled barley grains and traces of bread/club wheat. Charred material from deposits assigned to the later of the two phases also included some heath grass, blinks, heather and heath rush (*Juncus squarrosus* L.) remains which might represent burnt turves, though this is not discussed in the original report. Two late Iron Age pit fill contexts at Dragonby in which there was also waterlogged preservation of plant remains were also investigated (one from each of the phases detailed above). Against a background of the same kinds of charred remains as recorded from this phase of the site as a whole, there were modest-sized assemblages of uncharred fruits and seeds from plants of both disturbed and damp or wet soils, and a component in one of the assemblages perhaps suggestive of scrub. The later assemblage produced a group of woad (*Isatis tinctoria* L.) pod fragments, the earliest fossil record for this plant in the British Isles—though it is quite well known from Iron Age deposits in continental NW Europe (**Dragonby (woad)**). The earlier of the two 'waterlogged' assemblages gave a single weld/dyer's rocket (*Reseda luteola* L.) seed—this plant, also much used since antiquity for dyeing, appears not to be recorded in pre-Roman contexts in Britain and is likely therefore to be a late Iron Age or Roman introduction.

Turning now to sites where preservation (at least of the material *reported*) was wholly or primarily by waterlogging, the earliest, in terms of excavation, was Wheeler's **Stanwick** site. As noted in the brief survey of the history of archaeobotanical work in the region, the report is typical for the period, dealing with what are essentially a few 'spot' finds of plant material recovered during excavation. The presence of wood and leaves of willow, *inter alia*, is regarded as indicating the presence of willow and other scrub in the vicinity, whilst the suite of mosses perhaps indicates heathland (it is tempting to wonder if this is not *another* example of material originating in turf!). Another 'find' was a fruiting body of a fungus, *Bovista nigrescens* Pers., perhaps more of interest as a curiosity than as a adjunct to site interpretation (though typically a plant of short grass habitats and again perhaps indicative of turf, if not brought to the site deliberately). The context of the find is a ditch fill layer—one which also yielded a late Iron Age sword and scabbard; finds such as these seems unlikely to have survived unless there were buried quickly (if the ditch were dry) or were thrown into standing water (the more likely depositional environment for the various uncharred plant (and fungus) remains).

Much more recently, studies of the fills of pits and ditches/gullies of Iron Age date in northern Holderness (**Leven-Brandesburton EAU 94/15**) yielded some possible evidence for short grassland (turves again?), although in fact few remains of any kind were preserved from deposits at this stage in the history of the site. Further SW, at **North Cave EAU 97/37**, in the SE corner of the Vale of York, the large numbers of

remains recovered from 1st century CE pit fills (as well as from a post-hole and the fills of two wells) were dominated by plants of wet tracks (toad rush, *Juncus bufonius* L., and blinks), perhaps pointing to the nature of the local terrain at this site on sand and gravel at the foot of the Jurassic-Cretaceous scarp, just above the Humber floodplain—though these are also plants whose seeds are considered by Hall (2003b) to be likely to be transported in turves. Also present were some weeds, probably merely reflecting disturbance on light soils, and a small but consistent component of heathland plants—vegetative material of heather, cross-leaved heath (*Erica tetralix* L.), and several mosses—and bracken (*Pteridium aquilinum* (L.) Kuhn), perhaps from litter (though it seems likely that heathland would have developed at an early date as the light sandy soils in the vicinity of this site became deforested and settled during the prehistoric period). Although there was abundant archaeological evidence for settlement at North Cave, the plant remains offer little direct evidence for human activity; there was a single ?wheat grain from the entirety of the 15 x 1 kg samples examined (though a programme of bulk-sieving might have served to yield more remains which are, as we have seen, usually very sparse in prehistoric occupation deposits).

Further west in the Vale of York, sites along the route of the BP Teesside-Saltend Ethylene Pipeline (TSEP) provided an opportunity to study some later Iron Age (and Romano-British) occupation deposits. At **Carberry Hall Farm EAU 2002/05**, between Wilberfoss and Fangfoss, about 15 kilometres W of York, a ditch fill giving evidence from uncharred remains for scrub or a hedgeline—including the very characteristic rough chervil (*Chaerophyllum temulentum* L.) and three-nerved sandwort (*Moehringia trinervia* (L.) Clairv.)—also yielded some charred remains thought likely to represent burning of turves from heathland, and these charred remains were also recorded in other feature fills from the site where waterlogged material was sparse or lacking. Evidence from insects contrasted somewhat with this picture: 'while the vegetation [as inferred from analysis of insect remains] seems to have been strongly under human influence, producing pastureland, there [was] no evidence from the beetles for nearby buildings or artificial accumulations of organic waste.' Moreover 'no [insect] species confined to living trees were recorded (cf. the botanical evidence), though unpublished research suggests that woodland only a few metres from developing deposits may be unrepresented by the insects. There was [however] some evidence of dead wood.' A radiocarbon date made on selected uncharred material (elder twigs) from the ditch fill was cal. BCE 110-CE 70 (Beta-161366).

Further along the TSEP, at **Ganstead (S of) EAU 2002/09**, on the NE fringes of Hull, a series of features was dated by radiocarbon assay on plant remains and bone to the period between the 3rd century BCE and the 1st century CE. Plant remains were largely limited to charcoal but there were some charred remains perhaps representing burnt turves and some charred cereals and weeds perhaps from burnt straw (e.g. an assemblage with sedge and spike-rush nutlets, and moderate numbers of seeds of blinks, *Montia*, and wild radish pod segments, grass/cereal culm-nodes, cereal awn fragments and a hulled wheat glume fragment, all from the upper fill of an enclosure ditch dated via some of these remains to two ranges: cal. 350 to 300 BCE and cal. 220 to 50 BCE, Beta-158373).

Another ‘linear development’, the new A1-M1 Link road SE of Leeds, exposed a ditch fill dated 1st century BCE to 1st century CE at **South Dyke (A1-M1) 92-8**, near Aberford. The remains recorded were mainly from aquatic and marshland plants with a few weeds, and of limited interpretative value. Not far away, by contrast, another site on the line of this road, at **Manor Farm (A1-M1) 92-8** yielded small concentrations (in 15 samples, totalling 460 litres) of charred cereal grains (wheat, including emmer/spelt, and barley), a little chaff, and a few weeds, but also onion couch ‘tubers’ in several samples. From a total of 41 litres of sediment from a third site on this road development, **Swillington Common (A1-M1) 92-8**, modest concentrations of charred remains were obtained from seven contexts dated mid-late Iron Age to earlier Roman. Almost all the wheat material was certainly or tentatively identified as emmer, with only a very little spelt and some ‘emmer/spelt’ grains and chaff. There were some barley grains and rachis segments and a small range of weed taxa, mainly brome caryopses.

A last Iron Age site which calls for comment is also unique in the British Isles: **Lindow Moss (body)**, near Wilmslow, Cheshire. Here, parts of a male corpse were recovered during peat extraction and sufficient of the gut had survived to offer an opportunity to study its contents. Holden reported the presence in 20 g (fresh weight) of material culled from the stomach, duodenum and small intestine, of ‘bran’ from wheat/rye, with some barley and brome, and much unidentified cereal chaff and some weed seed fragments.

5.4.2.4 Sites dated to the Later Iron Age or Early Roman period

A number of sites with dating to the later Iron Age or early Roman periods have produced plant remains.

In South Yorkshire, at **Shafton by-pass/Engine Ln WYAS 903**, near Barnsley (not shown on map), 17 ditch, pit and posthole fills of Iron Age/Romano-British date were examined; they yielded only a few charred cereal grains, including wheat, and a few weeds and some charcoal.

To the south of York, at **Lingcroft Farm 80-91**, preliminary studies of late Iron Age/early Roman deposits associated with occupation on very sandy soils produced mostly small concentrations of charred remains, including a few ?bread/club wheat, barely, brome, oats and weeds, with some rachis and other chaff.

On the TSEP, at **High Catton (E of) EAU 2002/12**, about 10 km E of York, three ditch fills of late Iron Age or Romano-British date were examined. They mainly yielded waterlogged remains, though there were some charred debris—a few cereal grains and ?heather root/twig, the latter perhaps from burning peat or turves; there was also some uncharred material which perhaps originated in turves, including shoots and leaves of the heathland/woodland moss *Leucobryum glaucum* (Hedw.) Ångstr. and some cross-leaved heath leaves, though most of the remains were from but tall perennial weeds and wetland taxa likely to have been growing in the ditch itself. As at Carberry Hall Farm (above), the evidence for trees/scrub was not supported by the assemblages of insects.

Further W, near Stourton, Leeds, a site at **Bell Hill EAC 76/01** revealed a later Iron Age/Roman kiln from which two BS samples yielded charcoal and cereal grain both in moderate abundance: there was barley and spelt wheat, as well as oat, with hazelnut and some wild species, presumably weeds.

The last site in this group was near Catterick *NYR* at **Marne Barracks ASUD**. Two contexts were chosen from those investigated in the assessment, material coming from two ditches revealed in one trench. AMS dating suggested the fills were of late Iron Age to Romano-British date (1st century BCE to 1st century CE). Two sample were re-examined, with columes of 28 and 21 litres. Both yielded moderate numbers of spelt glume-bases and undifferentiated cereal chaff, one also containing some wheat grain, a bread wheat grain, and two barley grains. One assemblage contained a *Danthonia* caryopsis, with remains of sedge and ribwort plantain (*Plantago lanceolata* L.) perhaps from turves or burnt plant litter. Glume-base measurements gave results in agreement with those from S England recorded by Helbæk (1952) and by Huntley at another site in Catterick (**Catterick (RAF) (kiln)**) but larger than those normally observed for material from N England.

5.4.3 Summary and future prospects

From the late prehistoric period we have a rather large and growing body of evidence for plant use, much of it, as with the Neolithic and earlier Bronze Age, in the form of charred cereal grains, chaff, associated weed seeds and, in some cases, remains which look as if they may have arrived in the deposits in ash from burnt turves (or even as uncharred vestiges of the same kind of material). There is an especially large corpus of data from the NE of the region, thanks in no small part to the work by Marijke van der Veen. There is even one bog body whose digestive tract has furnished the earliest evidence within England as a whole for food that has incontrovertibly been ingested. This evidence from Cheshire notwithstanding, there is certainly, again, a bias in favour of sites to the E of the Pennines—strikingly revealed by Fig 4—which cannot be wholly explained in terms of relative land areas. The absence of evidence from Cumbria, Lancashire and the former counties of Greater Manchester and (with one exception) Merseyside is stark and deserves explanation. Reference to the *EAB* indicates that sites of this period—or at least sites where plant or animal material has been reported—are, indeed, extremely rare and the investigation of any that may become available for study in the future must be a high priority, especially where there is waterlogged preservation of occupation deposits.

5.5 The rise and fall of the Roman empire (1.9 -1.5 ka BP/1st-4th centuries CE, Fig 5 and Fig 6)

Archaeological evidence abounds in N England for invasion, occupation and settlement by those peoples conveniently grouped under the term ‘Romans’ and some substantial studies of plant remains associated with Roman sites have been made. Not surprisingly, given the history of Roman occupation in the region, military sites are extremely well represented (a contrast with the southern part of *Britannia*) and the following survey considers these sites first, divided geographically into those east and west of the Pennines but south of Hadrian’s Wall, then those associated

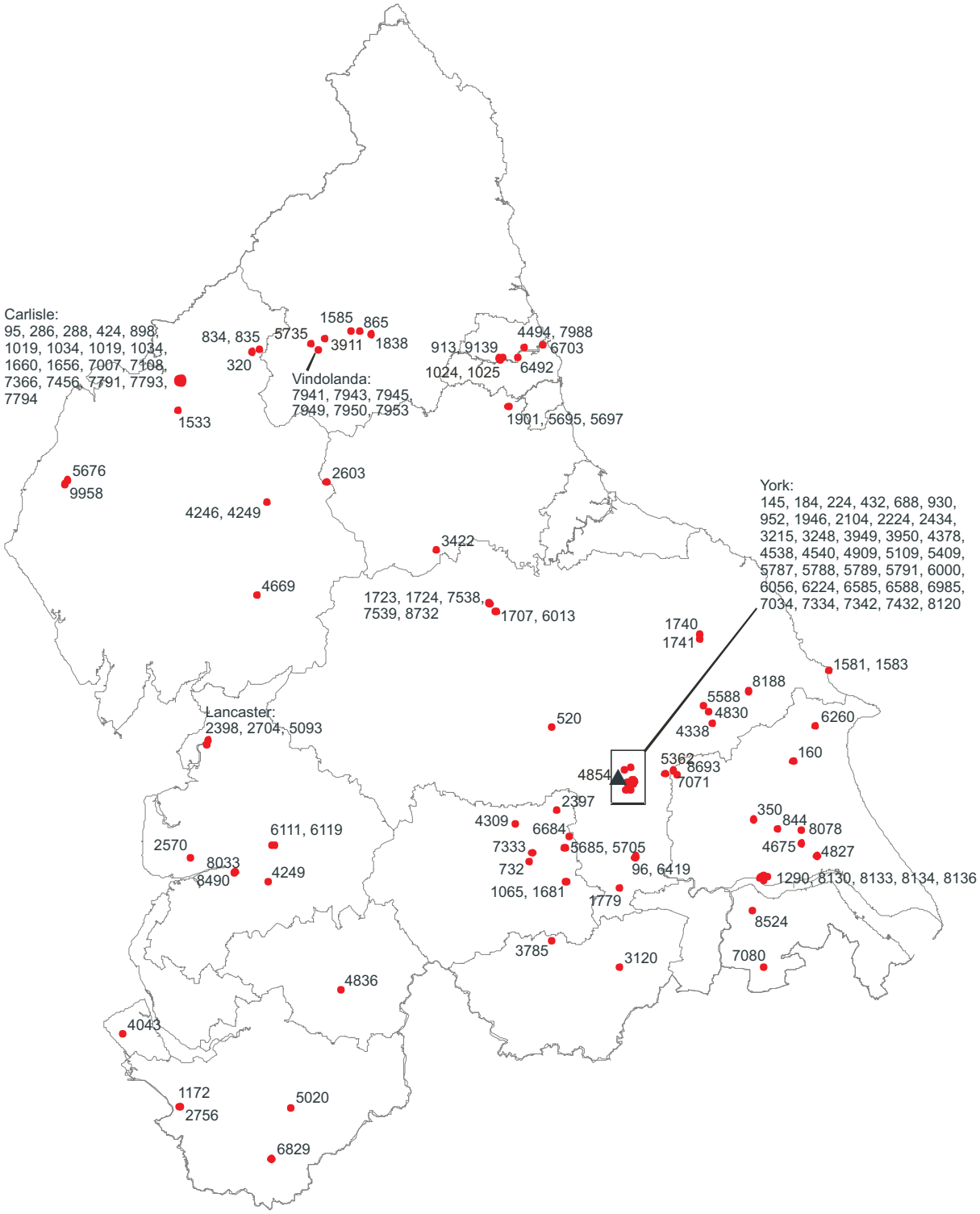

Fig 5: Sites with archaeobotanical studies of material of Roman date (tentatively dated sites marked with black triangle) referred to in the text and for which reliable grid references could be found. Sites designated as Romano-British are shown in Fig 6, though the distinction is sometimes arbitrary

Key: 95—Abbey St 90; 96—Abbey Walk 97; 145—Adams Hydraulics III EAU 91/05; 160—Albion St 92 EAU 92/12; 184—Aldwark (7-9) 85 AML 58/89; 224—All Saints School 93 EAU

93/10; 286—Annetwell St AML 107/89; 288—Annetwell St AML 17/89; 320—Appletree EAU 2000/46; 350—Arras Cottages ASUD 782; 424—BBC site (Carlisle) DEAR 1/92; 432—Back Swinegate EAU 94/13; 520—Bar Ln DEAR 16/96; 688—Bedern 76-81 (well fills); 732—Bell Hill EAC 76/01; 834—Birdoswald 87-92; 835—Birdoswald AML 104/91; 844—Bishop Burton 93 EAU 93/03; 865—Black Carts DEAR 18/98; 898—Blackfriars St (Carlisle) 77-9; 913—Blackgate DEAR 41/94; 930—Blake St EAU 86/07; 952—Blossom St (12-20) EAU 91/18; 1019—Botchergate (53-63) OAN; 1024—Bottle Bank DEAR 35/98; 1025—Bottle Bank LUAU; 1034—Bowling Green (Carlisle) DEAR 2/93; 1065—Bradley St 91-3; 1172—Bridge St (Chester) PRS 2002/16; 1290—Brough on Humber 58-61; 1533—Carlisle 77 AML 2483; 1581—Carr Naze 93-4; 1583—Carr Naze 93-4 EAU 96/26; 1585—Carrawburgh 50; 1656—Castle St (Carlisle) 81-2; 1660—Castle St (Carlisle) AML 4010; 1681—Castleford 74-85; 1707—Catterick (RAF) (kiln); 1723—Catterick site 524 DEAR 2/94; 1724—Catterick sites 506 & 511 DEAR 3/94; 1740—Cawthorn Camps 2000 EAU 2001/17; 1741—Cawthorn Camps 99 EAU 2000/09; 1779—Chapel Haddlesey-Eggborough Pipeline; 1838—Chesters Bridge AML 29/93; 1901—Church Chare 90-1; 1946—Church St (York) 72-3; 2104—Coney St (39-41) 74-5 (W H Smith); 2224—County House EAU 97/52; 2397—Dalton Parlours 76; 2398—Damside (Lancaster) 90 DEAR 4/92; 2434—Davygate 55-8; 2570—Dowbridge Close 94 EAU 95/02; 2603—Dubby Sike 84; 2704—East Gate (Mitre Yd) 73; 2756—Eastgate St (3-15) (Chester) 90-1; 3120—Frenchgate 64-9; 3215—Tanner Row (24-30) 83-4; 3248—Gillygate (45-57) 92 EAU 92/22; 3422—Greta Bridge DEAR 34/96; 3785—High St (Shafton) WYAS 860; 3911—Housesteads Fort AML 186/88 (and location for 3906—Housesteads AML 3746); 3949—Hungate 50-1; 3950—Hungate area EAU 2000/29; 4043—Irby CfA 31/2002; 4246—Kirkby Thore 83; 4249—Kirkby Thore LUAU; 4309—Lakeland Crescent DEAR 12/94; 4338—Langton Villa; 4378—Layerthorpe Bridge EAU 2000/64; 4494—Link Building DEAR 7/98; 4538—Little Stonegate (3) EAU 99/46; 4540—Little Stonegate (rear 3) EAU 99/21; 4669—Low Borrowbridge 92 DEAR 6/92; 4675—Low Farm EAU 2002/08; 4827—Malmo Rd EAU 92/01; 4830—Malton 30 (J&H) (also location for 4831—Malton 30 (reconsidered)); 4836—Manchester 1899; 4854—Manor Ln EAU 97/27; 4909—Marygate (26-8) EAU 92/10; 5020—Middlewich EHy; 5093—Mitchells Brewery DEAR 12/93; 5109—Monkgate (50-2) (York) 95 EAU 95/20; 5362—North Farm EAU 93/11; 5409—North St (York) 93 EAU 93/14; 5588—Orchard Fields 92 EAU 93/19; 5676—Papcastle AML 76/88; 5685—Park House DEAR 8/95; 5695—Park View DEAR 20/94; 5697—Park View School ASUD 794; 5705—Parlington Hollins (A1-M1) 92-8; 5735—Peel Gap AML 114/89; 5787—Piccadilly (22) 87 EAU 95/53; 5788—Piccadilly (38) EAU 92/09; 5789—Piccadilly (41) EAU 92/20 (and location for 5790—Piccadilly (41) EAU 99/45); 5791—Piccadilly (50) EAU 92/08; 6000—Micklegate (1-9) 88-9 EAU 93/22; 6013—RAF Catterick 94 EAU 94/41; 6056—Rawcliffe Manor 92 EAU 92/11; 6111—Ribchester 80, 89-90; 6119—Ribchester Museum Extn/Granaries OAN; 6224—Rougier St (5) 81; 6260—Rudston Villa; 6419—Selby boreholes 92 EAU 92/07; 6492—Shields Rd 2001 ASUD 786; 6585—Skeldergate (58-9) 73-5 (bucket); 6588—Skeldergate (58-9) 73-5 (well fills); 6684—South Dyke (A1-M1) 92-8; 6703—South Shields Fort; 6829—St Annes Ln (Nantwich) 85; 6985—St Maurices Rd (2) 92 EAU 92/14; 7007—St Nicholas Yard 96-7; 7034—St Saviourgate (9) 95 EAU 98/14 7071—Stamford Bridge 98 HA; 7080—Staniwells Farm EAU 90/05; 7108—Stanwix 94 EAU 94/57; 7333—Swillington Common (A1-M1) 92-8; 7334—Swinegate (12-18) EAU 94/13; 7342—Tadcaster Rd (62) 95 EAU 95/44; 7366—Tarraby Ln 76; 7432—The Fox EAU 97/41; 7456—The Lanes AML 51/92; 7538—Thornbrough Farm DEAR 12/97; 7539—Thornbrough Farm DEAR 21/96; 7791—Tullie House 79 AML 3218; 7793—Tullie House AML 2389; 7794—Tullie House Extension & Basement DEAR 1/91; 7941—Vindolanda (bracken); 7943—Vindolanda 73-6 & 85-9; 7945—Vindolanda (puff-balls); 7949—Vindolanda 71-6; 7950—Vindolanda 72; 7953—Vindolanda 97; 7988—Wallsend (Segedunum) DEAR 37/98; 8033—Walton le Dale AML 4544; 8078—Waterside Rd EAU 2001/39; 8120—Wellington Row 88-9 EAU 95/14; 8130—Welton Low Rd EAU 97/29; 8133—Welton Rd 94 EAU 94/50; 8134—Welton Rd 94 EAU 95/09; 8136—Welton Wold; 8188—West Heslerton (draft plant report); 8490—Winery Ln (S of) 96 HA (plants); 8524—Winterton; 8693—High Catton (NE of) EAU 2002/15; 8732—

Catterick 58-97 (Thornbrough Farm Site 482); 9139—Castle Garth 76-92; 9958—Papcastle (grain)

with the Wall itself. Material from civilian settlements, especially the many 'native' occupation sites of the later 1st to 4th centuries CE, is then reviewed.

Studies of plant macrofossils from deposits dated to the period of Roman occupation (and assimilation?) have included a relatively large corpus of material with preservation by waterlogging, notably from military and civilian sites in Carlisle and York, but also from several of the smaller military establishments. Some large concentrations of charred cereal remains representing grain stores have been examined (two in York, one in Malton, and one in South Shields), whilst many rural sites have yielded (individually) small amounts of information concerning cultivation and use of crops (from charred remains) and sometimes concerning local environments and use of natural resources (mainly from uncharred assemblages). The recurrence of evidence for material thought likely to include or consist largely of stable manure, especially from forts, is noteworthy—and perhaps something which should cause no surprise in the context of a group of people heavily reliant on equines for transport. That large quantities of stable manure were disposed of in pits and ditches rather than being recycled onto fields perhaps indicates a lack of connection between the (mainly military) establishments where these deposits have been found and the surrounding agricultural economy. We should also recall that localised concentrations of highly organic material are likely to be influential in self-preservation.

Another (and well-known) feature of many Roman assemblages is the presence of 'exotic' taxa representing importation from the Mediterranean realms of the Empire. A major area of interest for archaeobotanists at this period is the question of the impact of the Roman invasion on native agro-economies, though as van der Veen (1991) has reminded us (p. 446), 'the deployment of troops and the occupation of the forts in northern England varied considerably through time' so that effects may have been both local and short-lived and may not be visible within the archaeobotanical record, especially where dating of assemblages is broad.

5.5.1 Roman military sites: the Legionary fortresses at York and Chester

5.5.1.1 York (*Eboracum*)

Although York's Legionary fortress is archaeologically quite well known, rather few excavations of deposits closely associated with it have generated information concerning plant remains. Several of the interventions took place at an early date when archaeobotanical studies were rare and of very limited extent. An example here is **Davygate 55-8**, where turves from the ramparts of the fortress yielded only 'spot' identifications of three mosses, and three tentative identifications of seeds, although this report notes the presence of grasses distinguished by silica bodies (phytoliths) from the epidermis— a category of remains which might be considered worthy of further investigation in cases where the presence of turves or other potentially grass-dominated materials is suspected. (It seems to be the case that turves in the ramparts, here, as elsewhere, are generally very easy to distinguish during

excavation but are not usually sampled in order to investigate, via archaeobotanical and other studies, the nature of the ground surface from which they were cut!). Other, more recent, investigations of the ramparts have taken place in Aldwark and The Bedern, near the NE corner of the fortress wall. At **Aldwark (7-9) 85 AML 58/89**, 24 contexts, mostly deposits forming the rampart of the fortress or associated with its construction were examined (via 28 1 kg 'test' subsamples) but, apart from charcoal, few plant remains were recorded from these samples; not surprisingly, perhaps, those fossils present were mainly from weeds or plants otherwise typical of urban occupation sites. Nearby, from an excavation adjacent to 1-5 Aldwark (unpublished data), the only one of the nine contexts of Roman (here ?late 1st-3rd century CE) date investigated in which there were more than the merest traces of preserved plant remains was a slot fill from which some weeds and wetland taxa were recovered from a bulk sample, though their significance is difficult to interpret. Rampart deposits were also revealed in a machine-cut trench in The Bedern; several samples gave plant remains with good preservation amongst which there was a conspicuous component of heathland material in the form of variously charred and uncharred heather root/twig and shoot fragments, flowers and seeds as well as traces of cross-leaved heath leaves and even seeds of heath rush (ARH, unpublished data). That these arrived in heathland turvesn seems very likely, though the contexts were not sufficiently clear from the excavation to suggest whether they were actually in position within the rampart. The presence of a variety of other kinds of remains, especially annual weeds, perhaps indicates that these were occupation deposits accumulating on the rampart after its construction. Moreover, the presence of both charred and uncharred material may indicate separate sources or material from the same source used in different ways prior to its final deposition.

Within the fortress, examination of deposits which were superficial in the Roman period has invariably drawn an archaeobotanical blank. Thus at **Blake St EAU 86/07** and **Swinegate (12-18) EAU 94/13**, both in the *Praetentura*, deposits of 2nd century date interpreted as floors, levelling, and dumps all failed to produce more than a few of the more durable kinds of plant remains such as charcoal and elderberry seeds. Dumps of late 3rd-4th century date from the latter site gave a single uncharred achene of hemp (*Cannabis sativa* L.)—there is no particular reason why this should be regarded as intrusive—but otherwise only some charcoal and traces of wood. That an area such as this, in a largely stone-built environment, was kept clean at street level and has thus none of the preservation of organic remains seen in surface-laid contexts in the Anglo-Scandinavian and earlier medieval periods in the city should come as no surprise—though contrary examples from other fortresses and forts (Carlisle, South Shields) show that York, whilst a model of cleanliness, may not necessarily have been typical (the problems of 'clean' Roman towns, with particular reference to York and the other three *Colonia* towns, are discussed further by Dobney *et al.*, 1999). Interestingly, an apparently superficial 1st/2nd century deposit from an excavation in **Little Stonegate (rear 3) EAU 99/21** offered hints of the presence of burnt hay, and there was an undated (but pre-/early Roman) deposit which may have been a burnt *in situ* turfline.

Given the general paucity of remains in deposits formed near the surface, it is to subterranean depositional environments that attention must be turned for studies of plant remains for York in the Roman period. Two sites associated with the fortress

offer some information in this respect, though the first is much less useful than the second. At **Church St (York) 72-3**, some fills of a stone-built sewer probably serving the fortress and dated 1st-early 5th century were investigated using a suite of bioarchaeological techniques, although only a single sample was examined archaeobotanically. It yielded a small assemblage of remains including a few possible food plants, but no primary evidence for domestic waste or faeces. It is possible that the fills, in fact, largely post-date the use of the sewer (cf. Kenward forthcoming) and may also have suffered contamination in more recent times. It remains, however, an important early example of a multidisciplinary investigation, with synthesis, and publication in its own right, separate from the excavation report.

By far the most productive deposits from the fortress were the fills of a well, probably of early 4th century date, discovered during extensive excavations in The Bedern (**Bedern 76-81 (well fills)**). Five samples from four contexts provided diverse assemblages containing many grassland taxa, perhaps representing stable manure and/or turf, though with a strong 'trampled' ground component perhaps indicating conditions in the vicinity of the well. The most abundant taxa included annual and perennial weeds, but there were also many remains of sedges, spike-rush (*Eleocharis palustris* sensu lato), purging flax (*Linum catharticum* L.), sheep's sorrel (*Rumex acetosella* agg.), and some salt-marsh taxa and a small peatland component (including discrete fragments of *Sphagnum* peat in two contexts), as well as a few foodplants—fig (*Ficus carica* L.), grape (*Vitis vinifera* L.), and wheat/rye 'bran'. Presumably the well was used for the disposal of a variety of materials or received dumps of already mixed waste from, for example, the clearing of areas of ground at the surface.

One further deposit evidently formed below ground within the fortress came from the excavation at **Little Stonegate (rear 3) EAU 99/21** (mentioned above in respect of a 1st/2nd century context): a deposit of 4th century date, yielded a weed assemblage with abundant chenopod seeds from a 'garderobe' fill. The presence of wetland and peatland taxa perhaps suggests a litter-rich deposit characteristic of animal bedding—a rare example of the elusive waste from stabling which would be predicted to have been important within the military establishment of the fortress.

5.5.1.2 Chester (*Deva*)

The single published report on plant remains from the legionary fortress at Chester (**Eastgate St (3-15) (Chester) 90-1**) deals with a very few charred remains from five small (3 kg) samples from 1st century deposits, offering no useful interpretative information. More recent work at a site in the middle of the area of the fort, **Bridge St (Chester) PRS 2002/16**, investigated 17 deposits as part of an evaluation, including the fills of a stone-lined culvert and of a drain, and some charcoal-rich layers; samples varied in size from 5 to 60 litres, but there were few plant remains other than charcoal and some uncharred elder seeds. On the basis of rather limited investigations, the cleanliness of the fortress at Chester seems to be mirroring that seen in York.

5.5.2 Roman military sites: forts and camps

5.5.2.1 Castleford (*Lagentium* or *Legeolium*)

Two reports appear to be available for plant remains from this fort, with a substantial study being undertaken on a variety of deposits from excavations during the height of the 'rescue' years (**Castleford 74-85**). The archaeobotanically most productive were some 'midden' deposits from the first phase of fort occupation, and fills of a well and a ditch from the post-abandonment phase (all yielding large assemblages of uncharred remains), and some deposits associated with a mid 2nd century grain store from the *vicus* (where charred remains were often abundant).

Though almost 'lavish' in the presentation of results (tables spanning no less than 36 pages and six pages of 'habitat' diagrams) the report is frustrating for the way in which the interpretation of the material is presented, with few references to other relevant work and a general lack of clarity as to what the assemblages might signify and some naïveté about deposit formation. The lack of any parallel study of insects from material in which such remains were surely well-preserved (if not also abundant) and for which insect evidence would clearly be useful (cf. studies of plant and insect remains as indicators of stable manure, Kenward and Hall 1997) is to be deplored. Equally, the wisdom of undertaking so much pollen analytical work on occupation deposits of this kind must be questioned.

The 'midden' samples proved to be very rich in uncharred remains—as many as 120 taxa—but with rather little spatial variation through the deposit. The author presents some quite elaborate ecological habitat diagrams (figs. 103-10) and the discussion of the data largely follows the assumption that these habitats are represented in the vicinity, thus (p. 165) 'many of the *Juncus* seeds could have come from tussocks of rush growing in this area' although 'in view of their abundance and range in some [of the midden] samples, it is tempting to conclude that deliberate human selection was involved.' Conspicuous and predominant in the 'waterlogged' assemblages were the remains of plants from grassland habitats, with the remains of self-heal (*Prunella vulgaris* L.) and many other 'short grassland' taxa especially frequent, but also a variety of grasses whose uncharred caryopses are not often preserved in quantity in occupation deposits. Again, a 'local' source for the remains is suggested (p. 166): 'the presence of abundant short grassland species … suggests grazing may have been used to keep the fort vegetation low', though the author does also remark (in discussing weeds of cultivation!) that 'plants associated with calcareous soils could also have been derived from hay remains rather than crop processing waste' and 'the presence of clover … flowers, together with the pods of other leguminous species [though the latter are not apparently listed in any of the data tables] … could suggest animal dung' (there is a reference here to one of Greig's discussions (1988) of evidence for hay but none to Wilson's on horse dung from Roman Lancaster, cf. **East Gate (Mitre Yd) 73**, below). Some other remains, such as bracken (frequent in some of the Castleford midden samples) and heather, are discussed in terms of collection from the surroundings by the occupants of the fort, but with little allusion to their possible uses (some may have been used as roofing for a structure within the midden area, we are informed) and, most worryingly, no acknowledgement of the evidence for bracken from Vindolanda already long-published (by Seaward: **Vindolanda (bracken)** and **Vindolanda 71-6**) at the time the Castleford material was

examined. With hindsight—though it is difficult to believe that sufficient published material was not available at the time the report was revised for publication in 1998 for the author to have arrived at this conclusion herself—we can probably see much of this material as originating in stable manure (cf. **Tanner Row (24-30) 83-4** in York) though this is only rather obliquely suggested in the report on the Castleford material.

Remains from (?human) food from this site included, as might be expected, seeds used as flavourings—opium poppy (*Papaver somniferum* L.), celery seed (*Apium graveolens* L.), and coriander (*Coriandrum sativum* L.)—and some exotic fruits and nuts (fig, grape, walnut *Juglans regia* L.), with at least one pit fill context so rich in food remains as to suggest the presence of faecal material—borne out by the very large count for whipworm (*Trichuris*) eggs in a pollen sample from this deposit (there was only a low 'background' count for eggs in samples from elsewhere at the site). Again, no explicit interpretation of these remains is made in the report (and the presence of 'bran' is mentioned in the text but not, it would seem, in the tables).

The most frequent charred material in deposits associated with the *vicus* grain store at Castleford was in the form of grains, mainly spelt wheat, though with one assemblage dominated by bread wheat; a high proportion of the wheat grains were not definitely referable to one or the other taxon, however. Some 6-row hulled barley was present, as well as a little oats and rye, though the former was not identified beyond genus. Only a little chaff was recorded, mostly spelt glume-bases.

(At the risk of appearing to be unfairly critical of this work one must also query the level of identification of some of the plant taxa, e.g. *Viola tricolor* and perhaps some of the sedges (we are not told if these retained the diagnostic utricles). Likewise, the rather large numbers of seeds of *Chenopodium bonus-henricus* L. in the absence of any records for *Atriplex* leads one to wonder whether at least some of the former were not actually from the latter taxon.)

The second report relevant to Castleford (**Bradley St 91-3**) deals with a single ditch fill sample which yielded a few charred cereal grains and weed seeds (and some charcoal) of little interpretative consequence.

5.5.2.2 Malton (*Derventio*)

A single sample of well-cleaned (weed- and chaff-free) charred grain of late 2nd century date from the fort at Malton *NYR* was examined by Jessen and Helbæk (**Malton 30 (J&H)**), and again more recently by ARH for Paul Buckland (**Malton 30 (reconsidered)**). The bulk of the material was wheat (not identified further) with some emmer, 'club' wheat, and 6-row barley and traces of oats. More recently, at **Orchard Fields 92 EAU 93/19** a rather extensive survey of 2nd-4th century material was undertaken, which included occupation deposits and ?floor layers. In these dry deposits rich in oolitic limestone there were only the merest traces of charred hazel nutshell and a few very poorly preserved cereal grains.

5.5.2.3 Cawthorn Camps

Excavation in two of the four 'marching camps' at this site near Pickering *NYR* yielded only very small amounts of plant material from Roman deposits. A group of samples from 24 contexts at **Cawthorn Camps 99 EAU 2000/09**, mainly taken from deposits thought to contain remains of turves in order to test for the presence of plant indicators of such material yielded only a little charcoal, traces of charred cereal grain and a few weed grasses, although some charred root/rhizome and other herbaceous material might have originated in cut turves which were burnt (or *in situ* turves upon which fires were at some point lit). A later stage of investigation (**Cawthorn Camps 2000 EAU 2001/17**) examined material from 64 contexts, mainly associated with the Roman earthworks; it yielded a little charcoal (including oak and ash, alder, hazel, ?birch and some other trees), and a very few charred cereal grains and hazel nutshell fragments.

5.5.2.4 Catterick (*Cataractonium Catuvellauni*)

(Note that the published report discussed below provides little or no information about context type, nor do the data tables indicate precisely which site the individual species lists represent; this account has relied primarily on the unpublished accounts by JPH, though data from a variety of sites, largely of Roman date, in the Catterick area have been placed in a regional context by her in the same publication (Huntley 2002).)

Excavations at **Catterick 58-97 (Thornbrough Farm Site 452)**, near Catterick *NYR*, revealed feature fills associated with the Antonine fort, mostly of 3rd-4th century date, but in the overall range mid 2nd-4th century; the richest samples were from pit or gully fills. Most of the rather large number of samples (57) contained 'seeds', though usually in low concentrations (only three—from pits and gullies—gave more than five items/litre; the data in the published report are presented as seeds/100 litres so that these very low concentrations can easily be seen). Barley (mostly hulled) was dominant and the grains were well-formed and large, even in samples where they were sparse; low concentrations of weed seeds and chaff suggested this was fully processed grain, perhaps for human consumption. A little spelt wheat was present as well as a few bread wheat grains, whilst the only chaff comprised two glume fragments of wheat, one identified as spelt. Shoots and charcoal of heather were quite frequent and there were some grassland (including hay meadow) plants. Very few uncharred remains were recovered from these samples though a single fig seed was noted from one of them.

The study of one of two contexts with waterlogged remains from the second site at Thornbrough Farm (**Catterick 58-97 (Thornbrough Farm Site 482)**), the primary fill of the fort ditch, of late 2nd-early 3rd century date, revealed a large component of cereal 'bran', with wheat/rye, barley and oats all present. There were also corncockle seed coat fragments (and *Sphagnum* moss is noted in the preliminary report, though not subsequently in the final publication); the material probably represents human faecal material—though no analysis of parasite eggs was undertaken to check this.

5.5.2.5 Greta Bridge (*?Morbium*)

A single bulk sample of 1st century brown sandy clay beneath massive clay ?rampart deposits of the fort at **Greta Bridge DEAR 34/96** *DUR* yielded only charcoal (including heather) with a few charred cereal grains and weed seeds including some spelt chaff and hulled barley.

5.5.2.6 Chester-le-Street (*Concangium*)

Three excavations have provided opportunities to study deposits associated with the fort at Chester-le-Street *DUR* archaeobotanically. From **Park View DEAR 20/94**, 2nd-3rd century deposits from the intervallum ditch, *vallum* road, rampart, and a buried soil under road were excavated. The three bulk samples examined gave only charred material: in the earlier phases there was evidence for burnt grassland or perhaps turf—a pre-fort sample from beneath the road contained onion couch 'tubers' and yellow-rattle (*Rhinanthus*) seeds—whilst spelt wheat and oats were recorded from later deposits, along with a little barley; one 3rd century sample contained hulled barley and oats with one flax seed, and some spelt glumes and grass caryopses. More recently, an evaluation at **Park View School ASUD 794** examined archaeobotanically a layer sealed beneath a cobbled surface associated with fort (closer dating was not entirely clear however). The 8 litre sample yielded a modest-sized assemblage of charred hexaploid wheat and unidentified cereal grains with traces of barley, ?spelt and oat, hazel nutshell, and also heather 'wood'.

At **Church Chare 90-1**, various fills and layers of late 3rd/early 4th century date associated with the fort were investigated via large (60 litre) samples. Very few remains were recovered and five of the thirteen samples were completely barren, but in the remainder there were a few charred remains including cereal grains and weeds, as well as heather flowers and a heath-grass caryopsis (these last two perhaps from turves?).

5.5.2.7 South Shields (*Arbeia*)

A major deposit of charred cereals was recovered from **South Shields Fort**, Sunderland, from two 3rd century deposits from the forecourt granary: demolition material resulting from a fire, and a layer formed from the demolition of a somewhat later *opus signinum* floor. Altogether, 33 samples of the lower and 30 of the upper deposit were examined, which effectively sampled the whole area between the sleeper walls. Abundant charred grain was recovered from the lower layer: it was mainly wheat, with roughly equal quantities of spelt and bread/club wheat identifiable, together with a little barley (perhaps a weed?). The crop was very clean, with the spelt mostly dehusked and rather few weed seeds present. The upper layer gave assemblages more like 'fine sieving residues' with proportionally less grain and few segetals (cornfield weeds) and many of the cereal grains fragmented, consistent with the different mode of formation of the deposit. Some of the 'weeds' in these charred assemblages were perhaps likely to have had an origin in grassland via turves if not hay or dung.

From a pit of Hadrianic date near the later *Principia*, a small sample of the basal fill, a layer of organic material, was found to be rich in grassland taxa (and analysis of pollen concurred with this) suggesting the presence of stable manure/litter.

A later layer at South Shields, from the first half of the 4th century, consisted of a small deposit of charred grain from the Courtyard House. It was found to be a concentration of hexaploid wheat grains, much of it probably spelt, with some bread/club wheat and a little barley and oats and a few weeds.

5.5.2.8 Newcastle

Excavations of the fort in Newcastle over a long period (Castle Garth 76-92) yielded a modest number of samples, of which all but one produced small quantities of charred remains, mostly grains but with the merest traces of chaff (from both glume and free-threshing wheats) and a few weed seeds. Remains of heather twigs and flowers were also sometimes present, presumably representing fuel, bedding or structural material. A single later Roman deposit in a robbed out cut yielded a rather large assemblage of waterlogged remains, the fig, coriander and hazel nutshell present certainly suggesting some food waste, though a wide range of taxa was represented, including arable and waste ground weeds and some probable grassland plants.

5.5.2.9 Walton-le-Dale

At this fort site SE of Preston *LAN* deposits of 1st-4th century date were examined, though the most productive material was from fills of wells or pits and deposits from hearths of 1st-2nd century date (Walton le Dale AML 4544), the later phases being less well sampled and possibly contaminated. The excavation record provides evidence of what may have been industrial activity, though the nature of this had not been elucidated at the time the archaeobotanical evidence was initially reported. Unfortunately, the samples were considered too small to be useful for recovery of charred remains. The fill deposits yielded only sparse uncharred material, perhaps from local vegetation—the features were evidently not used for rubbish disposal. The samples of material from hearths also gave only sparse remains: charred hulled barley and wheat grains were commonest, with some rye and oats. The wheat was thought to be spelt, but there may also have been some bread wheat. A single field bean (*Vicia faba* var. *minor)* cotyledon was also recorded. One deposit associated with a furnace produced an assemblage dominated by charred henbane (*Hyoscyamus niger* L.) seeds, which may have some significance as a source of a strong narcotic used in medicine.

5.5.2.10 Kirkham

Material for analysis from excavations of the fort at Kirkham, W of Preston *LAN* (Dowbridge Close 94 EAU 95/02), mainly comprised ditch fills. In total, 17 contexts were examined, representing occupation through the various stages of development of the signal station/fortlet into a stone-built fort. Roughly one-third of the 22 samples were barren of plant remains, the rest mostly giving rather small assemblages, almost exclusively uncharred material. One fill was rich in seeds of weeds (especially

taxa of nutrient-enriched habitats) with wheat/rye 'bran', corncockle seed fragments and two salt-marsh taxa (sea arrowgrass, *Triglochin maritima* L. and mud rush, *Juncus gerardi* Loisel.), perhaps most likely to represent stable manure or herbivore dung. In other cases there was perhaps some evidence for acid grassland/peatland turf, but no layers of stable manure or turf, as such, could be distinguished, despite the description by the excavator of 'what appeared to be horse bedding and hay ... found in the ditches'.

5.5.2.11 Ribchester (*Bremetenacum Veteranorum*)

An extensive investigation was undertaken of material from nearly 200 contexts (mostly fills of pits and ditches, or from hearths and 'layers'), mainly of 1st-2nd century date, from an area immediately outside the fort (but within the ditched area) at Ribchester, near Clitheroe *LAN* (**Ribchester 80, 89-90**). The 242 samples from Roman levels were of varying sizes from 0.5 to 50+ kg, though mostly a few kilogrammes in weight, and they yielded charred and uncharred plant remains (insufficient material was collected to permit bulk-sieving for recovery of larger numbers of charred remains). There were low levels of exotic foods (cf. the fort in Carlisle)—fig, grape and coriander, with dill (*Anethum graveolens* L.) and opium poppy. Some probable wild-collected fruits were recorded, including hazelnut, sloe and blackberry, with strawberry (*Fragaria vesca* L.) and bilberry (*Vaccinium myrtillus* L.), though this last may have arrived with heathland material for bedding. The charred plant material mostly consisted of hulled barley and hexaploid wheat grains, probably from casual dumping; chaff and oats were rare, the former including some from spelt wheat and a trace from emmer. There were, however, distinctive hay (calcareous grassland) and heathland components, perhaps from stable manure and the 'dumping of waste hay and bedding' (p. 359) was widespread.

More recent excavation, at **Ribchester Museum Extn/Granaries OAN**, yielded a single sample from the extension area and two from an area identified as granaries. The former comprised uncharred material including fig, blackberry, with some weeds and wetland taxa, though none was well preserved. Of the samples from the granaries, one yielded much (mainly oak) charcoal, the other abundant charred cereals: hulled barley and some wheat, with occasional oat grains, but (not surprisingly) no chaff. This corroborates Huntley's finding of barley as the chief cereal at Ribchester, whether it was stored and used as food for animals or for humans (though this conclusion is based on an actual count of barley of five grains from a sample of 3.2 kg!).

5.5.2.12 Lancaster (*Calunium*)

At a site in **East Gate (Mitre Yd) 73**, backfills (dated 175-250 CE) of a timber-lined well inserted into the defences provided four samples of discrete horse 'turds' plus 1500 ml of debris from around them. This material was very rich in uncharred remains, especially grassland taxa, including small legume (pea-flower) flowers (e.g. from clovers or medicks), legume pod and tendril fragments, and also many fragmentary and whole fruits of cereals and grasses. There were, of course, also some weeds (both ruderals and segetals), heathland plants, woodland/scrub and

wetland taxa, with almost no remains likely to have served as human food—merely traces of fig and coriander (and what may have been dill, though recorded in the original report as hog's fennel, *Peucedanum officinale* L.). Though this material was little more than a 'spot find', it certainly represents a standard by which to judge other material in which the presence of horse (or other equine) dung is suspected.

Mitchells Brewery DEAR 12/93 was a multiperiod site in Lancaster. The earliest deposits were from the early Roman period fort and associated buildings, which lasted through to the 3rd or 4th centuries, although there may have been an hiatus during the 2nd century. The deposits sampled were mainly layers and pits and, although some of the latter may have been waterlogged initially, none was when excavated and preservation was almost entirely through charring. About 37 small bulk samples were assessed and produced mostly hexaploid wheat and oats. Unusually—given evidence from other Roman military sites in the area—barley was not common.

5.5.2.13 Ambleside (*Galava*)

From the granary of this fort in Cumbria (**Ambleside AML 11/93**) a single sample of 0.44 kg was examined and 752 seeds counted. Spelt wheat formed the bulk, with a little emmer and rare barley, oat and rye grains; there was no chaff and few weeds (mainly *Bromus*). Much of the grain had been damaged by insects (presumably the grain weevil, *Sitophilus granarius*, cf. Kenward forthcoming).

5.5.2.14 Carlisle *(Luguvalium)*

By contrast with the situation at York, excavations within the fort at Carlisle have yielded more abundant evidence for plant remains, both from excavations exposing the edge of the fort during work to extend the Tullie House Museum and during improvement and modernisation of various properties in the city. Unpublished accounts of the examination of nearly 200 samples of various kinds from Roman deposits at **Annetwell St AML 107/89**—most were from the late 1st to late 2nd century deposits associated with both the earlier timber forts and the subsequent stone fort built about CE 105—revealed the presence of charred remains in more than two-thirds of them, although in only 24 cases were there more than very small numbers of fossils. Sampling involved a combination of bulk and 'specialist' (equivalent to small 'GBA') samples to ensure collection of both charred material in quantity (if present) and the more delicate waterlogged material. Context types were typically pit and drain fills but with various other kinds of deposits also chosen for analysis.

The charred remains present here included cereal grains which were mostly barley (including the 6-row form) with some wheat (mainly spelt, but also including emmer and bread wheat) and a few rye and oat grains; a variety of pulses—lentils (*Lens culinaris* Medicus, presumably an imported crop), peas (*Pisum sativum* L.) and field beans—were also represented. Some samples were rich in charred seeds from grassland plants which might indicate debris from burnt hay or animal dung. Uncharred remains were of diverse origins and included a variety of weed taxa, together with plants of damp ground, salt-marsh and heathland (as in the well fills

from The Bedern and Skeldergate, York). Two deposits from latrine pits (**Annetwell St AML 17/89**) clearly gave evidence for (?human) faeces, material which is rather rarely recorded at this period. Wheat/rye 'bran' was predominant here, but there was also some bran from barley and oats, with seed fragments of the cornfield weed corncockle (*Agrostemma githago* L.) and also of one or more of the cabbage/turnip genus *Brassica* (though in the absence of a closer identification it is uncertain if this was a weed or a condiment). The whole seeds were predominantly fig, one sample also containing sloes and the other large numbers of opium poppy seeds, presumably a flavouring or decoration. Other food remains from the assemblage of uncharred material (detailed in **Annetwell St AML 37/89**) comprised olive (*Olea europaea* L., a single stone), grape, coriander, dill, and one seed of an exotic spice known variously as black cumin, kalonji, Roman coriander or (most confusingly) onion seed (*Nigella sativa* L.). The small numbers of flax seeds recorded may also represent food.

Nearby at **Abbey St 90**, three ditch fill contexts associated with the fortress were investigated; they included two turf-lines and primary ditch fill. Rather small numbers of seeds were recovered, mainly weeds and grassland taxa.

Seven small bulk samples were analysed from a late 1st to early 2nd century ground surface as well as a further deposit from a wattle-lined pit at **Tullie House AML 2389**. They produced much the same range of taxa as other samples from this general area of Carlisle, namely an assemblage of wetland/wet grassland and arable weeds. Again, only small amounts of food plants were present suggesting that the pit did not contain much domestic rubbish. Turves were noted in the excavation, apparently forming banks, walls and floors and pollen from five of them was analysed (all produced pollen assemblages suggesting heathy grassland to grassy clearings amongst alder woodland; it was suggested that these turves were cut locally although not immediately adjacent to the site). Unfortunately no examination of macrofossil remains from these turves seems to have been undertaken. At the nearby site in **Scotch St (Carlisle) AML 2387** ('Vasey's' site), where the evidence from pollen was similar to that from the last site, the few small bulk samples (context type/period unrecorded) produced limited numbers of wet ground and arable/ruderal taxa plus two charred bread wheat grains (one of which was a firm identification, the other more tentative).

Further material from this area was obtained from floor levels and a wooden drain (**Tullie House 79 AML 3218**). A total of 11 samples produced a uniform assemblage of seeds, mainly weeds of arable and waste land, plus wet ground (there were abundant *Montia* seeds in many samples which, together with remains of buttercups, grasses, sedges and *Rumex acetosella* may suggest the presence of turves, though the original author did not mention this). Food plants were rare.

Excavations at **Tullie House Extension & Basement DEAR 1/91** lay adjacent to the turf rampart of the Flavian fort. A bulk sample from a pit produced much mineral-replaced material, including 'mineralised' fly puparia, but no seeds (parasite eggs were not investigated but it seems likely that faecal matter was present here). Three fills of the annexe ditch from this site (Caruana 1992) produced some probable evidence for turf (with remains of *Montia*, *Cerastium*, *Leontodon*, and *Potentilla*) and

perhaps bedding in the form of bracken. From a pollen smear of the turf forming the rampart a few fern spores only were recorded and it was not considered worthy of full analysis.

Immediately adjacent to this site was the **BBC site (Carlisle) DEAR 1/92**. Seven 1st-2nd century deposits associated with the fort were analysed. The samples—five from pit fills, one from a latrine channel, and another from a drain fill— were 'waterlogged' throughout. Cereal bran was present, often abundant, in all of the samples, although the suite of exotic seeds usually accompanying bran in food waste thought to have originated in human occupation was absent. This led to suggestions that the diet of those whose waste was deposited here varied somewhat from that of others within the fort. Large numbers of small grass caryopses plus other grassland taxa were abundant in the drain and latrine channel fills, possibly indicating disposal of bedding or stable manure. Such deposition did not occur in the pits.

5.5.2.15 Hadrian's Wall (for the purpose of this review, treated wholly in the 'military' category)

The sporadic nature and very variable scale and quality of studies of plant remains from sites associated with Hadrian's Wall all reflect the piecemeal way in which excavations have been undertaken by a large number of different archaeologists over more than a century. There is no doubt that much well-preserved material has been lost through inadequate provision of archaeobotanical (and other bioarchaeological) advice and practical resources and through difficulties in monitoring adequately the interventions which have taken place.

The sites are considered in geographical order from E to W (sites are variously in the administrative units of the former Tyne & Wear, Northumberland or Cumbria):

At the easternmost site, **Wallsend (Segedunum) DEAR 37/98** *T&W*, layers and feature fills from granary area, hospital and latrine drain outlet, and camp road were all sampled. The 22 samples of 5-10 litres unfortunately yielded only a very few charred plant remains (these samples were small, and the deposits were mainly intractable clays). A subsequent investigation in this area, **Link Building DEAR 7/98**, involved material from gullies, drains and ditches from the eastern *vicus* of the *Segedunum* fort: the 12 'flots' from 10 litres BS samples processed on site yielded traces of charred spelt, hulled barley, and field bean.

To the west of Wallsend, in **Shields Rd 2001 ASUD 786**, four contexts were studied in an evaluation; there were small amounts of charred material, including one spelt glume-base from a pit fill associated with Roman *cippi*.

Located in the centre of the modern city of Newcastle, and located close to the line of the Wall in the vicinity of *Pons Aelius*, a site at **Blackgate DEAR 41/94** yielded only a little evidence for charred cereals despite intensive investigation: in an assessment of 39 bulk samples only two contained barley and wheat grains (at low concentrations).

At Chesters (*Cilurnum*) *NHU*, some 30 km west of Newcastle, deposits of mid 2nd-early 4th century date associated with the bridge over the River North Tyne (adjacent

to the fort) were investigated by means of a small number of bulk samples (**Chesters Bridge AML 29/93**). There was limited evidence for barley and hexaploid (including spelt and bread) wheat, with traces of spelt chaff; one sample containing uncharred material had evidently formed through natural deposition at a time of flash flooding.

A few km W again, the *mithraeum* at the fort at Carrawburgh/Carrawbrough (*Brocolitia*) *NHU* has produced important 3rd century deposits from which spot finds of charred material proved to be stone pine (*Pinus pinea* L.) cones and seeds, together with some pine cone charcoal and hazel charcoal (**Carrawburgh 50**); 'carbonaceous' material adhering to an iron altar shovel was identified as further pine cone charcoal. This represents a rare, if not unique, find within the British Isles since other archaeological remains of stone pine are either from *secondary* deposits associated with a temple or from deposits not thought to be related to buildings with religious significance; it is also a rare example of the clear ritual use of plants, and one of only two records for stone pine in the northern region of England.
Some 10 km W again, at Housesteads (*Vercovicium*) *NHU*, two studies of plant remains from this well-known fort have been made (both unpublished). In the earlier (**Housesteads AML 3746**), some early 2nd century organic deposits at the base of (and within) the primary rampart, and four charcoal layers of late 2nd-4th century date, were investigated. The 'waterlogged' samples mostly contained rich assemblages of seeds representing turf/short grassland, especially those of buttercups (*Ranunculus* spp.) and purging flax, with some blinks, sheep's sorrel, self-heal, rushes, sedges and grasses; there was almost no evidence for crops or human activity. The 'charcoal' layers gave a few remains from grassland/heathland. It is likely that most of this material was from turves either forming *in situ* or used in construction. (The records for barren strawberry, *Potentilla sterilis* (L.) Garcke, a plant of woodland edges and scrub, are somewhat at variance with this interpretation and it must be conjectured that these were probably fruits of tormentil, *P. erecta*, whose ecology is much more consistent with that of the other recorded remains.)

The other investigation (**Housesteads Fort AML 186/88**) involved a single 2nd century context immediately above the early 2nd century roadway leading to the N gate of the fort. The sample of waterlogged material examined proved to be rich in small grass seeds, sedge nutlets, heather fruits and shoots and a variety of weed seeds with some bracken pinnules; there was a single crop plant (spelt wheat, of which there were uncharred glume-bases), and mosses were common. Taken as a whole, the plant remains represented grassland, wetland, disturbed ground and heathland/moorland and the deposit thus has no clear mode of formation (though it may well have included a turf component and an origin in stable manure should also be considered).

A little to the SW of Housesteads and off the line of the Wall, lies the site of *Vindolanda* (Chesterholme) *NHU*. Conditions for excellent preservation of organic remains by waterlogging clearly occurred at certain times in certain places at this fort, though one might now quibble with Seaward's statement (**Vindolanda 73-6 & 85-9**, p. 91) that 'Vindolanda is unique [amongst sites with preservation 'under similar anaerobic (*sic*) conditions'] in terms of the immense scale of the environmental evidence there'. Certainly no very detailed published study of plant remains exists

and it is very much to be regretted that the considerable potential, clear from published reports to date, does not appear to have been realised.

The earliest published plant macrofossil finds (**Vindolanda 67-9 [inc 33-5]**) came from late Roman fills of a well in the Headquarters Building. For the most part, this report deals with wooden finds, and casual wood fragments—mostly oak and hazel, with a few other taxa, including one specimen each of yew (*Taxus baccata* L.) and sycamore (*Acer pseudoplatanus* L., presumably imported at this early date) and two of pine (*Pinus*), but perhaps most intriguing is the comment by Blackburn in her report that 'a root and a base of a stalk of a cabbage was also discovered, bearing a strong resemblance to modern cultivated cabbages'! Unfortunately, no proper account of this extraordinary find appears to have been published.
Later excavations at Vindolanda provided botanical evidence which can most probably be seen as further examples of litter from animal bedding or the like. The **Vindolanda 71-6** and **Vindolanda 72** reports between them discuss organic material of pre-Hadrianic date (85-125 CE) from occupation levels in the *vicus* building which was mainly bracken (and in some cases also abundant 'straw'), but also some large 'hypnoid' mosses, especially *Hylocomium splendens* (Hedw.) Br. Eur. and *Calliergon cuspidatum* (Hedw.) Kindb., mainly from grassland/heathland habitats. In the first report, Seaward also mentions that walnut and hazel nut, acorns, gorse (*Ulex*) pods, and heather stems were all identified. A further 'spot' find was of fruiting bodies of two species of puff-ball fungus (*Bovista nigrescens* and *Calvatia utriformis* (Bull.: Pers.) Jaap, the latter now known as *Handkea utriformis* (Bull.: Pers.) Kreisel). These also came from pre-Hadrianic deposits and are discussed (in **Vindolanda (puff-balls)**) in terms of their possible use in medicine as haemostatics and/or as tinder. A later report (**Vindolanda 73-6 & 85-9**), referred to above, appears essentially to rehearse the information from the earlier accounts but adds some further records for mosses and also a species list of plant represented by 'seeds' (over 99% of which were 'waterlogged'). Unfortunately, the list of 136 taxa presented is only described as 'the more interesting' ones—amongst which were the exotics dill, coriander, ?opium poppy and fig.

Environmental samples from the more recent excavations at Vindolanda (Huntley 2003) have provided abundant evidence for deposition of stable manure with very little inclusion of domestic rubbish or food debris (faecal or otherwise). The small charred assemblage indicates the usual 6-row hulled barley and spelt-type wheats with slight evidence that wheat was absent from deposits from the enigmatic 'round-houses'.

NW of *Vindolanda*, and back on the line of the Wall, 22 deposits associated with what may have been a watch tower were examined at **Peel Gap AML 114/89**; they yielded only limited evidence of charred wheat and barley grains, mainly from two contexts, but there were other assemblages of uncharred material indicating eutrophic (nutrient- and therefore species-rich) fen meadows, grassland and heathland, all presumably habitats represented in the vicinity, with little evidence for weeds or foodplants. Remains from some of the ditchfills north of the Wall indicated that eutrophication (mineral enrichment) may have been taking place there.

Just W of the border between Cumbria and Northumberland lies the fort of Birdoswald (*Camboglanna)*. Extensive sampling and analysis were undertaken of deposits of late 4th (-early 5th) century date, mainly from between sleeper walls of the granary, but also from ditch fills and some other kinds of deposits (**Birdoswald AML 104/91**; **Birdoswald 87-92**). Although 289 bulk samples were examined, few remains were recovered. From sub-floor contexts associated with a *horreum* (granary) there were, as might be expected, some charred cereals—more or less equal amounts of barley (most of it hulled), and wheat (spelt, plus bread wheat), with traces of oats and rye; in addition there were a very few spelt glumes and one field bean seed. Some samples gave a few grassland taxa and it is possible that hay was also stored in the granary. The ditch fills gave evidence of uncharred rubbish with perhaps some faecal material (both wheat/rye and barley bran), but there were no exotics (apart from a single fig seed from a sample from the area of the present-day toilet block!).
At the nearby site of **Black Carts DEAR 18/98**, deposits mainly from the *vallum* ditch infill were examined. Three of the 20 BS samples of 2-20 litres yielded small amounts of charred material, one assemblage having a few weeds, a trace of chaff (wheat), and of grain (spelt); gorse was recorded but with no mention of the part concerned.

A little to the E of Birdoswald/Black Carts, the earlier (turf-built) and the later (stone-built) Walls diverge for a distance of nearly 3 km westwards. Just W of the fort, within this zone of divergence, a number of investigations of the turf wall have been made at Appletree. Most recently, from an old section re-exposed for the 1999 decennial Hadrian's Wall 'pilgrimage', samples were taken of deposits clearly containing turves to ascertain whether plant macrofossil remains could be found in them which might be diagnostic for identifying turves in other contexts (**Appletree EAU 2000/46**). Material from the Turf Wall itself was too strongly oxidised for remains to be identifiable, but some blocks of peaty sediment, which (lithostratigraphically) had the character of fallen turves, recovered from the ditch to the N of the Wall, gave small amounts of charred and uncharred remains which could be construed as having, indeed, originated in turves fromed on an acidic soil (Hall 2003b).

The next site is about 20 km to the W of Appletree, at **Tarraby Ln 76**, near Stanwix, on the outskirts of Carlisle, where a series of ditches between the Wall and *vallum*, perhaps associated with the *vicus* of the fort were excavated. Two contexts were examined for plant remains: one a ditchfill dated to the first half of the 2nd century, the second a pitfill dated to the mid 2nd century. The former gave an assemblage of remains from plants of nutrient-rich waste ground and open water, whilst the ditchfill (sampled in the field as 'Roman grass cuttings') was found to contain abundant grass florets (?chaff) and sedge nutlets with some other grassland plants (perhaps from hay cut from a wet meadow), but unfortunately no record of the size of the vegetative fragments is given by which to judge whether they might have represented whole cut vegetation and/or fragments left after consumption by, for example, horses.

At Stanwix (*Petriana*), itself, an organic layer (perhaps an old ground surface) sealed beneath a massive clay dump interpreted as parade ground for the fort was revealed by excavation. Assessment of samples from this ?OGS (**Stanwix 94 EAU 94/57**) indicated that there was good preservation of plant remains, with evidence for grassland, whilst a sample from a layer of 'brushwood/vegetation' overlying the

?OGS seemed to consist largely of remains of hay with brushwood —the most likely origin being stable clearings.

5.5.2.16 Carr Naze Signal Station

The only one of the several Roman signal stations along the coast of NE England for which any archaeobotanical studies have been made is that at Carr Naze, on Filey Brigg, near Filey *NYR* (**Carr Naze 93-4**), where the sea has left only small part of what is interpreted as the central courtyard surrounding the tower of the station, on a narrow headland formed largely of cliffs of glacial till. Deposits of late Roman (late 4th century) date, mainly occupation material from the courtyard were examined in some detail (58 samples from 33 contexts being investigated during assessment of the bioarchaeological potential of the material, and 11 samples from seven contexts being studied for the main analysis). Plant remains were sparse, but there were small amounts of charred material in all the occupation deposits; these included a very few cereal grains (barley, wheat, including hexaploid forms, and indeterminate grains) and root/rhizome and ?heather twig/root material, the latter two categories perhaps material from burnt turves. The sedge nutlets and ribwort plantain seeds might also have arrived from this kind or material, though hay or herbivore dung is another possible source.

5.5.3 Civilian and sub-military areas directly serving military establishments and civilian and presumed civilian occupation in towns

The sections here follow a rough trajectory from S to N, firstly E, then W of the Pennines.

5.5.3.1 Doncaster (*Danum*)

Only one sample from the civilian settlement at *Danum* has been studied. At **Frenchgate 64-9**, material from a 2nd century pit fill consisted of a very large number of apple pips with a small number of other food remains, all mineralised; this was presumably a cess pit deposit.

5.5.3.2 Brough (*Petuaria*)

The Roman town of Brough-on-Humber *EYR* lies a few kilometres to the W of Hull. A fort was established here on the N side of the crossing point on the Humber in the 1st century. The shortcomings of the earliest report on Roman plant remains from the town (**Brough on Humber 58-61**) have already been mentioned in the brief historical survey of archaeobotanical work in the region (above) and a discreet veil can therefore be drawn here.

Rather disappointingly, subsequent excavations in the area have failed to produce interpretatively useful remains. To the N of the military establishment at Brough, several excavations have taken place along Welton Road in an area where activity was presumably largely civilian. Freely-draining subsoils and shallow stratigraphy are reflected in minimal preservation of waterlogged remains and so far few charred plant remains have been recovered, despite four opportunities to obtain evidence. The earliest intervention, **Welton Rd (rear 40-52) 91 EAU 91/25**, provided samples of fills

from two ditches and a stone-lined drain of presumed Roman date; there were only traces of durable seeds in one sample, ?modern remains in another, and what were undoubtedly modern remains in a third. At **Welton Rd 94 EAU 94/50**, there were almost no ancient plant remains in the 66 samples examined from 2nd-3rd century ditchfills and other contexts, though one 3rd century deposit described as a backfill gave some herbaceous detritus and seeds which may have originated in grassland. Whether this was local vegetation, or reached the fill in turf, hay, or stable manure, for example, could not be established. Further Roman ditch and cut fills at **Welton Rd 94 EAU 95/09** yielded no plant remains other than a little charcoal and three fat-hen (*Chenopodium album* L.) seeds. Lastly, three ditchfills were examined at **Welton Low Rd EAU 96/17**. Plant remains were very sparse, though the presence of some fool's watercress (*Apium nodiflorum* (L.) Lag.) in one sample is consistent with accumulation in a ditch containing standing water; there were also a few weed taxa. More recently, two probable foreshore deposits dated to the Romano-British period from a site at **Magistrates Court (Brough) EAU 2001/38** yielded one assemblage of remains perhaps more typical of medieval than Roman-British deposits, with a mixture of arable weeds, *Sphagnum leaves*, heather and a little charred cereal grain; the other deposit investigated contained remains of some salt-marsh plants indicating a brackish water environment of deposition consistent with a location on a former tidal foreshore.

5.5.3.3 York (*Eboracum*)

5.5.3.3.1 York NE of the Ouse

In Coney Street, no more than 100 m outside the fortress wall, towards its SE corner, and close to the present course of the River Ouse, probable military warehouses of late 1st-early 2nd century date were investigated (**Coney St (39-41) 74-5 (W H Smith)**). Samples from a humic silt deposit overlying beam slots of an earlier warehouse, from a clay layer sealing this, and from a grain-rich layer associated with a second warehouse, were all examined. The humic silt contained a few weed seeds, whilst the clay was, as might be expected largely sterile. But the 'grain layer' consisted largely of rather 'clean' charred grain, of which a little over half was identified as spelt wheat (although no chaff was recovered), with smaller amounts of 6-row barley and a little rye and oats, together with a few weed seeds. According to Dorian Williams, who examined the material, the presence of three tentatively identified charred seeds of the cornfield weed larkspur, *Delphinium ambiguum* (probably the plant now known as *Consolida ajacis* (L.) Schur, though the nomenclature is complex!) and one of yellow vetchling, *Lathyrus aphaca* L., perhaps offers some evidence for an origin for the wheat crop in southern England (or even from overseas?). Unfortunately it has not been possible to relocate these remains in order to reassess these identifications.

At **St Saviourgate (9) 95 EAU 98/14**, somewhat to the S and E of the fort, an early Roman linear cut fill and three fills of a ?4th century pit were investigated. The cut fill yielded ruderals with some evidence for hearth and food waste; one of the pit fills produced a rather similar assemblage, with perhaps a turf component (*Scirpus setaceus* L., *Montia*), another yielded remains including mud rush (*Juncus gerardi*) and weeds, and the third gave evidence including food waste, weeds, and worm

eggs (this may in fact have been post-Roman and, like much other material from this site is long overdue for a more detailed analysis).

E of St Saviourgate, and close to a supposed ford acrossing the River Foss, Roman levels sampled at the **Layerthorpe Bridge EAU 2000/64** site (from a shallow trench in Peasholme Green) comrpised pit fills and dumps of late 2nd/early 3rd century date. Eight samples from these were examined during an assessment. One of the pit fills contained very decayed faecal material of which the plant component was essentially mineral-replaced: apple seeds, *Prunus* stones, corncockle seed fragments. The other fills and the dumps were almost barren of identifiable plant remains. (Two deposits provisionally dated as Roman and thought to be dumps in the river at the same site—from trenches at the edge of the present river Foss—were also examined. One, which yielded clubmoss (*Diphasiastrum*, formerly *Diphasium*) stem fragments, almost certainly (and the other probably) in fact comprised or included material of later (Anglo-Scandinavian) date. Subsequent dating by radiocarbon assay has confirmed the later date for this material.

Build-up and ?ditch fill deposits at the nearby site at **Adams Hydraulics III EAU 91/05** have also been investigated. The mid 2nd-3rd century build-up produced a rather small assemblage of plant remains, mostly nitrophile perennial/biennial weeds with fig and tentatively identified nutlets of the herb summer savory (*Satureja hortensis* L.), whilst the early 3rd century ?ditch fill yielded a large number of taxa, including several likely to represent litter—hay, straw, bracken (e.g. from stable manure)—with many hooked involucral bracts (from the burs) of burdock (*Arctium*, perhaps from coats of livestock). Another deposit in same feature contained some raised-bog peat, a further material which may well have ben imported as animal litter.

Preliminary evaluation of deposits to be affected by a large development at **Hungate area EAU 2000/29**, to the W of the last site, involved investigation of three deposits of Roman date. Two were barren of remains other than trace of charcoal, whilst the third, from a pit fill, yielded the merest traces of charred cereal grains.

Further downstream, along the River Foss, at **Hungate 50-1**, two contexts dated to the period 275-350 CE were investigated—a ‘reedy and grass-like deposit’ from a pit and a sandy silt layer (the latter wrongly attributed to the Anglo-Danish phase by Richardson on p. 109 of her report, cf. her Section CL!). A small list of taxa, primarily from wetland or grassland, was obtained for the pit fill; the silt layer only yielded hazel nutshell. (The pit fill list includes a *very* unlikely identification of the rare mountain plant *Sibbaldia procumbens*; note that a number of the taxa were not regarded by the original authors as necessarily satisfactorily identified at the level of species but this particular determination must surely remain altogether doubtful!).

A number of developer-funded sites in the Piccadilly area, downstream again of the mid 20th century Hungate site, have extended into Roman levels, though the material recovered has usually been devoid of organic material and therefore either not sampled, or only investigated very superficially. At **Piccadilly (41) EAU 99/45**, the site furthest away from the river, for example, the shallow-lying Roman levels were effectively barren.

5.5.3.3.2 York SW of the Ouse

Across the River Ouse lies an area conventionally considered to be the site of one of the four *Colonia* (founded civilian settlements) of *Britannia*—along with Lincoln, Gloucester and Colchester. There is certainly considerable evidence for Roman occupation in this part of the city and, regardless of its actual political status, the *Colonia* of York must represent the largest Roman civilian settlement in our region, probably covering most if not all of the area currently defined by the medieval city walls on the SW side of the River Ouse. It has been investigated through several interventions, of which the largest have been in Wellington Row, Tanner Row, and Skeldergate. From Roman levels nearest the river in North Street (**North St (York) 93 EAU 93/14**), four deposits of 2nd-4th century date were assessed archaeobotanically. A late 2nd century deposit described as 'silt sand and organic build-up' gave an assemblage which might have included redeposited herbivore dung—there were many uncharred grass culm fragments, together with moderate numbers of remains of buttercup, purging flax, sea arrowgrass, spike-rush and self-heal—whilst a late 2nd century dump included some charred cereals and a single bog rosemary (*Andromeda polifolia* L.) seed (this peat bog plant is regularly recorded from deposits of Roman date in York in which clasts of raised-bog peat, with which it evidently arrived in the city, are also present).

Further away from the river, at **Wellington Row 88-9 EAU 95/14**, assessment of material obtained by means of a large-scale sampling strategy from large numbers of contexts relating to Roman occupation (including a major road) confirmed that some of the earlier (1st-2nd century) Roman deposits included a turf bank, in which there were identifiable turves and a consistent suite of plants most likely to have arrived with it—*Montia*, *Potentilla* cf. *erecta* and *Danthonia* (for further details see Hall 2003b). However, a variety of other remains were recorded from other contexts of this period at this site. Thus one backfill yielded a rich grassland flora (from hay or manure?), and some contexts described as backfill/ditch fill had a distinctive food (faecal?) component (fig, apple, coriander, dill, celery seed), but also peat and salt-marsh remains; something of the same group was recovered from some pit fills, with grape, walnut, too. Some '?flood deposits' had a turf-like component, perhaps indicating redeposited material or turf forming *in situ*. Samples from deposits formed during the latest part of the 2nd century at this site were mostly barren of plant remains other than charcoal, though a wall construction cut fill produced a small group of weeds, traces of peatland taxa, and some peat itself, as well as ?hay taxa (e.g. from manure) and a trace of fig (a typical mixture from Roman organic waste, to judge from the two nearby sites discussed next). Later Roman (early 3rd - late 4th century) deposits at Wellington Row mostly lacked plant remains other than a little charcoal, though one sample of 'charcoal ash from a fire' may have contained burnt peat or turves, and ?burnt peat was noted from several deposits. From the latest (late 4th century) group of deposits, mostly dumps, there were almost no plant remains apart from charcoal, even from cut fills.

Still further from the river, in excavations in Rougier Street and Tanner Row, the earliest Roman deposits encountered were fills of ditches cut into the natural. At the first of these, **Rougier St (5) 81**, mid-late 2nd century channel fills contained a rich variety of remains from occupation, including peatland, grassland, salt-marsh, food waste and some wetland taxa. Above these was a thick deposit of burnt cereals

interpreted as the remains of a granary. The material was mainly 'clean' spelt wheat, both grains and whole spikelets, with a few weed seeds. There were modest amounts of 6-row barley and also of cultivated oats. The presence of many coleoptiles (shoots) indicated a degree of germination prior to charring, perhaps a case of storage under damp conditions or a harvest in a persistently wet summer, rather than evidence for malting. Other foodplants recorded from this phase of the stratigraphy included charred and uncharred olive stones, fig seeds, celery seed, coriander, and opium poppy, and there was a small component of peatland taxa and also bracken (perhaps from litter/bedding). Much the same range of taxa was recorded from deposits associated with a late 2nd century road across the burnt layer as from the channel fills preceding it.
Across the street, at **Tanner Row (24-30) 83-4** (widely known as the 'General Accident' site), sampling and analysis were undertaken on a large scale, despite the restricted nature of the excavation, in a series of connected narrow, but deep trenches. Samples from the 'natural' deposits at the base of the sequence yielded small numbers of weed taxa, as well as a single record for fig, probably reflecting the first Roman activity on this land. The first true occupation deposits yielded a rich and diverse flora indicating disposal of occupation material (including small amounts of food remains—especially hazelnut, with fig, grape, coriander and summer savory, and traces of charred cereals—and peatland material) into an area of weedy vegetation.

Contexts related to three successive phases of timber buildings and some richly organic dumps of mid 2nd-early 3rd century date associated with these were especially heavily sampled (114 contexts were examined via 171 samples of various kinds). The dumps and some drain fills, in particular, contained an abundance and diversity of well-preserved remains, mainly uncharred, with some assemblages notably rich in grassland plants (probably from stable manure—the lists include many hay meadow and pasture taxa) with peatland remains, food taxa, and a variety of weeds. The most abundant 'useful' taxa were (in order) hazelnut, linseed (flax), fig, bracken, coriander, heather, walnut, summer savory, celery seed, grape, olive (in 18 contexts), 'plum', (?bread) wheat, and barley, and there were a few records of charred lentil and black mulberry (*Morus nigra* L.) seeds, box (*Buxus sempervirens* L.) leaves and twigs, and single records for rue (*Ruta graveolens* L.) seeds and stone pine nutshell remains. Some of the grassland taxa clearly pointed to exploitation of grassland on chalk or limestone, neither of which formations outcrop nearer to York than about 15-20 km. Two other unusual taxa in these deposits were strawberry clover (*Trifolium fragiferum* L.) and bur medick (*Medicago minima* (L.) Bartal.). The former tends to favour short turf on coastal sandy soils, and is a somewhat surprising find in this context, whilst the latter is an alien and a rare example at this early date of a plant arriving (presumably casually) from outside Britain.

Deposits associated with two phases of stone buildings and their occupation from the later Roman periods (early 3rd-4th century and later) were, as might be expected, mostly rather poorer in plant remains than those from the preceding phases, but overall the same kinds of plants were present in smaller amounts, or only in certain deposits (box leaf fragments and olive stones were again recorded in more than one context from early to mid 3rd century levels).

Downstream of the presumed Roman river crossing (which lay between the present Lendal and Ouse Bridges), several excavations on the riverside slopes in the Skeldergate and Bishophill areas have provided opportunities to study plant remains from Roman levels. At 1-9 Micklegate, excavation revealed massive Roman masonry from what may well have been a large public building. Eight samples of dump and occupation deposits associated with these buildings were assessed (**Micklegate (1-9) 88-9 EAU 93/22**) but plant remains were mostly very sparse; however, one mid 2nd century deposit contained traces of peatland and ?litter taxa (bracken) similar to those seen at the 24-30 Tanner Row site in deposits of a similar date.

Further downstream along the river slope, in Skeldergate, the fills of a well were examined in some detail (16 contexts; 23 samples, representing most of the sequence of fills: **Skeldergate (58-9) 73-5 (well fills)**). The richer assemblages contained a great diversity of plant remains, including foodplants (fig, celery seed, various fruits, hazel nut, walnut), salt-marsh taxa, peatland and wetland plants, and quite large numbers of weeds; there were also leaves of box. This material probably represents mixed rubbish from the surface deposited in the well in the 4th century (there was pottery of 1st-4th century date throughout sequence), including garden waste, and blocks of peat. A wooden bucket in the fills was found to be of silver fir (*Abies alba* Miller), and must have been imported (**Skeldergate (58-9) 73-5 (bucket)**).

5.5.3.3.3 Supposed suburban sites around the city of York

A number of small-scale excavations has been undertaken in what were probably the outer suburbs of Roman York and most of the material examined archaeobotanically—generally not dated more closely than 'Roman'—has yielded no more than traces of charcoal or a few decay-resistant seeds of no interpretative significance. This is consonant with the usually shallow stratigraphy and occupation whose nature was apparently low-density and/or short-lived. On the N fringes of the city, we may cite interventions at **Gillygate (45-57) 92 EAU 92/22** and **Marygate (26-8) EAU 92/10** (3rd century); to the NE, sites in **St Maurices Rd (2) 92 EAU 92/14**, **Monkgate (50-2) (York) 95 EAU 95/20** and **County House EAU 97/52**; and to the SW, excavations at **All Saints School 93 EAU 93/10**, and **Blossom St (12-20) EAU 91/18**. Clearly further opportunities for studying aspects of Roman activity in these outlying areas through analysis of plant remains is likely to be very limited unless some chance finds are made of concentrations of charred remains or of deeply stratified deposits in which waterlogged material may survive.

5.5.3.4 Roecliffe

At a site along the A1 at Roecliffe, near Boroughbridge *NYR* (a brief summary is provided in **Roecliffe 93**, with detail in **A1 Walshford-Dishforth DEAR 4/93**), where an area of industrial activity in the *vicus* of a fort was identified, 53 samples with a combined volume of 795 litres were examined for plant remains. Low concentrations of cereal grains, mostly spelt and barley, were recovered; there was also some crop processing debris from deposits N of the River Ure at this site.

5.5.3.5 Catterick (*Cataractonium Catuvellauni*)

(NB: Data from a variety of sites, largely of Roman date, in the Catterick area have recently been placed in a regional context by one of us (Huntley 2002b).)

Further N along the A1, a site near Catterick (**Catterick (RAF) (kiln)**), produced a sample from a ?late 3rd-early 4th century deposit associated with a feature interpreted as pottery kiln or corn-drier close to the Bainesse Farm site (see below). A small subsample of the flot from 40 litres of sediment was examined and it contained a rich assemblage of charred material, mainly spelt glumes and some spikelets, barley rachis internodes, and seeds of weeds (especially stinking mayweed, *Anthemis cotula* L., cf. the Bayram Hill and Allerton sites, below). Heather twigs are mentioned in the report as having been observed (though they are not listed in the report table)—they may represent fuel or perhaps material from the construction of the kiln. Spelt glume-base measurements for material from this site were similar to those obtained by Helbæk (1952) for southern England, and in this respect are unlike those (smaller) dimensions usually recorded for spelt in northern England; it may be asked whether this indicates an imported crop or better growing conditions in the later part of the Roman period than in the 1st/2nd centuries (the period for which the smaller glumes of northern spelt assemblages have been recorded).

At two other sites near Catterick (**Catterick sites 506 & 511 DEAR 3/94**), miscellaneous layers and fills of negative features were investigated archaeobotanically. For 'Site 506' (post-100 CE deposits, near Bainesse Farm, S of the River Swale), the samples were mostly poor in plant remains. At 'Site 511' (N of the river, from buildings along Roman Dere Street), charred hexaploid wheat and barley grains more or less equally abundant, although one context was dominated by hulled barley (1000+ grains) with <1% of wheat and oats combined. There was also some evidence for heathy grassland (from turves?) and perhaps also for peat burning. By contrast, two bulk samples from dump layers associated with occupation outside the Antonine fort at the nearby **Thornbrough Farm DEAR 21/96** site (CAS 482) yielded no plant material.

5.5.3.6 South Shields (*Arbeia*)

From a well in the *vicus* outside the SW gate of the fort, three fill contexts dated to the first half of the 4th century were examined (**South Shields Fort**). They contained a mixture of charred and uncharred material, the former consisting of spelt and bread/club wheats and a trace of 6-row hulled barley. About 25% of wheat had begun to germinate; there was also some chaff and seeds of weeds. The uncharred material included more spelt, in the form of glume-bases, with some wild-collected fruits, coriander, celery seed, a variety of weeds, and heather and bracken (perhaps from litter, as at so many sites of this period).

5.5.3.7 Gateshead

At the Bottle Bank DEAR 35/98/Bottle Bank LUAU site, six BS samples of 2.4-21 kg from pit fills (or a gully) yielded between them some charred spelt glumes and spikelets, hexaploid wheat grain, and brittle wheat rachis internodes, as well as rye

grain. There was a suggestion that straw used for thatching was represented. An unusual record for 2-row barley was also made for these deposits.

5.5.3.8 Nantwich

As a good example of a case where archaeobotanical information content is in inverse proportion to the scale of investigation, we may cite the analysis of a 30 g subsample of dense organic material from the basal fill of a plank-lined tank at **St Annes Ln (Nantwich) 85**, dated to the period 2nd-4th century. There is little doubt that the material was human faeces, rich in food remains (and also in eggs of intestinal parasites); though the final use of this feature was as a cess pit, the primary use was not clear. Amongst the food taxa recorded were *Allium* (probably leek, *A. porrum* L.) leaf epidermis fragments, seeds of fig, coriander, celery, and several other edible fruits, as well as abundant wheat/rye 'bran'.

5.5.3.9 Walton-le-Dale

An investigation of Roman occupation deposits at Walton-le-Dale, near Preston (Winery Ln (S of) 96 HA (plants)), concentrated on material from a large ditched enclosure with circular buildings and a road, and later trench-and-slot buildings, dating to the early 2nd-early 3rd centuries. A total of 116 samples was bulk-sieved and identifiable remains were found in 67 of them, most of the assemblages comprising charred cereal grain and low concentrations of weed seeds, but no chaff. One well fill was found to contain some uncharred plant material. The cereal grains were often poorly preserved; they were mainly barley, some of which were hulled, whilst most of the wheat present was not identified further but included some hexaploid material, perhaps including spelt. The weed taxa were mainly commonly occurring taxa typical of Polygono-Chenopodietea communities, especially in the waterlogged well sample where nitrophiles were abundant, and included an unusual record for the goosefoot *Chenopodium opulifolium* Schrader ex Koch & Ziz (an alien from S Europe, perhaps becoming established in the area following introduction via trade).

5.5.3.10 Lancaster (*Calunium*)

At a site presumed to be on the fringes of the Roman town (**Damside (Lancaster) 90 DEAR 4/92**), nine samples from seven 'layers' were assessed; charred and uncharred material was present, mostly representing grassland and ruderal taxa—the site may be so marginal to the main centre to occupation that it was beyond the area where rubbish was being deposited.

5.5.3.11 Kirkby Thore

Between Penrith and Appleby, Cumbria, at **Kirkby Thore 83**, a total of ~130 litres of 2nd century deposits from the *vicus* of the fort yielded rather low concentrations of charred remains: barley and oat grains were the commonest, but much of the material was not closely identifiable. There were traces of wheat, whilst the weeds were mostly chickweed, grasses and ribwort plantain. Subsequent work at another site, **Kirkby Thore LUAU**, explored well and ditch fills and material from other

features. The well fill was rich in charred and uncharred plant remains including wheat, and a range of weeds including poppy and hemlock, as well as flax.

5.5.3.12 Carlisle (*Luguvalium*)

Material from two areas S of the fort in Carlisle has been studied archaeobotanically. At **Blackfriars St (Carlisle) 77-9**, various contexts associated with buildings were investigated, with 15 of the 38 samples examined yielding plant remains other than charcoal (though the plant remains were recovered by paraffin flotation and dry sorting of the 'flot' and residue, so inevitably rather short and biased lists of taxa are presented). With this caveat in mind, it may be noted that there was a fairly consistent presence of taxa which might indicate turves and/or flooring in this group of assemblages, though the author only mentions the possibility of rushes/sedges for flooring; there were few crop plants and no exotics.

At **Castle St (Carlisle) 81-2** a somewhat similar number of samples to that from Castle Street was examined, but they were treated in a more careful fashion and will certainly have provided assemblages with little or no recovery bias. Again, the assemblages from those deposits yielding more than a few plant remains often suggested the presence of litter of some kind, whether strewn material on floors in buildings or the jumble of vegetable matter consistent with debris forming in places where large domestic animals are kept. However, samples from five pit fills from the earliest phase of Roman activity (*c*. early 70s to 92-3 CE) gave diverse remains, indicative of no single function for the pits. One assemblage contained many heather twig fragments and grass seeds, whilst bilberry seeds were the most abundant remains in another; a paucity of weeds suggests that the site was relatively clean at this stage. One context from the later part of this phase, an accumulation in a room of one of two buildings, gave an assemblage rich in wet ground taxa and cereal fragments, perhaps fodder/bedding from an animal byre, whilst a drain fill of this late 1st century date contained fig seeds (presumably from human faecal waste). Material which may well have originated from animal penning was recovered from a sample from within an oval wattle structure actually designated as a 'pen' from the late 1st/early 2nd century phase of occupation: it was rich in grass fruits, uncharred wheat glume-bases and bracken frond fragments. Deposits from inside the building recorded at this phase mostly gave rather few remains of no particular character, though some late floors may again have contained evidence for strewn plant litter, whilst an external spread from the later part of the phase may have contained straw and/or threshing waste, whilst a further sample contained heather debris, perhaps from roofing. After a phase in which dumps with few remains were recorded, a floor layer in a building of the subsequent phase (early-mid 2nd century) included bracken frond fragments with grass seeds, dock (*Rumex*) fruits and yellow-rattle seeds as well as self-heal and purging flax, these together again suggesting the presence of litter and animal dung; a smaller but similar group came from the external deposit from between buildings.

Considered as a body, then, the plant remains from Castle Street offer evidence of the housing and feeding of animals just outside the fort at various times during the Roman period, with only sparse evidence for any other activity and only traces of exotic taxa likely to have been imported for human consumption. To these can be

added a tantalising record of sweet chestnut, *Castanea sativa*, presumably remains of a nut (listed together with hazel nutshell 'spot finds'), and presumably of Roman date, from the early stages of excavation at this site (**Castle St (Carlisle) AML 4010**).

The complex of sites in **The Lanes AML 51/92** comprised a large series of excavations through the edges of the Roman occupation of Carlisle. Most of the deposits formed in the 1st-2nd centuries (as do most of the rest from Roman Carlisle). More than 200 deposits were analysed, using a combination of bulk and specialist samples. Charred material was generally present in low concentrations with no deposits showing a high density of remains. As is typical in the city at this period, much of this material comprised barley and wheat grains, and wheat (mostly spelt) chaff with a few weeds. Waterlogged remains were common, and abundant in a few deposits. There were strong indications that this was an edge-of-town agricultural area with small patches of cultivation, probable housing for animals, and so on. Many deposits had high concentrations of what are interpreted as typical stable manure/byre waste/hay taxa. One deposit from a property boundary ditch gave good evidence for domestic rubbish and faecal material, with the boundary itself probably a blackthorn and alder hedgeline. Areas associated with massive stone buildings were kept quite clean—an observation true also of the adjacent Lanes 2 site.

At **Bowling Green (Carlisle) DEAR 2/93**, E of The Lanes, assemblages of charred remains similar to those from Roman levels at that site-complex were recovered from the five samples examined: they consisted of spelt, oats and barley grains with spelt and emmer glumes. From the barley rachis observed, both lax- and dense-eared forms were present. Uncharred assemblages were dominated by heather and bracken (from litter?), and nitrophile weeds. Three of the five samples were from fills of pits but, unlike many other such deposits in Carlisle, these generally gave assemblages in which rather few habitats were represented. Bedding/manure taxa (other, perhaps, than the bracken and heather) were not abundant and it may be that the deposits represent relatively short-term dumps of soil and other debris.

Two more recent evaluations have explored other parts of Roman Carlisle. At **Botchergate (53-63) OAN**, 13 Roman deposits were bulk-sieved. They yielded small assemblages of charered material including cereals—wheat, oats, and a single chaff fragment. A Roman well fill was more productive, with charred and uncharred remains, including charred heather flowers and shoots and charred moss interpreted as possible evidence of the use of surface turf from heathland or raised mire for thatching. Not far away, at **St Nicholas Yard 96-7**, eight contexts of Roman date examined via 12 samples yielded small numbers of charred cereals and a few weed seeds.

5.5.3.13 Papcastle (*Derventio*)

An early record of plant remains in the region was made by Irwin, who described a 'bed of wheat' found under the modern road 'adjoining the Camp-field' just outside the fort at Papcastle *CUM* in the 1920s (**Papcastle (grain)**). Irwin thought that this bed might have been as much as 12 yds (11 m) long by 2 yards (1.8 m) across, which might indicate that it was part of a granary. He found that many grains were

almost intact and that 'it was all quite black, the result evidently not of heat but of long continued damp and mould'. Whilst this interpretation seems unlikely, Irwin did carry out an early archaeobotanical experiment in which he compared the weight of the Papcastle grains with some modern wheat and showed that they had lost a little over 30% of their original dry weight. He also tested the composition of the Roman grains and showed the ash to have a high calcium carbonate content (12% of ash); this mineral was barely recorded from modern grains. Was this, perhaps an example of preservation by mineral-replacement on a large scale? Irwin suggests the lime may have originated in the overlying road metalling, in which case the infiltration would have been recent relative to the deposition of the grain. It would not, however, explain the dark colour, so that we may in fact be dealing with charred material that had subsequently become lime-enriched through percolation from above. (Interestingly, Irwin also reports on 'some blackened oats' found in what sounds like a clay-lined pit exposed in a gravel pit section at **Brewery Field** near Cockermouth in about 1904. He considers that this, too, was uncharred, but it is difficult to see how the oats, and a layer of blackened hazel twigs covering it, could be readily preserved in any other way than through charring. The material was not dated, though Irwin is inclined to agree with the opinion formed at the time of the bed's discovery that it was an 'ancient British grain-store'.)

From deposits of 1st-3rd century date associated with the *vicus* attached to the fort at Papcastle (**Papcastle AML 76/88**), 40 samples were chosen at random and a further 23 selected from specific contexts, to investigate their plant remains. As so often where uncharred material of this date is preserved, there was evidence for dumping of waste byre material or storage of hay. The most abundant charred cereals were oats, especially in the early phases, with hulled barley and wheat grains (including a little emmer) scattered through the sequence; the glume-bases were all clearly spelt. In addition, charred rye grains, peas, beans, hazel nutshell fragments, and flax seeds were all recorded.

5.5.4 Roman cemeteries

For the few investigations of Roman cemeteries in which plant remains have been studied, none—perhaps unsurprisingly—has produced more than a little evidence. At **Bar Ln DEAR 16/96**, Boroughbridge *NYR*, 'washovers' from 25 bulk samples from 'Roman' cremation pits, post-hole fills and pit fills processed on site yielded charcoal (mainly oak) and some seeds—a few each of charred hulled barley, spelt and bread wheat grains. There was no chaff and very few weed seeds (from ruderal or grassland plants). At **Low Borrowbridge 92 DEAR 6/92**, near Tebay *CUM*, nine samples from a 2nd-3rd century cemetery and enclosures were assessed: they yielded very low concentrations of charred remains. At two other cemetery sites, wood charcoal only was recovered: **Brougham Castle AML 2592**, near Penrith *CUM*, and **Trentholme Dr 51-2**, York.

5.5.5 Roman rural settlement and 'native' sites (mainly Fig 6)

5.5.5.1 Villas

As a type of Roman occupation site, villas are (as is well documented) much less common in the northern region of England than further south. Botanical evidence has been recovered from excavations at just four, all (not surprisingly) from the SE quarter of the region.

From the most north-westerly of the three, at **Dalton Parlours 76**, near Collingham *WYR*, three samples of well fills dated 150-300 CE yielded assemblages dominated by weeds, especially stinging nettle (*Urtica dioica* L.), with a wide range of arable and ruderal taxa, including some typical of biennial/perennial nitrophile communities, providing a general implication of abandonment; there were very few potentially 'useful' taxa. Two samples from the fill (dated 200-370 CE) in a sunken-floored building with stone-revetted sides and sealed by make-up of later flooring, yielded abundant charred spelt glume-bases, with modest numbers of spelt and spelt/bread wheat and unidentifiable wheat grains, and some barley (including the 6-row form), with weed seeds including grasses (especially heath grass) and sedges (these two perhaps from turves, though not interpreted in this way by the original authors). The grain was, presumably, from a crop stored here or nearby.

At **Rudston Villa**, on the eastern end of the Chalk Wolds between Great Driffield and Bridlington *EYR*, ten samples from the fills of a well were examined. They provided quite a rich assemblage, dominated by weeds of waste places, but with a distinctive grassland group including salad burnet (*Sanguisorba minor* Scop.) and small scabious (*Scabiosa columbaria* L.), two plants of calcareous grassland which might be of local origin (they were both also recorded from organic accumulations of Roman date at **Tanner Row (24-30) 83-4** in York), maybe arriving via hay. Some turf may also have been present in the fills at Rudston, but there were only traces of remains which may have come from foodplants for human consumption. Also on the Wolds, at **Langton Villa** *NYR*, material from the fills of a well included considerable quantities of waterlogged wood, both timbers and twigs. The author of the report describing these noted that the wood had become 'soft and cheesy' and that there were 'spherical stony nodules' in the pith of many of the twigs with some other 'petrification', suggesting that preservation, though waterlogged, was rather poor. Nutshell of hazel and walnut was also recorded, together with a single twig of the latter, perhaps proving that the tree which furnished the nuts was growing locally–an exotic introduction to this part of Yorkshire. The well also yielded some 'knarled [*sic*] root-like structures which proved to be stems of Heather', a further example of the Roman exploitation of heathland or moorland which presumably lay at some considerable distance from this site perched on the Chalk. The only other plant remains reported for this site were 'a considerable quantity of burnt wheat' noted from the floor of a small room in the corner of an area interpreted as a threshing floor, and close to a furnace which may have been a corn-drying kiln. No further work on this latter material appears ever to have been undertaken–it does not, for example, feature in Jessen and Helbæk's (1944) survey of charred cereal remains and grain impressions from British and Irish sites.

South of the Humber, at **Winterton**, near Scunthorpe *NLI*, one sample of charred seeds from a Roman hearth has been investigated; no complete list has been published but fig, field bean, and grape (a single individual) and unidentified cereal grains are all listed in a paper devoted to a discussion of the cultivation of grape in Britain in Roman times. Some extremely well-preserved leafy twigs of box are also known from this site, but the only published record appears to be a photograph used by Dimbleby (1978, unnumbered second plate) in a semi-popular account of archaeobotany.

5.5.5.2 Smaller settlements, including 'native' sites

Very many (usually very limited) excavations of small-scale, essentially rural Roman and 'Romano-British' sites have been made in the region. They are considered by dividing our area in four quadrants geographically.

5.5.5.2.1 South-Eastern area

Roman or Romano-British deposits associated with presumed small-scale rural occupation in northern Lincolnshire have been investigated archaeobotanically at three sites in the former area of S Humberside.

At the first of these, near Hibaldstow *NLI*, close to the Roman Ermine Street, several samples from occupation deposits at a site at **Staniwells Farm EAU 90/05** were investigated. Most of the sparse remains were modern seeds, but from two samples from the same ash deposit, associated with a 3rd century oven, modest-sized assemblages of charred remains, largely cereal and associated macrofossils, were recorded. The charred grain showed evidence for sprouting, on perhaps 80% of the spelt and 30% of the better-preserved hulled barley grains (though there was a rather high proportion of unidentifiable grains). The wheat grains were often sprouted to about two-thirds of the length of the grain, whilst those of barley were only just sprouting when charred. These remains gave a strong impression that malting may have been in progress at this site. Besides the grain there was a little spelt and barley chaff and a few weed seeds.

At **Dragonby 64-73**, near Scunthorpe *NLI*, a variety of feature fills provided plant remains, though (as noted above with regard to Iron Age deposits from the site) the work was carried out over a long period and without adequate control so that there was a clear bias in both sampling and sorting, and the sizes of the samples are mostly unknown. The material from this period was dated *c.* 45-300 CE and altogether 29 contexts and 38 samples were investigated. Three fills of a well yielded essentially 'waterlogged' assemblages, mainly comprising nitrophile weeds. There were records for coriander, summer savory, and opium poppy, and also several weld/dyer's rocket seeds (which might be related to dyeing, though in such small numbers they are perhaps as likely to be from plants growing as weeds). Turning to the charred material, overall there was a small assemblage of cereal grains and chaff, the grain mostly unidentifiable but including small numbers of 6-row hulled barley and a little spelt (determined via chaff), plus some charred hazel nutshell. There were also some weed seeds and a single charred ?flax seed.

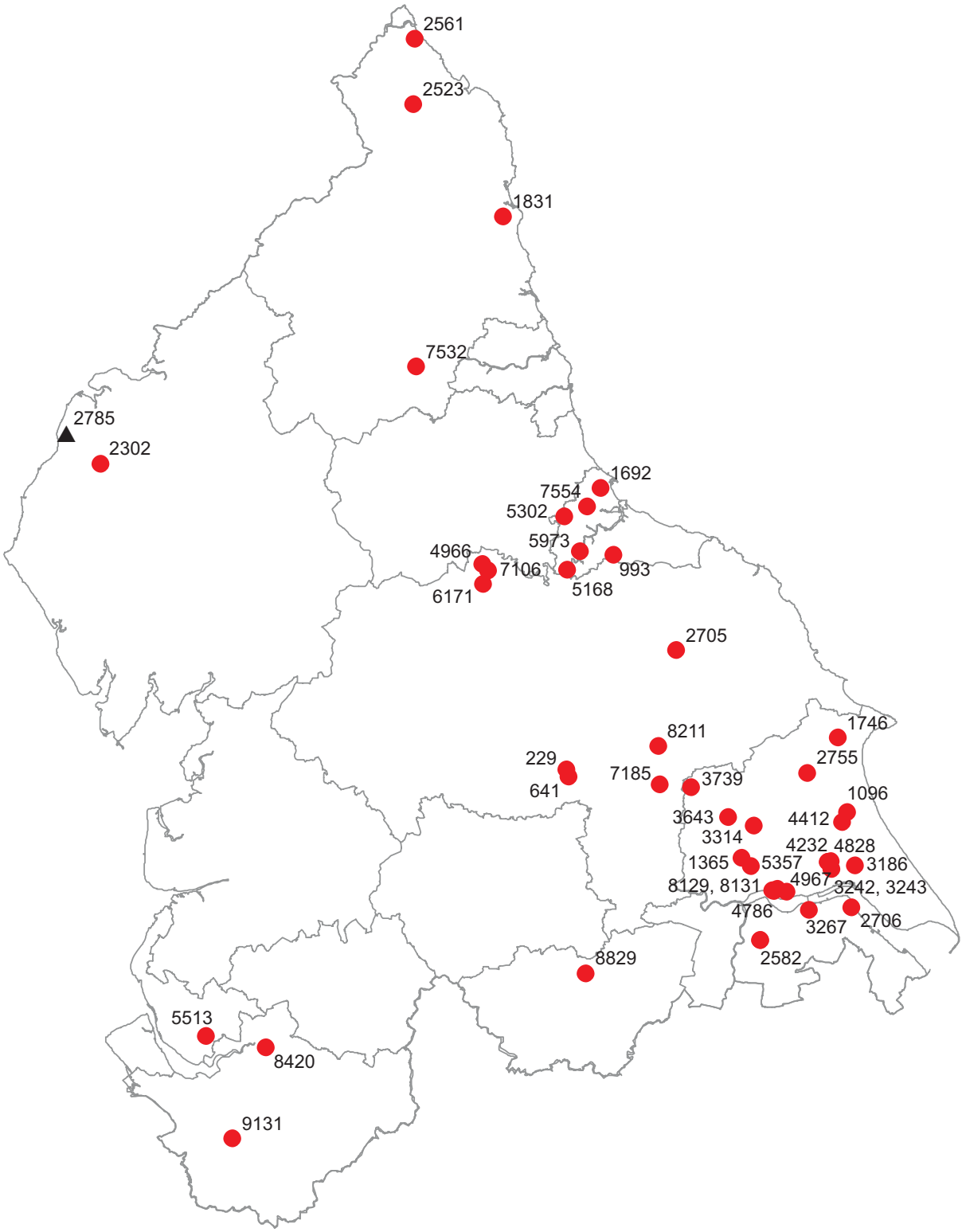

Fig 6: Rural sites with archaeobotanical studies of material of Romano-British date referred to in the text and for which reliable grid references could be found; see also Fig 5 (Roman sites). ?Romano-British, marked with black triangle.

Key: 229—Allerton Grange DEAR 15/94; 641—Bayram Hill DEAR 1/94; 993—Bonny Grove Farm 92; 1096—Brandesburton ASUD 662; 1365—Bursea House 83-4, 87, 91-2;1692—Catcote 87; 1746—Caythorpe Pipeline; 1831—Chester House 85; 2302—Croftlands 77;

2523—Dod Law West; 2561—Doubstead 80; 2582—Dragonby 64-73; 2705—East Gilmoor ASUD 732; 2706—East Halton Skitter EAU 2000/32; 2755—Eastgate South (Driffield) EAU 2001/36; 2785—Edderside 89-90 DEAR 3/91; 3186—Ganstead (S of) EAU 2002/09; 3242—Gibraltar Farm EAU 97/17; 3243—Gibraltar Farm EAU 98/06; 3267—Glebe Farm 92 EAU 93/13; 3314—Goodmanham (NE of) EAU 2000/73; 3643—Hayton 95 DEAR 17/96; 3739—High Catton (E of) EAU 2002/12; 4232—Kingswood EAU 96/55; 4412—Leven-Brandesburton EAU 94/15; 4786—Magistrates Court (Brough) EAU 2001/38; 4828—Malmo Rd EAU 97/38; 4966—Melsonby 92-5; 4967—Melton (South Lawn) 94; 5168—Mourie Farm ASUD 783; 5302—Newton Bewley 98 ASUD 729; 5357—North Cave EAU 97/37; 5513—Ochre Brook 93; 5973—Quarry Farm 2000 ASUD 660; 6171—Rock Castle 87; 7106—Stanwick 84-9; 7185—Stockton West Moor EAU 96/27; 7532—Thornbrough 83-4; 7554—Thorpe Thewles 80-2; 8129—Welton Low Rd EAU 96/17; 8131—Welton Rd (rear 40-52) 91 EAU 91/25; 8211—West Lilling EAU 2002/01; 8420—Wilderspool 66-9 & 76; 8829—Billingley Drive 99; 9131—Birch Heath 2001

Of the deposits sampled during excavations of a Romano-British 'farmstead' at **Glebe Farm 92 EAU 93/13**, near Barton-upon-Humber *NLI*, the only two contexts examined from which interpretatively useful assemblages of plant were recovered were both mid-late 4th century fills of a timber-lined feature. Two samples were examined: one of 45 kg from the lower part of the fills, the other 7 kg, from higher up. The assemblage from the lower sample was rich in nitrophile annual weeds with a variety of other weeds, but otherwise with only a few wetland taxa and a small component of probable foodplants, including apple, coriander, plum/bullace, bread wheat and a single nutlet of the herb, balm (*Melissa officinalis* L.); all, except for the plumstone fragments, were recorded in very small amounts. The remains from the upper sample were a limited subset of those in the (much larger) lower one.

Work on a site exposed during survey for a pipeline at **East Halton Skitter EAU 2000/32**, near Immingham *NLI*, involved examination of 13 samples from various feature fills; one pit fill yielded some charred cereal grains in modest numbers and there was one deposit, not associated with any archaeological features, comsisting of highly humified *Sphagnum* peat (which seems more likely to have been brought from some distance than to represent a material from a local mire in this geological and topographical context).

Close to the Humber shore, at Melton, near Brough *EYR* (**Melton (South Lawn) 94**), late 1st-mid 3rd century material was examined, mainly from ditch and gully fills. The 29 bulk samples examined in the assessment of material from the site as a whole generally proved to contain only a few poorly preserved charred cereal grains—hulled barley, bread wheat, spelt—with traces of pea and some weed seeds. Eight samples were selected for further analysis and, though the concentrations of charred material were low (usually only one or a very few specimens per litre), two assemblages were rather larger. One of these was from early Roman levels and included a modest amount of evidence for spelt chaff and grains, the latter also including oats, barley and bread wheat, but otherwise a large component of grains that could not be identified beyond 'Cerealia'. The 'weeds' present in this and some later Roman deposits from the site were typical of assemblages of the period, though with a modest component of *Danthonia* which (with *Montia fontana* ssp. *chondrosperma*, *Carex*, and *Eleocharis palustris*) might indicate that burnt turves

formed part of the ash deposited into the features investigated. (This is not, however, discussed by the author who follows the usual practice of treating such remains as evidence of exploitation for cereal crops of land with poor drainage and other areas with acidic but dry soils.)

On the Chalk Wolds, just north of the Humber, samples of the fill from a 2nd century T-shaped corn-drying oven at **Welton Wold**, near Brough (perhaps a villa site), provided plant material preserved in a way which has only very rarely been recorded elsewhere in the region (though it is quite likely either to have been overlooked or to have been lost through the over-rigorous nature of routine processing techniques): that is, 'silicified' remains. In this case, the assemblage was a mixture of charred and silicified material, mostly cereal grains and chaff. The charred remains consisted especially of spelt and emmer/spelt glume-bases, and spelt and wheat grains not identifiable further, together with some barley and brome grains. The silicified material consisted of abundant wheat awn fragments and unidentified cereal chaff with smaller amounts of spelt-type glume beaks. (The significance of the 'silicified' material is that it offers a chance to study certain kinds of plant remains preserved where burning has occurred in fully oxidising conditions. It is most likely to represent deposits of ash which have accumulated quickly or become rapidly buried, as a result of which the delicate structures have escaped mechanical damage. In such cases, charred plant remains may well be sparse or lacking. Beyond studies of cereal chaff, a further potential use for silicified remains is in detecting ash used for some purpose, such as in dyeing or soap-making.)

By a curious coincidence, silicified material was also recovered from a site on the Teesside-Sandsend Ethylene Pipeline (TSEP), near Goodmanham (**Goodmanham (NE of) EAU 2000/73**), about 7 km NW of Welton *EYR*. Samples from a variety of feature fills of 1st to 4th century date yielded at least a few charred cereal grains, and sometimes also some chaff (probably all spelt wheat), whilst one context yielded a high concentration of silicified chaff (in this case almost entirely awns, the 'beard' of the cereal spikelet). There was also some probable evidence for turves in the form of charred heather root/twig (and in one case also shoot) material, rhizome fragments, and heath grass caryopses. This material may have originated in areas of heathland developed—perhaps somewhat surprisingly—on the chalkland. (Heather is sometimes found on leached soils on the Chalk (*fide* Crackles 1990, 112), as is heath grass, so importation from, for example, the more distanct lower-lying sandy ground to the south and east of Market Weighton, need not necessarily be invoked.)

Other small rural sites on the Wolds have yielded some modest-sized assemblages of charred plant material. Thus at a site along the **Caythorpe Pipeline**, at the eastern end of the Wolds near Rudston *EYR*, a ditch fill yielded an assemblage in which hexaploid wheat and barley grains were moderately common, though with only a single spelt chaff fragment and a few weed seeds. On another pipeline, the TSEP, at **Arras Cottages ASUD 782 (TSEP)**, near Market Weighton *EYR*, one pit fill context was examined in an assessment; the 12 litre sample yielded a modest-sized assemblage of largely unidentifable charred grains (though with some hexaploid wheat and hulled barley), spelt glume-bases, barley rachis, small legumes and weed seeds.

Several sites with rural Romano-British occupation have been studied in the Holderness lowlands to the S and E of the Chalk Wolds. Just off the chalk at Driffield *EYR* a site at **Albion St 92 EAU 92/12** produced some 4th century pit/ditch fills which were almost barren, whilst at **Eastgate South (Driffield) EAU 2001/36** a pit and a ditch fill produced some tentative evidence of charred turves. In Beverley, a site at **Waterside Rd EAU 2001/39** revealed some ditch fills with Romano-British pottery in which there were—unusually for a site of this period—wood chips and woody debris apparently from scrub, and some aquatics.

In Holderness proper, at **Leven-Brandesburton EAU 94/15** *EYR*, NE of Beverley, fills of ditches (and a few pits) of 2nd to 4th century date were investigated via 34 samples. There was good preservation of plant macrofossils in many contexts, especially the ditch fills; the assemblages had a prominent component of remains from biennial and perennial plants of disturbed soils, especially where nutrient enrichment has occurred, and typical of abandoned waste ground, and untrampled edges of paths and fields—here probably indicating neglected field margins/ditch banks. There was some overlap into a grassland/turf group, but annual weeds of cultivated land and waste places were also present. Rather few wetland taxa were recorded, considering the nature of the contexts; there were a few peatland types, presumably imported with turf or peat, and a single record of a charred cereal grain, but no clear component of foodplants other than remains of some plants which are also readily accounted for as elements of the local vegetation and which found there way into the deposits through natural dispersal.

By contrast, at Malmo Road, on the N outskirts of Hull, neither of the two investigations undertaken, both of which encountered deposits broadly dated as Roman or Romano-British (**Malmo Rd EAU 92/01** and **Malmo Rd EAU 97/38**), yielded more than a very few plant remains and these were of no interpretative value. Similar results were obtained for ditch and pit fills from a site nearby on the TSEP, at **Lawns Farm EAU 2002/06**, near Dunswell *EYR*. Some deposits in the Kingswood area, on the other hand, from **Gibraltar Farm EAU 97/17**, were more productive. A ditch fill gave some evidence for occupation in what was essentially an aquatic deposit: traces of linseed and charred cereal chaff (though there was more evidence for detritus from occupation from the insect assemblage). A ditch/bank deposit from the same site yielded a little chaff, a barley grain, and traces of hempseed with some wet meadow plants. Later excavations at the same site (**Gibraltar Farm EAU 98/06**) yielded many samples, mainly from Romano-British deposits, but the nine samples examined in an assessment revealed only small amounts of essentially natural wetland plant remains with little indication of human activity—perhaps reflecting abandonment rather than site use.

Several Roman and Romano-British sites have been studied in the SE part of the Vale of York, N of the Humber, most notably at North Cave and near Hayton. On the apron of sands and gravels at the foot of the Jurassic-Cretaceous scarp a little NW of Brough at **North Cave EAU 97/37** *EYR*, two main phases of Romano-British occupation have been investigated archaeobotanically. A variety of contexts, including enclosure ditch fills and pit fills, and especially the fills of a deep, narrow pit with a wicker structure at its base, all from the late 2nd-?early 3rd century phase, yielded well-preserved plants remains in most cases, though they were much more

abundant in some samples than others. The remains were mainly uncharred, but wood charcoal was frequent and there were a very few charred cereal grains (barley, wheat, ?rye) and the merest traces of spelt wheat and barley chaff. Some charred heather remains perhaps represent material used as fuel. As at some other sites of this period (e.g. **Leven-Brandesburton EAU 94/15**, see above), there was a strong component of perennials of disturbed places likely to represent initial phases of abandonment or neglect. Coriander, recorded from two contexts, was the only cultivated non-cereal. Some wetland and grassland habitats were also represented.

From the next phase, dated late 3rd-mid 4th century, two pit fills and four deposits associated with the flue of a stone-built oven or similar structure were studied, though only small samples (mostly 1 kg) were examined. There were some modest-sized assemblages of uncharred remains from the pit fills (though with essentially the same kinds of taxa as for the preceding phase), but the deposits associated with the flue yielded small amounts of charred remains including a few wheat grains and chaff (amongst them spelt), and traces of barley; there was a single tentative record for summer savory.

From a group of samples from a pit fill and two ditch fills, all of mid 4th century and later date, there were rather small groups of plant remains, mostly uncharred (from the ditch fills), with only a trace of charred barley and hexaploid wheat from one sample; the remains included wetland taxa likely to have been living in the ditches (!) and weeds of disturbed places, especially those with damp soils. A single sample (from another ditch fill, and dated broadly to the late 3rd-4th century and later) produced a single capsule fragment of flax. Though there were some woody taxa (especially alder), from these late Roman deposits, heathland taxa were lacking (in contrast to the earlier phases).

To the W of North Cave, in the lowlands of the Foulness Valley, excavations at **Bursea House 83-4, 87, 91-2** near Holme-on-Spalding-Moor *EYR*, provided an opportunity to study late Roman pottery making. Deposits filling ditches or associated with pottery kilns were investigated by means of 37 samples of 20 litres each and these yielded small amounts of charred plant material. There was consistent evidence from the richer contexts for cereal remains, usually barley and wheat grains, with some glume bases and rachis fragments. The most frequent wild taxa were recorded as Cyperaceae and Polygonaceae, with unusal records for the shallow-water plant shore-weed (*Littorella uniflora* (L.) Ascherson) and also remains of heath grass, *Danthonia*. The presence of the last of these, together with substantial numbers of grass culm base/rhizome fragments, led the report's author to the conclusion that turves could have been used to make the kilns and peat to have been cut as fuel to fire them.

Further along the Roman road from *Petuaria* to *Eburacum*, at **Hayton 95 DEAR 17/96** *EYR*, a programme of sieving of 1st century deposits (samples not detailed in the report) mainly recovered modern cereal straw and rootlets; there was little charcoal or other charred material present, though barley, spelt and bread wheat were all recorded, with spelt and bread wheat chaff suggesting processing at the site and, in addition, there were a few weed seeds. More recent excavations revealed a well in which there was good waterlogged preservation (the artefacts including

wooden furniture!); a single sample examined informally (in parallel with a study of insect remains) produced a very large assemblage of taxa—as is typical of such well fills—some 92 vascular plants and mosses, the more abundant being nitrophile weeds, especially perennial and biennial taxa, so perhaps largely representing dumped vegetation from clearance following a phase of disuse of the area, or dispersal from plants which were growing around the well after it ceased to be in use.

Heading now in the direction of *Eburacum*, some further sites on the TSEP and other pipeline routes have proved useful in recent years as a source of information about Roman-British rural activity in the SE Vale of York. At **High Catton (NE of) EAU 2002/15** *EYR*, plant remains were investigated from ditch and gully fills of 4th century date; amongst these, traces of ?burnt turves and straw were found. A little further N still, at **North Farm EAU 93/11**, near Stamford Bridge *EYR*, a few plant remains from deposits associated with roads, ditches and buildings were recovered but they were of little value in understanding the nature of the occupation or activity here. Nearby at another site, **Stamford Bridge 98 HA**, a small sample from the fill of a linear earthwork from a ladder settlement indicated that there was excellent preservation of remains of insects and plants by anoxic waterlogging, the plants mainly comprising herbaceous taxa of wet places with some woody plants (mainly *Rubus*) from scrub. Somewhat closer to York, fills of Romano-British features at **Stockton West Moor EAU 96/27** to the NE of the city gave a few uncharred plant typical of land with impeded drainage (from one of four samples), and a large assemblage including charred and ?partly charred arable weeds and chaff and culm-node fragments, all of it almost certainly modern (from another).

A few km N again, a site on the TSEP near **West Lilling EAU 2002/01** *NYR*, revealed an extensive area of Romano-British (mainly late 3rd century) ditches. Four ditch fills were found to have good waterlogged preservation of plant and insect macrofossils, the plant remains representing disturbed ground and regenerating scrub and tall herbaceous vegetation; thinly distributed charred remains included some spelt grain and chaff, as well as material which may have originated in burnt and unburnt turves or peat (including charred and uncharred heather, charred root/rhizome and herbaceous detritus, and some uncharred seeds including *Danthonia* caryopses, seeds of *Montia* and *Potentilla* cf. *erecta* and *Scirpus setaceus*—though it is possible that these might have grown in turf in the vicinity). In contrast, the insect remains indicated grazing but gave little evidence for the presence of people. Another site further N on the TSEP, at **Acaster Hill ASUD 716**, at Husthwaite, near Easingwold *NYR*, one secondary ditch fill and two roundhouse gully fills were investigated via samples of 10-11.6 litres; they yielded abundant charcoal, but two also produced some cereals (traces of wheat and hulled barley grains and spelt glume-bases and modest numbers of ‘indet.’ cereal grains), sloe stones, and some weed seeds.

Within the pre-1996 city limits of York, but no doubt rural at the time they formed, occupation deposits at several sites have been studied, though preservation of plant remains has usually been extremely poor. At two sites along the old Roman road to Tadcaster (*Calcaria*), **Tadcaster Rd (62) 95 EAU 95/44** and **The Fox EAU 97/41**, samples were effectively barren and the same was true for ?Roman material from **Manor Ln EAU 97/27** in Rawcliffe, to the N of the city.

A site removed from any others of this period in the southern central Vale of York was found during pipeline work between and Chapel Haddlesey and Eggborough in the Aire valley S of Selby (**Chapel Haddlesey-Eggborough Pipeline EAU 99/31**). Work on a single 3 kg sample from a pond or ditch fill revealed elder twigs and seeds and remains from alder and willow, in contrast to a mainly aquatic insect assemblage. There were also some weeds of waste ground, a single seed flax, a single hemp achene fragment, a little charred ?spelt chaff, and peatland material in the form of leaves of *Sphagnum* and a single heather capsule.

Following next a line northwards along the Permian limestone (and adjacent Carboniferous Coal Measures sandstones) belt on the W margin of the Vale of York, the most southerly sites with evidence for plant remains from deposits from small-scale rural Roman/Romano-British occupation lie between Doncaster and Barnsley. Three sites in the South Yorkshire area fall in this category. At **Billingley Drive 99**, Thurnscoe, 91 contexts, mainly ditch and feature fills were assessed by means of 100 BS samples, totalling 1179.5 litres (i.e. a mean of ~12 litres/sample), and 40 of these (from 34 contexts) were chosen for subsequent analysis. The detailed results for a selection of these in turn appear in the published report. Overall, there were low levels of charred cereals in many deposits, with a few higher concentrations, notably from the fills of a large oven interpreted as having been used for corn drying. Indeed, material from the fills of the oven accounted for >82% of the quantified material (including chaff, coleoptiles, and cornfield weeds). Overall, 71% of the cereal grain was indeterminable, the rest mainly wheat (some of it identified as emmer, emmer/spelt or spelt), with a little barley, and traces of oats and rye. The chaff mainly comprised glume wheat spikelet forks and glume-bases (mostly spelt or unidentifiable beyond ‘wheat’, though surely either emmer or spelt), with a few rachis fragments of glume-wheat, free-threshing wheat and barley. The barley grain included some twisted and hulled 6-row specimens. Some of the grain from the corn-drying oven had begun to germinate prior to charring (in at least 20% of the grain from samples from three contexts from the oven) and detached coleoptiles were frequent. The author concludes that the corn drier may have been used for parching the glume wheats (to make subsequent processing easier), for drying the grains prior to storage, or for roasting during malting; the material may represent grain lost during any or all of these three processes.

Intriguingly, also recorded at this site were heather remains, including capsules and other material, and there were some records for heath grass. Charcoal from four contexts was examined in detail: there were quite a few Ericaceae (presumably heather) stem fragments from both a beam slot fill (here forming the whole of the charcoal content) and a hearth (where all but a little of which was oak and birch charcoal); Ericaceae stems from the beam slot fill were dated by radiocarbon to 130-420 CE (so they do not appear to have originated in peat, for example). An origin in heathland material brought as fuel seems likely.

In the village of Shafton, near Barnsley, two recent sites have offered an opportunity to study Romano-British deposits. At **High St (Shafton) WYAS 860** (NB shown on Fig 5, not Fig 6), 35 samples from primary ditch fills of 1st-2nd century date and other deposits associated with an enclosure were examined; they produced modest

numbers of charred grains, including emmer, spelt and barley; there were also diagnostic glume-bases of emmer and spelt, rachis-internodes of barley, and a small weed flora. Most of the grain came from contexts related to two hearths, mainly from secondary fill contexts; it was thought likely to represent processing waste.

Further N, the line of the A1-M1 link road has provided several glimpses of Roman/Romano-British rural occupation. At **Swillington Common (A1-M1) 92-8**, later Roman enclosure ditch fills (totalling 41 litres of sampled material) produced a few charred cereals, mostly 'indet.', and some weeds. Further NE, at a site called **Roman Ridge Rd 98 HA**, five samples were bulk-sieved. They yielded small amounts of charred rhizome including onion couch (*Arrhenatherum*) 'tubers' and some modern seeds. Further NE, again, at a site at **Parlington Hollins (A1-M1) 92-8**, some early Roman ditch fills were investigated. Again, there were small concentrations of grain and rather more chaff (mainly emmer/spelt glume-bases) with some weeds and grassland indicators in the form of *Danthonia*, *Plantago lanceolata* and further *Arrhenatherum* 'tubers', perhaps all from the burning of grass turves. Mid- and later-Roman assemblages from the same site were essentially similar. Not far from this was a site NE of Garforth, near Leeds, at **Park House DEAR 8/95**. Here, late Roman fills of large ditches, a pit, a grave, and a furrow, were investigated by means of bulk-sieved samples. The assemblage as a whole predominantly comprised cereal chaff, mainly spelt glume-bases, with a little bread wheat and traces of barley chaff. There were some weed seeds in low concentrations which might be indicative of heavy or seasonally waterlogged soils (probably at some distance from the site). The evidence may be consistent with processing of a locally grown (but off-site) crop. The absence of *Anthemis cotula* here may reflect the prevalence of well-drained calcareous soils in this area.

Further along the Permian limestone at **Bayram Hill DEAR 1/94**, E of Knaresborough *NYR*, two deposits from a rectangular enclosure, one ?Romano-British, the other ?mid 4th century were investigated by means of bulk samples. The former gave an assemblage dominated by hexaploid wheat grains (mostly spelt, with about 30% bread wheat) along with some hulled barley and rye; rye chaff was also present, and there were some weed seeds. The wheat glumes present were all of spelt but there was also some bread wheat chaff. Achenes of the weed stinking mayweed were abundant, suggesting the exploitation of heavier soils. The ?mid 4th century sample gave spelt and bread wheat with rye and a low concentration of barley, altogether rather like the ?Romano-British sample. At **Allerton Grange DEAR 15/94**, nearby, remains from 4th century linear and circular features were examined. Very low concentrations of grains, mainly oats with some barley and hexaploid wheat, were recovered, and caryopses of large grasses were common, suggesting a poorly-cleaned crop. Seeds of stinking mayweed were again well represented here, in an area with clay soils, which are said to favour this weed species.

Two sites within the current urban and suburban area of Leeds have yielded evidence for Romano-British rural occupation. At **Bell Hill EAC 76/01**, Stourton, SE of the city centre, two ditch fills were perhaps of this date. The combined 39 litres of sediment from two samples yielded a few charred spelt grains and some *Danthonia* and *Bromus* caryopses (both treated as crop weeds). On the N fringes of suburban Leeds, at **Lakeland Crescent DEAR 12/94** in Alwoodley, bulk samples from a

roadside ditch produced charred twigs, sedge stems, and grassland taxa (perhaps vegetation burned off prior to road building), together with some charred cereals (barley, spelt).

Passing back across the central Vale of York to the northern flanks of the Chalk Wolds, the evidence from the Roman levels at **West Heslerton (draft plant report)** (NB plotted on Fig 5) needs to be mentioned as a rare example of a site of this period and type in that area. The 18 samples from Roman deposits which were examined produced reasonable quantities of charred cereals, barley being fairly frequent in one enclosure ditch fill. Wheat was sparse in all samples with no really significant concentrations. Oats were frequent in some enclosure ditch samples and more so in one other sample. Unusually, perhaps, for this period, rye was frequent in another sample. There were very few arable weeds, mainly in one part of a ditch fill, where cereal chaff, mainly rye rachis, was found.

Across the Vale of Pickering, a site at **East Gilmoor ASUD 732** near Kirkbymoorside *NYR*, on the Tabular Limestones skirting the higher ground of the North York Moors, samples from five feature fills were examined. There were traces of uncharred remains (which, though not discussed in such terms by the report's author, are likely to be modern) but also some charred hazel nutshell, and a very few charred cereal grains, but with heather 'wood' in four of the 'flots'.

Moving W again, at the far northern end of the Vale of York, two excavations in the Catterick area of N Yorkshire have provided an opportunity to study plant remains from small-scale rural occupation. At **RAF Catterick 94 EAU 94/41**, a variety of fills of pits, ditches and post-holes as well as some 'occupation layers', dated as 'Roman' were investigated. Very few plant remains other than a little charcoal were recorded from these deposits, but one sample yielded a few charred hulled barley grains and one of wheat, some of the barley showing evidence of sprouting. Another sample gave a fragment of oats and some onion couch 'tubers'.

5.5.5.2.2 North-Eastern Area

From the northern end of the TSEP in Teesside, a single sample from amongst the 23 initially evaluated from a site at **Mourie Farm ASUD 783**, at Low Worsall *NYR*, between Yarm and Darlington, was re-examined in detail. The assemblage from the fill of a ditch dated to the 1st-4th centuries CE contained some charred cereals: one grain each of hexaploid wheat and barley, with some 'indet.' grains and weed seeds. Some 'charred root' material recorded as present amongst the charcoal is regarded by the author as perhaps having come from burning ditches for cleaning (though it is not entirely clear how such a practice would lead to charring of subterranean parts) or as perhaps representing roots of plants uprooted during harvesting and incidentally charred with the crop.

Romano-British deposits have been investigated archaeobotanically at three further sites in the Tees lowlands. At **Bonny Grove Farm 92**, on the southern edge of Middlesbrough *CLV*, a total of nearly 190 litres of pit, gully, and ditch fills yielded low concentrations of charred plant remains, including spelt and barley chaff, barley and hexaploid wheat grains, and a small range of weeds; there was also some grass and

sedge material, perhaps (with hindsight) from turves. At **Catcote 87**, near Hartlepool, N of the Tees, a total of 54 litres of sediment from the fills of a building foundation trench, a post-hole, and a masking layer adjacent to a building, produced moderate concentrations of unidentified cereal grains, with some wheat and barley, the latter including hulled and twisted grains together in one sample and therefore indicasting the presence of the 6-row form. There were also traces of spelt glumes and small numbers of weeds of no particular interpretative character. Also near Middlesbrough, a site at **Newton Bewley 98 ASUD 729** permitted the investigation of six context of 3rd-5th century date. There was one large and five smaller groups, mainly unidentified cereal grains but some hulled barley, and spelt glume-bases and grain. Not far away at **Quarry Farm 2000 ASUD 660**, Ingleby Barwick, samples from 41 contexts from field system ditches, gullies and pits were bulk-sieved; they mostly yielded only a few charred remains, though there were 14 contexts with 'significant' (though probably actually rather small) numbers of uncharred remains (which look suspiciously as if they might have been modern). There were also some charred cereal grains and chaff remains, including two concentrations of spelt glumes—one from a beam-slot—perhaps indicating processing nearby.

A single site on the Durham plateau area to the N of the Tees basin has yielded material of Romano-British date—perhaps from the 3rd century. At **Old Durham 51**, a few miles E of Durham City, a rubbish pit from a civilian occupation site produced what was essentially a 'spot find' of charred wood, the fragments small and thought to be from brushwood or chippings. They were identified as hawthorn (*Crataegus*) and gymnosperm (?juniper, *Juniperus*), though it seems unlikely that charcoal of hawthorn could readily be separated from that of several *other* common woody members of the rose family whose anatomy is essentially similar (apple, pear, rowan), and juniper is perhaps an unexpected find in lowland NE England, unless imported for some purpose (such as incense?).

In the Tyne Valley, a few kilometres to the south of Hadrian's Wall, excavation of a native enclosure at Thornbrough Scar (**Thornbrough 83-4**), near Corbridge *NHU*, was accompanied by sampling of a large number of contexts for analysis of plant remains—mostly fills of post-holes of 3rd-5th century date. A total of 635 litres was processed, and in the resulting assemblage charred cereal grains formed the dominant component, with much chaff but few weed seeds. There were grains of 6-row barley and spelt, and the chaff included ?emmer as a probable contaminant; rye was represented by rachis internodes and grains. There was also one ?flax seed as well as hazel, sloe, blackberry and the weeds present included corncockle. Of interest here in the context of taphonomy is the programme of dating of grain by AMS undertaken by van der Veen (1992, 61-2) which revealed a rather later date for the rye, spelt and barley than the wood charcoal; the dates on the latter, taken at face value, would have placed occupation firmly in the Iron Age.

Further N, again, on the Tyne-Forth coastal plain at **Doubstead 80**, near Berwick-upon-Tweed *NHU*, two samples were investigated—from the primary silt of a ditch terminal fill and the lowest fill of a pit, both from a rectilinear enclosure dated 75-200 CE. The ditch fill contained remains mainly of aquatic and wetland plants, with a range of weeds and traces of heathland/moorland taxa; the pit fill yielded traces of

charred barley and charred flowers and seeds of cross-leaved heath, the last perhaps arriving with bedding or turves.

5.5.5.2.3 North-Western Area

Two sites from the northern part of the region W of the Pennines have been investigated archaeobotanically. At **Croftlands 77**, near Wigton *CUM*, three samples from fills of one Romano-British (1st-2nd century) ditch gave a little evidence for rush-dominated pastures and for eutrophication (nutrient enrichment); there was no evidence of cereal cultivation, however, and the assemblages were of low diversity. At **Edderside 89-90 DEAR 3/91**, near Silloth *CUM*, five bulk samples from layers and a single pit fill from a probable Romano-British farmstead yielded a few charred grains of each of wheat, barley (some of it hulled), oats, ?bread wheat, plus a single spelt chaff fragment and traces of weed seeds.

5.5.5.2.4 South-Western Area

From the southern part of NW England, a 3rd century deposit rich in dumped charred cereals and chaff was reported from **Wilderspool 66-9 & 76**, near Warrington *CHE*. It was from a ditch fill and analysis of a small subsample showed the plant material to consist predominantly of spelt chaff with a little spelt grain (probably tail grain, i.e. under-sized grain that passes through sieves used in grain-cleaning); there were also small amounts of rye chaff and grain, perhaps contaminants.

At **Irby CfA 31/2002**, near Birkenhead *MER* a selection of the very large number of samples taken from layers, ditch and pit fills, and an oven, from a 1st-4th century native site were assessed (details in **Irby DEAR 27/96**); there were disappointingly few remains in the ditch fills, but the oven deposit yielded abundant charred barley grains, some spelt grains and chaff, and various weed seeds. Subsequent analysis of selected contexts produced assemblages from some 3rd/4th century levels associated with oval buildings in which there were traces of naked barley and emmer (thought to be reworked from earlier deposits) with traces of spelt and hulled barley. Not far away at **Ochre Brook 93** near Liverpool, material from the fills of construction features, pits, a posthole and ditches yielded charred cereal grains—mainly hulled barley, with a little wheat, including single specimens of spelt and ?bread wheat—but no chaff. There were some weed seeds and a few taxa representing grassland, heathland, and wet ground (notably a few *Danthonia* fruits and a single heather wood fragment, perhaps originating in heathland turves).

Small amounts of evidence that may more securely indicate the use of turves were also obtained from a series of samples from deposits (including ditch fills) associated with a series of Roman-British roundhouses at **Birch Heath 2001**, near Tarporley *CHE*. This evidence comprised traces of rhizome and culm material of grasses and sedges, and there were hints of the presence of some ericaceous material revealed by both the plant macrofossil and charcoal analyses. Very low concentrations of cereal remains were recovered, though with the wheat grains including a relatively high proportion of bread wheat along with the usual spelt (and perhaps also some emmer). The charred material was generally heavily impregnated with silt, which hampered recovery by flotation.

By far the oldest report on plant remains in the Northern Region is for Roman material from several sites in Manchester, although the report (Manchester 1899) is not well organised and it is difficult to relate the bioarchaeological evidence to the stratigraphy. The plant material is probably best thought of as spot finds from a rubbish pit and some 'layers' from shafts from several sites examined to different extents, though (by modern standards) little more than 'watching briefs'. Two assemblages consisted mainly of woodland/heathland mosses (rather unusually for deposits of this period), with several records for woody taxa, as wood, bark, and leaves. There are unusual (and perhaps erroneous?) records of juniper (berries) and hard fern (*Blechnum spicant*), as well as gorse stem, heather and other woody material which might be from brushwood for construction purposes.

5.5.6 Summary and future prospects

It is clear that we have an abundance of evidence for plant use during the Roman period in Northern England, both from military sites representing Roman Imperial invasion and occupation and from those where civilians—natives, Romanised or not, or Roman settlers—lived in the countryside or in one of the several urban centres. We see the importation of a variety of plants new to the British Isles—exotic crops arriving as part of a cultural package. Meanwhile, spelt wheat, already well established in the Iron Age, remains a staple, but bread wheat comes to be seen more and more in archaeobotanical assemblages. More detailed examination of the available data—something beyond the scope of this broad review—may (if tightly enough dated assemblages are available) shed more light on the changes in crops through the region during the first four centuries CE. Similarly, we seem to be seeing the appearance of some new plant associations in the countryside, presumably a result of changing patterns of exploitation of field and woods. These would also repay closer examination. The regular occurrence of remains likely to have been brought in turves from moorland or heathland is another interesting indication of how natural resources were being used—with implications both in terms of the extent of ground suitable (when needed) for turf-cutting and for the after-effects of paring.

With regard to forts and the civilian towns which grew up around them we have a wealth of evidence from York and Carlisle, though as soon as we shift the focus to examine different areas of these towns we actually find the evidence to be patchy, partly as a result of the nature of the material in the ground, but also as a function of when and where excavations have been possible. Similarly, looking at the distribution of sites across the region, we again find a preponderance to the E of the Pennines with rather few from the western lowlands. 'Romano-British' sites productive of evidence for macrofossil plant remains are very few in the W, whilst the corpus of information from the SE Vale of York and, to a lesser extent, the Tees basin, is quite substantial.

5.6 Immigrants from the East: Anglians and Anglo-Scandinavians (5th C to 1066 CE)

Apart from the very abundant evidence of plant remains from one major and a few minor sites revealing Anglo-Scandinavian (mid 9th-late 11th century) occupation in York (discussed below), there is an extremely small body of information available for this period for the north of England.

5.6.1 Anglian occupation and activity (Fig 7)

5.6.1.1 Anglian occupation on former Roman sites

There is no instance in our region of clear archaeological evidence for Anglian occupation directly following from Roman and there has been much debate on the question of the nature of the end of Roman towns such as York and Carlisle and their history in the period before there *is* clear evidence that they were re-occupied in the ninth or tenth centuries. At several sites in York, the period between the 4th and 9th centuries is marked by the accumulation of a dark-coloured 'loam' widely termed

'Dark Earth'. Though this has been investigated in some detail in towns such as London and Worcester, material from York or other northern towns has so far received little attention (Usai 2002). Certainly, no analyses so far made of plant remains from this material have shed light on the nature of environment or human activity (if any) through this long period: samples of 4th-9th century date from two sites SW of the Ouse in York yielded more than a few plant remains, to judge, at least, from assessment exercises.

Thus at **Wellington Row 88-9 EAU 95/14**, material from eight contexts—dumps and fills of pits and a well of broadly 4th-9th century date—have been examined during an assessment exercise. Plant remains other than charcoal were limited to traces of unidentifiable cereal grains (from two dump contexts), and of uncharred elder, nettle and hemlock (*Conium maculatum*) fruits (from the well fill). Similarly, for excavations in Micklegate, at the **Micklegate (1-9) 88-9 EAU 93/22** site, five 4th-9th century contexts of various kinds were examined; again, only a few of the more durable (and easily reworked) remains were recorded. Of the few Anglian deposits at 16-22 Coppergate assigned to the excavator's Phase 2 (5th-mid 9th centuries; no report available), only two layers were sampled, and only a single BS sample from one context and two 1 kg subsamples from another have been investigated. The BS sample yielded only charcoal, whilst the two subsamples from the other sample gave small assemblages of mainly weed taxa with traces of charred oats and uncharred celery seed and elderberry seeds in one, and elderberry alone in the other.

In Carlisle, Anglian deposits overlying accumulations of 1st-4th century date have been investigated at **Castle St (Carlisle) 81-2**. Here a single sample of this date was examined from the basal fills of a well; it contained rather diverse flora, though remains were at low concentrations, apart from numerous bracken fronds and a few hazel nutshell fragments, perhaps from dumped byre waste. As many of these taxa also occurred in the underlying Roman material there is, of course, the possibility that this material was not wholly Anglian, even if finds within it were.

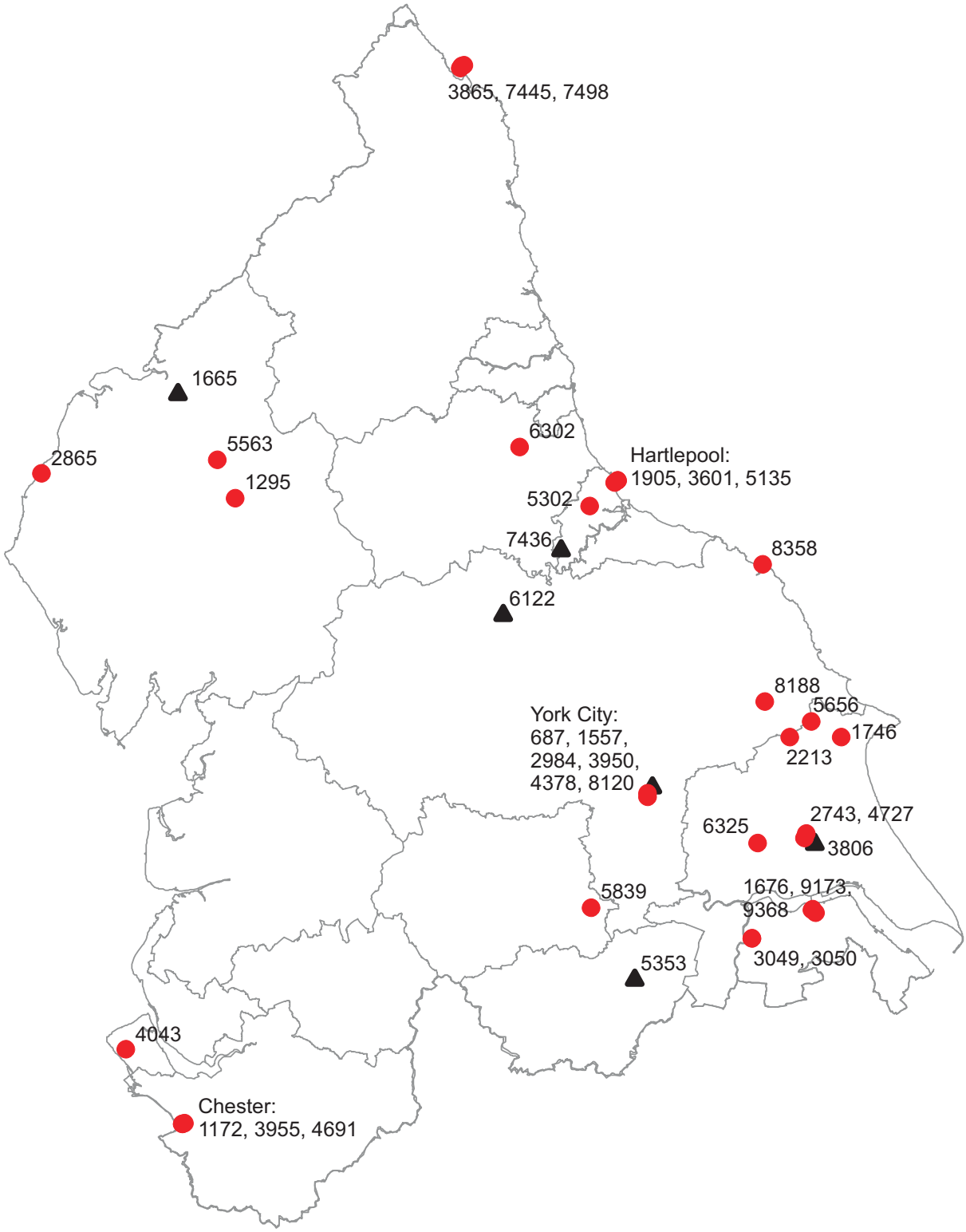

Fig 7: Sites with archaeobotanical studies of material of Anglian or 'Saxon' date (tentatively dated cases marked with a triangle) referred to in the text and for which reliable grid references could be found (some sites with reports on preservation of wood by mineral replacement are not *included here)*

Key: 687—Bedern/Aldwark 76-81 (Anglian pits); 1172—Bridge St (Chester) PRS 2002/16; 1295—Brougham Castle DEAR 5/92; 1557—Carmelite St EAU 91/15; 1665—Castle St (Carlisle) AML 77/88; 1676—Castledyke 89-90 EAU 92/02; 1746—Caythorpe Pipeline; 1905—Church Close 84-5 (Anglo-Saxon); 2213—Cottam 93 EAU 94/32; 2743—Eastgate (Beverley) 83-6; 2865—Ewanrigg AML 85/88; 2984—Fishergate (46-54) 85-6 (Anglian); 3049—Flixborough 89 EAU 2000/56 (location also for 3050—Flixborough 89 EAU 93/21; 3601—Hartlepool Headland sites ASUD 644; 3806—Highgate 77; 3865—Holy Island Village 77; 3950—Hungate area EAU 2000/29; 3955—Hunter St School 79-81; 4043—Irby CfA 31/2002; 4378—Layerthorpe Bridge EAU 2000/64; 4691—Lower Bridge St 74-6; 4727—Lurk Ln 79-82; 5135—Morrison Hall 87 AML 52/90; 5302—Newton Bewley 98 ASUD 729; 5353—North Bridge 93-4 EAU 97/16; 5563—Old Penrith 77 & 9; 5656—Paddock Hill (Octon) AML 14/93; 5839—Pontefract Castle 82-6; 6122—Richardsons Depot DEAR 10/97; 6302—Saddler St (61-3) 74; 6325—Sancton (Saxon Cemetery) 76-80; 7436—The Garth ASUD 803; 7445—The Heugh DEAR 38/94; 7498—The Winery 2000 EAC; 8120—Wellington Row 88-9 EAU 95/14; 8188—West Heslerton (draft plant report); 8358—Whitby Headland DEAR 5/99; 9173—Barton-upon-Humber; 9368—Barrow Rd 99-2000

In Chester, a single context, a Saxon ‘dark earth’, investigated (under two context numbers) at **Hunter St School 79-81**, similarly yielded very small numbers of plant remains from the two samples examined, presumably all charred (it is not clear from the report) and of little interpretative value. The record here of a single ‘*Dianthus* spp.’ seed, not illustrated in the report, is somewhat suspicious. One other sample of this date has been examined from excavations in Chester: 750 ml of supposed Saxon plough soil from **Lower Bridge St 74-6**. It contained a very few remains—four uncharred seeds (of no interpretative value) and five charred cereal grains. Another site in the same area (**Lower Bridge St EAU 89/32**) was a little more productive, a pitfill of Saxon date yielding evidence for faecal material in the form of parasite eggs, chewed fish bones and some foodplant detritus, including wheat/rye ‘bran’ and a few of the more decay-resistant kinds of seeds from edible fruits.

More recent excavations in the centre of Chester (**Bridge St (Chester) PRS 2002/16** revealed a number of features of dated to the period between the 4th century and *c.* 900 CE. Material from a total of ten contexts from this phase was investigated for the assessment, with two from a layer of ‘dark earth’ and seven of the remainder from deposits interpreted as feature/cut fills. All ten samples yielded at least a little charcoal, and seven also some uncharred elder seed material. Charred cereal grains were occasionally present—barley, oats (including cultivated oats) and wheat (including bread/club wheat)—were all noted, and there were rare records of charred hazel nutshell. A pit fill, described by the excavator as having a midden-like character proved to contain traces of mineral-replaced material, including at least one apple seed, and did, therefore, perhaps contain some organic waste of faecal origin (it also yielded moderate amounts of fish bone). None of the samples was considered worthy of further analysis of plant remains, however.

In the SE quadrant of our region, one context from the earliest phases of occupation at a site at Low Fisher Gate in Doncaster (**North Bridge 93-4 EAU 97/16**), was tentatively dated as ‘Saxon’. It was interpreted archaeologically as a clay dump in a pit or as a river silt. Two samples, one ‘test’ and one BS sample of about 30 kg were examined, but only traces of charred cultivated oats and charred and uncharred hazel nutshell, together with a few weeds and perhaps wetland taxa, were recorded.

The presence of tentatively identified mud rush (*Juncus gerardi*) seeds at a score of '2' on a four-point scale perhaps points to the presence of wet meadows (with some brackish influence?) in the vicinity, but the assemblage was really too small and diverse to be interpreted with any confidence.

Late Saxon (probably 8th-10th century) deposits at **Pontefract Castle 82-6**, from features cut into the original ground surface beneath the Constable Tower of the Norman and later castle, yielded modest amounts of charcoal and charred cereals and weeds (though no details of sample sizes and numbers are given with which to judge concentrations). The grain was mainly oats with a little rye, and traces of wheat and barley, perhaps just contaminants; the author concludes that the grain was as likely to be for animals as human consumption.

Another exception to the general rule of poor preservation in 'urban' deposits of this date is from 11 depression/pit fills from **Bedern/Aldwark 76-81 (Anglian pits)** within the SE part of the Roman fortress and dated 4th-?late 9th century—the one radiocarbon date obtained being ce 740±80 (HAR-5666). Twelve subsamples from 11 samples of these fills were examined, three in some detail, the rest 'scanned'. They gave quite a rich flora including hemp, celery seed, ?summer savory, oats, ?barley, (?bread) wheat, hazel nut, elderberry and *Rubus* seeds (the last tentatively identified as raspberry, *R. idaeus*, and blackberry). A large proportion of the taxa could be classified as weeds of various kinds—most of the taxa recorded from more than half the samples were weeds—but there were also a few grassland plants. These latter may indicate grassland habitats forming in neglected areas of occupation, although some might be indicators of cut vegetation or even dung. In addition, there were a few wetland (mostly waterside/fen) taxa, including saw-sedge (*Cladium mariscus*), whose fruits might have arrived in material cut for roofing or perhaps as fuel or litter, or in imported sedge peat.

5.6.1.2 Possible Anglian trading centres

Excavations at Fishergate, York, on a riverside (though essentially rather dry) site to the S of the Roman and medieval city revealed an area where occupation may well have been primarily concerned with trade (**Fishergate (46-54) 85-6 (Anglian)**). Material of Anglian date was divided into three sub-phases, though much of it could only be dated broadly to the Anglian period. From the earliest phase (late 7th-early 8th century), 20 contexts, a mixture of fills of pits, post-holes and ditches, were examined by means of five 'test' and 22 BS subsamples. There were sparse plant remains: a mixture of charred material (mostly rare grains of barley, wheat and oats) and a little uncharred material (including some wetland taxa from ditch fills). Two contexts, one a ditch fill, the other a post-hole cut fill, contained faecal concretions (presumably formed from human waste) and this material was perhaps present also in a further three, but there was otherwise no evidence for either food or waste other than the charred cereals. Durable material like faecal concretions are readily preserved where reworked into later deposits, though at this site no pre-Anglian features likely to have contained such remains were encountered.

From the late 8th-early 9th century phase at Fishergate, 20 contexts were examined archaeobotanically; they were mostly pit, post-hole and slot fills and a few 'layers'.

There were 29 samples—represented by two test, 26 BS subsamples, and two spot samples. Again, only a very few identifiable remains were recovered: traces of charred barley and wheat grains, with faecal concretions in two contexts (a pit fill and a ?occupation-derived deposit), and perhaps also in another two.

The latest Anglian material (early-mid 9th century) was investigated for 18 contexts, mainly pit fills, but also a ditch fill; the 21 samples comprised one test, 19 BS subsamples, and a single spot sample. Plant remains were limited to traces of charred barley and wheat and three taxa indicative of wetland; one or more samples perhaps contained faecal concretions.

The group of broadly-dated deposits assigned to the period 'late 7th-mid 9th century' comprised 73 contexts, mainly pit fills, but also ditch and post-hole fills and 'backfills'. Here, 39 test subsamples, 72 BS and three spot samples, were investigated. As in the case of the more tightly-dated material, most samples yielded few plant remains other than charcoal or traces of charred cereals; there was evidence from some of the pit fills for faeces in the form of faecal concretions and small amounts of remains of food plants—mostly in mineralised form (one of larger assemblages was from a post-hole fill and is surely reworked material unless the post-hole was a misinterpreted pit!). The list of foodplants for the Anglian period as whole at Fishergate includes linseed, pea, field bean, apple, opium poppy and sloe, with small numbers of charred grains of oats, barley, bread wheat and perhaps also rye; the only other identifiable remains comprised a few seeds of weeds and of some wetland plants.

5.6.1.3 Early monasticism

Although the N of England can claim to have been the cradle of Anglo-Saxon monasticism, and excavations have been undertaken at some of the key sites in this respect, scarcely any opportunity for archaeobotanical study has been afforded. This partly reflects the early date of the excavations, at a time when sampling for biological remains was not routine. Thus, for example, at **Monkwearmouth 64-70**, the only plant remains recorded were fragments of wood from an 11th century pit—holly, elder and 'conifer' all being recorded.

However, at a monastery site in Hartlepool, **Church Close 84-5 (Anglo-Saxon)**, 13 samples from mid 7th-late 8th century pit fills produced some mineral-replaced material, including remains of fruits, especially *Prunus* stones, but also apple and linseed. At another site in Hartlepool, **Morrison Hall 87 AML 52/90**, Saxon plant material was investigated from samples of the fills of post-holes and other negative features. In all, 30 samples were examined and sparse charred remains of bread wheat with occasional oats, barley, peas, false oat grass (*Arrhenatherum*) 'tubers' and heather wood were recorded, the last two suggestive of imported fuel if not perhaps of turves.

5.6.1.4 Cemeteries

Only three Anglian cemeteries have provided evidence for plant material other than the rather frequently encountered mineral-replaced wood associated with metal coffin

fittings. Deposits investigated from **Castledyke 89-90 EAU 92/02** in Barton-on-Humber *NLI* were associated with burials or were the fills of pots. Large numbers of samples were taken, but many consisted of only a few grammes of dry chalk gravel when inspected in the laboratory. There were, not surprisingly, very few plant remains—a few charred cereal grains (mainly ?bread wheat, with traces of barley and oats). North of the Humber, at **Sancton (Saxon Cemetery) 76-80**, near Market Weighton *EYR*, grain impressions (and a single grain) were obtained, the former from pot sherds. A total of 38 latex casts and 17 plaster casts of latex impressions were made, and the bulk of the identifiable material proved to be barley and oats, the latter probably cultivated oats, the barley clearly a 6-row form. The one charred grain recovered at this site was also identified as barley. At two of the **Hartlepool Headland sites ASUD 644**, Saxon graves and buildings were revealed in the vicinity of St Hilda's Church. Two contexts from each of two sites (at least one a posthole) were examined: one yielded moderate amounts of bread wheat, the other traces of charred cereal grain.

An opportunity to study preservation of wood from coffin fittings by mineral-replacement was afforded by excavations at **Thwing AML 116/93** on the Wolds between Malton *NYR* and Bridlington *EYR*. Here, 28 samples of wood associated with 8th century iron fittings were examined and on this basis all the coffin boards were identified as oak, except for one ?ash (perhaps a replacement), and the two dowels found were oak and willow/poplar/aspen, respectively.

5.6.1.5 Rural occupation

Of those sites which do not fit any of the foregoing categories, and which therefore probably represent occupation by rural, agricultural communities, the two most important, unfortunately both on free-draining sandy substrates, are still unpublished at the time of completing this review; they are the sites at West Heslerton *NYR*, and Flixborough *NLI*.

At the first of these, **West Heslerton (draft plant report)**, at the foot of the Yorkshire Wolds, between Malton and Scarborough, a very large number of samples (2000) was examined during an assessment by Wendy Carruthers and Kathryn Hunter; they were mainly from the fills of features interpreted as *Grubenhäuser* (with further material from a malt kiln and further *Grubenhäuser* studied by S. Mrozowski and others). It is instructive to consider Carruthers and Hunter's strategy for handling such large amounts of material, as well as their general results for the period at hand. As the report remains unpublished, we have taken the liberty of quoting from it *in extenso* here.

> 'assessment ... revealed that fairly typical assemblages of charred plant remains were present in the 161 [Anglian] samples scanned, containing poorly preserved cereals, very little chaff and some weed seeds. A few calcium phosphate replaced fruits and seeds were also recovered from the flots, indicating that, where available, residues would [also] need to be sorted for selected samples. Waterlogged plant material was present in only two samples from the vicinity of [a] stream channel. The preservation of the charred plant remains, therefore, was not outstanding, but the fact that so many precisely located samples were available for study meant that enough data could be obtained to address a number of different environmental and economic questions ...

The assessment report recommended that the full analysis should take advantage of the widespread sampling regime by scanning the flot of every sample available (apart from samples with incomplete sample records or evidence of contamination). By giving each Scanned Sample (SS) priority codes, a selection would then be made of the *c.* 500 most promising samples for full analysis (= Full Analysis Sample – FAS). Priority was given to samples that met the following criteria:

- good plant macrofossil preservation ...
- large quantities of plant remains ...
- a wide range of taxa ...
- unusual or significant taxa (includes chaff which was always rare, and economic plants such as flax) ...
- archaeological importance of context (included all non-Grubenhaus features) ...
- group value (e.g. where a few Grubenhaus samples were selected on the basis of other criteria, the remaining samples might be included so as to examine the distribution within the whole feature) ...

FAS were selected to cover, as evenly as possible, all areas of the site, in order to investigate activity areas. Selection was strongly biased in favour of features such as pits, ditches and ovens/kilns, so as to counterbalance the large numbers of samples from the Grubenhäuser. Some areas, however, produced very few environmental samples, and others had to be left out of the statistical analysis due to lack of soil volume data... During the first stage of the post-excavation program in 1998 a total of 1922 samples were scanned by the two authors (SS). From these, 611 samples were selected for full identification and analysis (FAS), representing the remains from over 23,000 litres of soil.

Roman = 18 samples [discussed in this review above]
Anglian = 412 samples
Middle Saxon = 109 samples
Unphased = 15 samples

In general, the charred assemblages were fairly typical of most Saxon and medieval sites, with very little chaff being recovered, and many of the cereals being vacuolated and fragmented. The percentage of cereals that had to be left in the 'Indeterminate Cereal' category was c. 56% on average, reaching over 90% in the most poorly preserved samples. These two factors (low chaff and poor cereal preservation) are partly due to the types of cereals being grown at this time. It can be seen from Hillman's (1981) description of crop processing stages ([his] Figure 6) that free-threshing wheat, rye and barley have most of their straw, rachis fragments and coarse weed seeds removed at an early stage. This part of the processing is likely to be carried out nearer to the point of harvest than to the settlement, so as to remove the bulk of the waste prior to transporting it to the settlement. For this reason it may not be detected in any quantity in charred assemblages from a settlement. In addition, the waste product of this process is useful for fodder, thatching, flooring, etc. and so is likely to have been made use of, rather than being burnt. Thirdly, experimental work on the effects of charring on cereals by Boardman and Jones (1990) have demonstrated that free-threshing cereal chaff is far more likely to be destroyed by charring than cereal grains or glume wheat chaff. Therefore, assemblages from post-Roman settlements are likely to be more strongly affected by differential preservation than earlier assemblages.

There were no cases where crop processing waste could be detected on account of the presence of large quantities of chaff, although in a few cases the high number of weed seeds indicated that this type of waste may have been added to waste cereals.

Mineralised ... plant remains, worm cocoons and arthropod fragments were recovered from a wide range of contexts. Unfortunately, in the early stages of the excavation sample residues were not retained, so in some cases samples that may have contained mineralised faecal remains could not be fully investigated, e.g. pit 11AB 336. Sufficient residues were available for examination, however, to determine that in most cases the mineralised remains represented redeposited, diluted faecal and/or midden material. ... A similar range of mineralised seeds [to those found in the Bronze Age midden at Potterne, Wiltshire] was found in small quantities in many of the samples at West Heslerton, perhaps suggesting that small quantities material from midden deposits had been redeposited and/or trampled into the Grubenhäuser. A few features, however, contained large quantities of mineralised plant remains, including several fruit seeds and, in some cases, mineralised bran. These are discussed fully ... as the evidence suggested that they contained concentrated faecal material that had either been cleared out of latrine pits, or were preserved *in situ*. These remains provided valuable direct evidence of diet.'

Multivariate analysis of the large dataset available was undertaken, involving a TWINSPAN analysis, in which semi-quantitative data were used, the method progressively splitting the samples into groups according to the presence or absence of indicator species. The first group of samples to be split off (50 samples) consisted primarily of samples from one of the *Grubenhäuser*—one that stood out from all of the others examined in detail because it contained clearly stratified deposits with plant assemblages that varied from context to context. Cereals were particularly infrequent in these deposits. The second division split the samples containing frequent cereals (174 samples) from those producing very few cereals (383 samples), whilst the third significant split amongst the 'low cereal' samples removed those that contained 'fuel' taxa—such as heather remains (Ericaceae leaves, seeds and capsules), sedges, 'tubers' [actually probably all monocotyledonous rhizome fragments]—and grassland taxa from those containing larger numbers of cereals. This led Carruthers and Hunter to consider remains which might stand as evidence for the use of peat or turves used as fuel or, in the case of turves, perhaps for building. Their argument, which (in view of the support it gives to data from many other sites from other periods in the region) is again worth quoting *in extenso*, runs:

'Over 130 Grubenhäuser were investigated at West Heslerton, a figure second only to Mucking, Essex. Out of these, 41% had two post-holes, 23% had one and 36% appeared to lack post-holes altogether. The shape of the Grubenhäuser was generally sub-rectangular, and most were between 3 x 2m and 5 x 4m in size. The depths ranged from a few centimetres to over one metre, with a mean of 36cm, although differential preservation is likely to have affected this dimension. There was no evidence to indicate that the bases of the Grübenhauser had possessed any sort of lining, and since they showed no signs of erosion it is most likely that a suspended floor had been used. The only signs of activity, such as burnt deposits, in the bases of the Grubenhäuser were from features that clearly post-dated the original structures ...

There is little direct archaeological or archaeobotanical evidence for the form of the superstructure of Grübenhauser at West Heslerton, apart from the configuration of the post-holes. *In situ* deposits were very rare on the site, and most of the Grubenhaus fills were secondary, if not tertiary deposits. However, in view of the number of buildings that were constructed during the early Anglo-Saxon period, large quantities of building materials must have been spread around the site, and these materials must have made a substantial contribution to the backfilling of the Grubenhäuser after the site was abandoned. The widespread occurrence of the sedge nuts and

tubers [i.e. rhizome fragments] does suggest that turf is one resource that may have been used in the early Anglo-Saxon period. It seems unlikely that the Grubenhäuser at West Heslerton were furnished with wattle and daub walls, given the low frequency of daub from the site in general. The following evidence appears to support the suggestion that the sedge, [rhizome] and heath grass remains were likely to represent turf:

- There is very little evidence for the use of turf or peat prior to the construction of Grubenhäuser in the early Anglo-Saxon period. From the 22 FAS dated to the Roman period, no *Danthonia decumbens* caryopses were found, and only 12 sedge nuts and 2 [rhizome fragments] were recovered (total Roman sample volume = 345 litres of soil).

- Of the 48 Grubenhäuser from which FAS were examined, 34 (=70%) produced sedge nuts and [rhizome fragments] in at least some of the samples. The remaining 14 Grubenhäuser with no sedges and/or no [rhizome fragments] were, in all but one case, features where only a few samples were examined (=38 samples out of a total of 521 samples). Sedges and [rhizome fragments] were present in many of the samples in the northern area of the site, where cereals were generally scarce and crop processing waste was virtually absent.

- Of the 41 features from which FAS were examined, only 15 (=37%) produced sedges and [rhizome fragments] (present in at least some of the samples). The features, therefore, were less likely than the Grubenhäuser to contain turf or peat remains, although a concentration occurred in one of the fire pits. It is likely that some ditches and pits would have become filled with building materials eroding from Grubenhäuser after the site was abandoned in c.AD850.

- Stored crop samples in a primary context provide the best evidence for which taxa were definitely growing as arable weeds. No heath grass caryopses or [rhizome fragments] were recovered from the probable stored crop sample from the daub structure, 11CE 7068, and only 2 sedge nuts were present. There is very little evidence, therefore, from this sample at least, that heath grass and sedges were growing as weeds of the crop.

As is found in Grubenhäuser across the country, the lower fills generally consisted of dark brown fine sandy loam deposits, such as might be found if turf walls had weathered and collapsed after abandonment. This explanation has been put forward by Margaret Jones for similar deposits at Mucking ...'

Carruthers and Hunter cite an example of the 'large body of archaeological evidence to show that turf was widely used as a construction material on the continent during this period' and note the archaeological evidence for its use in the Viking period at Birsay, Orkney (for a somewhat more detailed review of archaeological evidence for turves, see Hall, 2003b). They also consider the taphonomic implications of various other remains recorded at West Heslerton in the Anglian period:

'The majority of the cereal remains will have become charred either accidentally during one of the crop processing stages, or deliberately when discarded as waste. ... In addition, the waste product of this process [threshing of free-threshing cereals close to fields] is useful for fodder, thatching, flooring etc. and so is likely to have been made use of, rather than being burnt'

and

'a great deal of the charred cereals around Saxon and later sites (i.e. sites growing free-threshing cereals) must have become burnt as a result of burning animal bedding which would have included waste fodder and dung.'

They also offer some insights into how the cereals may have been used:

> ‘The TWINSPAN analysis suggested that barley was behaving differently from the other three cereals, being more closely grouped with fuel remains such as Ericaceae and Cyperaceae than with cereal processing waste and arable weed seeds. Perhaps, since barley was so frequent and so widely distributed across the site, it was being used for both human and animal consumption. In addition, barley straw is the most absorbent type for bedding, so it may have been spread widely around the site when burnt amongst waste human and animal bedding. ...
>
> This may explain why it is consistently the principal cereal identified as impressions in Anglo-Saxon pot, but is less often the dominant cereal in charred plant assemblages (van der Veen, 1992). Uncharred and charred barley would have been liberally distributed around a settlement as background waste, if it was a major fodder crop and used for human consumption, but occasionally large deposits of any of the four cereals may have become accidentally or deliberately charred. For most sites, where large numbers of samples have not been taken, sampling has often been biased towards the more obviously charcoal-rich deposits. On these sites, barley would not always have been shown to be dominant, since, numerically, remains from the large burnt deposits would outnumber the more sparsely scattered background waste. This observation demonstrates the importance of taking large numbers of samples when studying charred plant remains. It also suggests that barley may have been more important on some of the other sites studied to date than the charred assemblages suggest.’

Amongst the other activities for which there was evidence from the plant remains at West Heslerton, perhaps one more should be mentioned: malting. Carruthers and Hunter observe that

> ‘...of the 611 samples examined in detail none of the cereal assemblages showed signs of having been deliberately sprouted. Occasional sprouted grains were found, such as in the daub structure ... but these had probably sprouted due to damp storage conditions, as they were solitary cases. A sample of grain from the ‘malt kiln’ ... examined by Steve Mrzowski and Patricia Fragola ... has provided evidence that at least one sample of barley had been deliberately sprouted for the purpose of extracting malt. However, the fact that these remains had not spread into surrounding features and that detached sprouts had not been found elsewhere on the site indicates that this must have been a very localised and possibly limited occurrence. In addition, the recovery of a variety of other crop plants such as a possible pea, possible flax fragment and several unsprouted cereals suggested that the proposed ‘malt kiln’ had probably been used for a variety of purposes.’

At Flixborough, near Scunthorpe *NLI*, early 7th-late 9th century deposits have been shown to contain a remarkable assemblage of artefacts, as well as evidence for several stages of timber building. The sampled deposits were mainly pit fills, dumps and other occupation deposits, almost all consisting of sand with variable amounts of bone and ash. For a preliminary assessment, 57 (<9%) of the samples of unprocessed sediment and 95 (<9%) of the bulk-sieved samples were examined, together with some hand-collected material (**Flixborough 89 EAU 93/21**). Small amounts of wood charcoal were present in most samples but other charred plant remains were very sparse. They included pod fragments and seeds of sea plantain (*Plantago maritima* L.) and rushes (*Juncus*), and a few charred cereals and pulses; some charred herbaceous stem fragments were considered likely to be interpretatively significant if they could be identified. Subsequent analysis **(Flixborough 89 EAU 2000/56)** resulted in examination of material from a total of

386 contexts via 560 samples, including many bulk-sieved on site (these were usually about 20 kg/10-15 litres in size) and GBAs (mostly of about 1-3 kg). This provided the opportunity to study the distribution of material by phase and context type, though there appeared to be no particular pattern except that certain dumps rich in ash were—not surprisingly—those richest in charred plant material.

It may be worth quoting the 'technical report' with regard to the identification of some of the plant material and the interpretation of the 'salt-marsh' assemblages.

> 'At an early stage in the examination of the washovers from the bulk-sieved samples from Flixborough it was noted that many 'washovers' contained needle-like charred plant stems, mostly no more than a millimetre in diameter (and often as little as 0.3-0.5 mm diameter) and up to about 10 mm in length. Some clearly bore stem nodes ... and were variously recorded as being from grasses and/or cereals (altogether these were recorded in 12 contexts, always at an abundance of '1' [on a 3- or 4-point scale dependingo n the sample type]). Some other specimens were recognised as having a characteristic 'pinching' at one end, presumably at the point of attachment of the structure to another organ or at a stem node ... Exceptionally, examples were found with an intact branched structure ...
>
> Microscopic examination with reflected light and using a scanning electron microscope failed to demonstrate the survival of any distinguishing epidermal characters ... though it seemed most likely that the material came from rushes (*Juncus*), spike-rushes (*Eleocharis*) or grasses (Gramineae).
>
> Although a comprehensive examination of specially prepared charred reference material of grasses, rushes and other possible candidates was impractical, it was found that the bases of some rush stems were narrowed at the point of attachment to the roots whilst the branching stalks of rush inflorescences were narrowed somewhat at their point of insertion, either around the whole circumference ... or on one side ... Given the slender nature of the 'pinched' stems, the culms (stems) of larger rushes such as *Juncus effusus*, *J. conglomeratus* or *J. inflexus*, or even mud rush, *Juncus gerardi*, can probably be discounted. The fossils are, however, rather similar to modern reference material of the inflorescence stems of *J. gerardi* or the culms of small rushes like toad-rush, *J. bufonius*, charred in the laboratory to mimic the fossils. (It should be noted, however, that none of the charred rush capsules and seeds resembled those of *J. bufonius*.)
>
> Though no definitive identification of the fragments with branches was been possible, they were found to be rather similar to culm material of the saltmarsh grass *Puccinellia maritima* and, indeed, it is possible that the 'pinched' stems with a flattened end ... also belong to this plant. (*P. maritima* is characterised by having many rather procumbent shoots, as well as creeping stolons, with leaves tending to arise from the upper side.)
>
> Where these plant stem fragments had no particular characteristic they were simply recorded as 'charred herbaceous detritus'; this category was present in 7% of contexts. As for the other stem [fragments], they lacked any epidermis which might give a clue as to their taxonomic affinities but again they seem most likely to be from rushes or grasses (none had the three-sided conformation characteristic of most members of the sedge family, Cyperaceae)...'

Amongst the other remains from Flixborough were fragments of charred rhizome/root (in six contexts) and charred fucoid seaweed lamina (in 4+?2 contexts).

‘Unless they became charred within a living turf underneath a fire, the root/rhizome material may well have arrived in turves, being charred accidentally (e.g. in turves used in a building which was subsequently destroyed by fire), or because the turves had been used as low-grade fuel or in the construction of a hearth or oven.

The seaweed may well have arrived incidentally with raw materials from the coast—it may become entangled in saltmarsh plants, for example, or grow in saltmarsh in its own right (cf. Adam 1990, 97ff.; most of the taxa he lists are not the fucoids thought to be represented by the fossil material at Flixborough, however). There is a further possibility that the seaweed was brought as a resource in its own right as a source of alkali, or as fertilizer or animal feed ... In one case, a sample from ... a dump, there were traces of what appeared to be spirorbid shells, likely to have arrived as seaweed epibionts (a similar association of charred seaweed and spirorbids has been recorded, for example, from Early Christian deposits at Deer Park Farms, Co. Antrim, N. Ireland by Kenward *et al.* 2000).’

With regard to the origin of the plant material, and especially that from salt-marsh:

‘Though the bulk of the matrix of the deposits through the whole sequence at Flixborough was blown sand, many contexts clearly had a considerable component of bone, shell and burnt material, including charcoal and ash. The fires which led to the formation of the charcoal and ash were no doubt also responsible for the charring (and thus survival) of the other plant remains at this site. For the most part, however, the burning presumably did not take place in the position where the charred remains were found (most being in dumps or feature fills rather than deposits associated directly with hearths or ovens).

This being so, it is important to consider the nature of the plant material which was burnt since it is clearly of an unusual kind, with such low concentrations of cereals, an absence of chaff, and a dearth of crop weeds, but a characteristic suite of remains, including charred herbaceous stems (perhaps from grasses and rushes), rush seed capsules, and some saltmarsh plants, of which the most frequent was sea plantain.

It seems most likely these remains wholly or largely originated in an area of saltmarsh, perhaps from the middle parts of the vertical zonation (cf. Rodwell 2000, 17ff.) if, for example, the plant association represented is the *Puccinellietum* (a rather species-poor community in which *Puccinellia* and *Plantago maritima* are prominent, *ibid*., 55ff.) or the slightly higher *Juncus maritimus-Triglochin maritima* or *Festuca rubra* communities (*ibid.*, 72-83). (For reasons discussed by Adam (1990, 51) it is difficult to translate this precisely to a height in relation to Ordnance Datum, but these are plant communities likely to be flooded by seawater at least once or twice a day through much of the year.) It is unfortunate, in this respect, that the charred rush capsules have not been identified to species, though if *J. gerardi* is present ... it would represent another typical denizen of middle and upper saltmarsh communities.

An assemblage from [one of the larger dump deposits] perhaps provides one of the best examples of a group largely, if not wholly, originating in saltmarsh. Together with tentatively identified culm of *Puccinellia maritima* and capsules of *Plantago maritima*, there were traces of several plants which could easily have grown in saltmarsh, though they are certainly not indicators of it, by themselves—silverweed (*Potentilla anserina*), black medick (*Medicago lupulina*), hairy buttercup (*Ranunculus sardous*) and spike-rush (*Eleocharis palustris*). Also present in the sample were moderate amounts of both ‘pinched’ stems and charred herbaceous detritus, of ash, concretions, and ‘glassy slag’, and traces of charred rush capsules...

Strong corroborative evidence for saltmarsh as principal source for the plant remains comes from the records for the snail *Hydrobia ulvae* (Pennant) ... some, at least, of which had been charred. This species, typical of saltmarsh habitats, was found in four contexts, of which all also yielded remains of saltmarsh plants ...

If this explanation for the source of these remains is correct, it is pertinent to ask how and why they were brought to the site. A number of possibilities immediately spring to mind:

(a) they arrived in **cut vegetation** for roofs or floors, or as hay, or bedding, or as packing for goods or live shellfish;

(b) they arrived as plant remains brought with **turves**, or incidentally with or deliberately mixed in what was primarily **mineral sediment** intended, for example, to make daub;

(c) they were plant remains within vertebrate **guts** or in herbivore **dung** (the dung being collected deliberately for burning or some other purpose, or deposited by livestock at the site [and burnt to dispose of it]);

(d) they represent plants **growing on the site**, remains of which were burnt incidentally underneath fires.

The last of these is perhaps the least likely. For these plant remains to have originated in vegetation growing at the site seems ecologically improbable. The generally well-drained sands at Flixborough are unlikely to have supported plants such as sea plantain which, in Britain today, is confined to maritime habitats. If the *Puccinellia* is correctly identified, this, too, would surely not have grown nearer Flixborough than the tidal reaches of the Humber, or perhaps the lowermost stretch of the Trent (though there are a few records of it from inland habitats, always where there is a saline influence). It is true that the finer plant stems might have come from a rush such as toad-rush (*Juncus bufonius*), a species observed at the site in 1999, growing in quantity around pools left by the excavation and sand extraction, but this does not help to explain the presence of the saltmarsh taxa.

The third explanation—at least so far as dung is concerned—also seems improbable, since the charred herbaceous plant material had evidently been charred when dried and uncompressed. Plant fragments from burnt dung might be expected to have collapsed prior to charring and, in particular, to have survived in clumps rather than as discrete charred plant fragments, often dispersed within lumps of ash. There is, otherwise, no reason to suppose the saltmarsh plants might not have been grazed by livestock ...

Another possibility which ought to be explored further, however, is that these remains arrived in the crops of geese feeding on saltmarsh. Freshly ingested plant material, before it reached the gizzard, might well be present in a relatively undamaged state, though it would probably need to have dried before charring.

The arrival of the plant remains in cut vegetation as litter or thatch may probably also be discounted. The remains are from stems probably rather too slender to have served for thatching, and, if they are flower stalks, one might have expected more of the larger material from the lower parts of the plants to have survived, too. There is also a notable absence of seeds from taller-growing plants which might be found in hay meadows, reed-beds or in other places where vegetation suitable for cutting for this purpose might be collected.

> Moreover, the parts of saltmarshes most likely to have yielded these remains are traditionally grazed (when not immersed by the sea!) but they are not conventionally used to cut a 'hay' crop. On the other hand, the more heavily grazed swards might easily yield turves, and in this case one might expect a larger content of silt and clay in the deposits rich in ash containing these saltmarsh plant remains. Insofar as the analyses permit this to be tested, it is clear from [data in] Table 13 that, with one exception, all the contexts for which a crude measure of turbidity and fine sediment content were measured and from which remains of one or more saltmarsh plants were recorded, scored at least moderately well for levels of either turbidity and/or fine sediment content. Had turves been brought, however, one might expect more remains of the basal parts of the plants growing on them. Had the plant material arrived in saltmarsh clay for daub, or had they become incorporated into daub during mixing, in the way that straw is traditionally used, it is then difficult to see how they might then become charred and freed from the daub matrix. (Material listed as daub, ?daub or baked clay/daub was frequently recorded—it was present in 25% of contexts, and at least moderately abundant in 4%—but charred plant remains were not noted from the lumps. Here, examination of clay lumps for diatoms or foraminiferans, for example, might help in indicating the location of sources for the clay.)
>
> As to the nearest location of saltmarsh to the site, it seems reasonable to suggest that it may have existed along the tidal reaches of the Trent, perhaps only a matter of a few hundred metres to the W of the site.'

A number of other, much smaller-scale excavations have yielded small amounts of evidence for plant remains from the Anglian period in our region. Not far from Flixborough, at **Barrow Rd 99-2000**, Barton-on-Humber *NLI*, excavations of a pit fill dated to the late 9th-early 10th century yielded a concentration of charred cereal grains (though constraints on the publication of a full report mean that no details of this assemblage are readily available in the public domain). Field bean and flax were also recorded from this pit fill, which lay at the end of a soakaway ditch draining a structure that was interpreted as a granary.

On the Chalk Wolds in the SE part of the region and N of the Humber, a number of excavations have produced evidence for Anglian occupation. At **Paddock Hill (Octon) AML 14/93**, Thwing, near Driffield *EYR*, 8th-early 10th century deposits investigated included two middens (other contexts are not specified in the report) and six samples were examined. There were small concentrations of charred remains with barley the most abundant grain, and with smaller amounts of bread wheat and oats with one ?field bean seed. Moderate numbers of *Brassica/Sinapis* seeds were present, perhaps a 'spice crop', and there was some mineral-replaced material from the middens, including cereal bran, ?apple/pear seeds and traces of weeds consistent with a midden. The trace of heather charcoal and a cf. Ericaceae fruit, as well as heath grass, suggest that some material may have been brought a considerable distance unless a kind of heathland developed on areas of the Wolds (though heathland material has been recovered from another site on the Wolds—from Romano-British levels at **Goodmanham (NE of) EAU 2000/73**, discussed above). Excavations at **Cottam 93 EAU 94/32**, near Sledmere *EYR*, provided deposits for assessment which were mostly fills of Anglian pits and ditches. They contained small amounts of charcoal and charred cereals only, the latter amounting to no more than a very few poorly preserved specimens. Near Caythorpe, further to the E (**Caythorpe Pipeline**), a pit fill provided an assemblage which mainly

comprised barley grains with moderate amounts of bread wheat grains and a little chaff of the same. Lastly, at **Wharram Percy (S Manor area)**, six samples from late Anglian levels from one area of the site yielded low concentrations (though quite high overall counts, since the sample sizes were large) of charred grain of wheat, hulled barley and oats, with some peas and traces of hulled barley chaff, and a few weeds; again there were traces of heathland material and *Danthonia* caryopses (described in the report in terms of imported heather for fuel/thatch).

At the N end of the Vale of York, a single context, a *Grubenhaus* fill of presumed Anglian date at **Richardsons Depot DEAR 10/97** at Catterick *NYR*, was examined via a single bulk-sieved sample; the plant material present was mainly charcoal (much of it oak), but there were also heather twigs (from fuel?) and some cereal grains but no chaff and no weed seeds. Most of the cereal grains were hulled barley, but oats and ?bread wheat were also present.

In the Tees lowlands to the E, at a site at **The Garth ASUD 803**, at Longnewton, between Darlington and Stockton-on-Tees, a single 5 litre sample from a gully fill dated to between the Roman and medieval periods yielded a rich assemblage of charred cereals including many barley and wheat grains, some barley and wheat chaff, oat grains, and range of cornfield weeds. Not far away, at **Newton Bewley 98 ASUD 729**, six contexts of Saxon (8th century) date were examined; the samples mainly produced small groups of charred cereals and weed seeds, the former mainly 'indet.' but with some hulled barley and wheat, and a trace of spelt glume-bases and grain, as well as a single flax seed.

At **Simy Folds AML 2397**, an upland site in the Pennines near Middleton-in-Teesdale *DUR*, 8th century occupation deposits yielded only charcoal (of at least four types), although cereal-type pollen was recorded in nearby peat deposits. The charcoal was not, however, dated independently, being simply regarded as of the same date as the occupation deposits.

In the NE part of the region, excavations on Holy Island, off the N Northumberland coast (**Holy Island Village 77**) provided one sample of 4.6 kg dated late Saxon-Early medieval. It contained traces of charred oats, barley and bread wheat grains and a few uncharred hemlock seeds (the latter no doubt a weed—though perhaps of recent origin?). Also on Lindisfarne Island, an excavation at **The Heugh DEAR 38/94** provided a single sample in which there were well-preserved charred cereals including many rye grains (dated by radiocarbon assay to CE 800-1000), presumably representing a clean processed crop. More recently, a developer-funded excavation at **The Winery 2000 EAC** on Lindisfarne led to the examination of material from two 'undated' aceramic phases. Material from six contexts—clay layers and fills of ditches/construction trenches—was investigated via six BS samples of 28-29 kg. Of these, one appears to have contained some burnt peat, though all gave small amounts of one or more of the following charred remains: barley, wheat, oats (all three as grains), hazel nutshell and ?seaweed.

From the NW part of the region, an intervention at **Brougham Castle DEAR 5/92** near Penrith *CUM* revealed features interpreted as 'sunken buildings', whose floors were sampled; though the samples were of small volume, some charred plant

remains were recovered. Oat grains were dominant in the assemblage, with barley, wheat and rye also present, as well as pea or bean, and—as noted by the author—somewhat surprisingly at a site some 50 km from the nearest sea coast, charred seaweed fragments. Close to the Cumbrian coast, at **Ewanrigg AML 85/88**, near Maryport, four 8th-10th century contexts, three of them fills of a stone-built feature, perhaps a drying kiln were investigated. Four BS samples of 0.2-16 litres were processed and moderate numbers of oat grains, together with seeds of the arable weed corn spurrey (*Spergula arvensis* L.) and various other weeds were recovered.

5.6.1.6 'Proto-Urban' occupation

In Beverley, the earliest archaeological deposits recovered at two sites (Lurk Lane and Eastgate) are dated to the Anglian/Anglo-Scandinavian period but, unlike those from the rural sites discussed in the previous section, they do not lie in an area of known Roman urban (or, at any rate, large-scale military) activity and are overlain by long sequences of later, medieval, occupation build-up formed close to the centres of the respective towns, and thus represent a somewhat different category. At **Eastgate (Beverley) 83-6**, one deposit of pre-mid 8th century date, an extensive layer of wood chips and organic debris on the natural ground surface 'pre-dating the first occupation', evidently contained some debris from human activity, since the single GBA and BS samples examined yielded wheat/rye 'bran' and arable weed seeds, as well as modest range of taxa perhaps indicating damp grassland. Broadly-dated organic dumps, layers, and ditch fills of the succeeding (mid 8th-mid 11th century) phase provided seven contexts from which 13 samples of various kinds were examined. The dumps and layers perhaps represented a midden or dunghill—they were rich in plant remains, mainly weeds of waste places, with a few possible food remains.

At **Lurk Ln 79-82**, close to Beverley Minster, the earliest sampled deposit was a late 8th-early 9th century ditch fill. The single sample from it gave small numbers of a limited range of plant taxa, probably mostly from local vegetation, but insufficient for a more detailed interpretation. Further ditch fills, dated early 9th-early 10th century, were investigated through samples from six contexts and these yielded a wide variety of plants representing woodland (especially), wetland, arable and waste ground weed vegetation; there were a few 'useful' plants: walnut, hazelnut, linseed, plum and some fruits which may well have been wild-growing.

5.6.1.7 Summary and future prospects

Our knowledge of Anglian plant use in the North of England is still extremely limited—as witness the lack of a map!—though large-scale excavations (with commensurate sampling), such as those at West Heslerton, have offered opportunities to help fill this lacuna, and the investigations both here and at Flixborough have shown that unusual material prompting interesting taphonomic and economic questions may sometimes be recovered from very unpromising deposits. Material preserved by waterlogging is particularly rare at sites of this period, but *no* well-stratified deposits dating to the period between the 5th and 9th centuries should be passed over for archaeobotanical evaluation and evidence from towns is at least as valuable as that from the countryside.

5.6.2 Anglo-Scandinavian occupation and activity

5.6.2.1 Anglo-Scandinavian York: 16-22 Coppergate (Fig 8)

It is probably true to say that more bioarchaeological data for the period in which settlers from Scandinavia began to occupy eastern and northern England (and parts of Ireland and northern Scotland, and the Isle of Man) have been recovered from York than from all other British and Irish sites of this period together. The main reason for this is the very extensive excavation, sampling, and analysis which was possible for the richly organic deposits at 16-22 Coppergate (**Coppergate (16-22) (Anglo-Scand)**), although material of this period has been found at a number of other sites in the city and, indeed, some was described (using the older term 'Anglo-Danish') from one of the earliest post-World War II urban excavations in Britain (**Hungate 50-1**), as mentioned below .

Excavation by York Archaeological Trust in the period 1976-81 at Coppergate site revealed a stratified sequence of several metres of mainly very richly organic deposits representing occupation in the period from the middle of the 9th century to the Conquest (and beyond; for comments on pre- and post-Viking levels, see above and below). Samples consisted of a mixture of types (indeed, the site acted as a test bed for developing strategies to deal with complex and richly organic urban occupation deposits): for the Anglo-Scandinavian levels at this site plant remains were investigated from more than 250 GBAs, more than 250 BSs, and many tens of spot finds of plant material.

Preservation of plant remains was usually good and often excellent, though for the earliest phase (the excavator's Period 3, mid 9th-early 10th century) it was mainly confined to the fills of pits (55 of the 88 contexts examined for plant remains were from pit fills and, of the rest, only 15 were 'layers' rather than fills of some kind). Archaeologically, this phase was marked by an absence of structures across the area excavated, but with evidence for hearths probably associated with glassmaking. For this group of samples, much of the evidence was for human faecal deposits: the pit fills were often rich in wheat/rye 'bran' with other plant and animal food remains, abundant eggs of the gut parasites *Trichuris* and *Ascaris,* and large and diverse assemblages of decomposer and other insects (Kenward forthcoming). The tally of probable or certain foodplants (and flavourings) was wide and includes hazelnut and walnut, raspberry, blackberry, apple, sloes, 'plums', field bean, linseed, bilberry, celery seed, coriander, dill, summer savory, opium poppy, hop (*Humulus lupulus* L.), elderberry, leek, and the cereals wheat (including bread wheat), barley, rye and oats, and there were a very few records also for fig and grape—though there remains a possibility that these are contaminants since these seeds were extremely rare in the Anglo-Scandinavian parts of the sequence as a whole, but are regular components of earlier (Roman) and later (post-Conquest) deposits in the city. Some large branching mosses of the kinds seen in greater quantity in later deposits (see below) were present in these pit fills, perhaps representing 'wipes'.

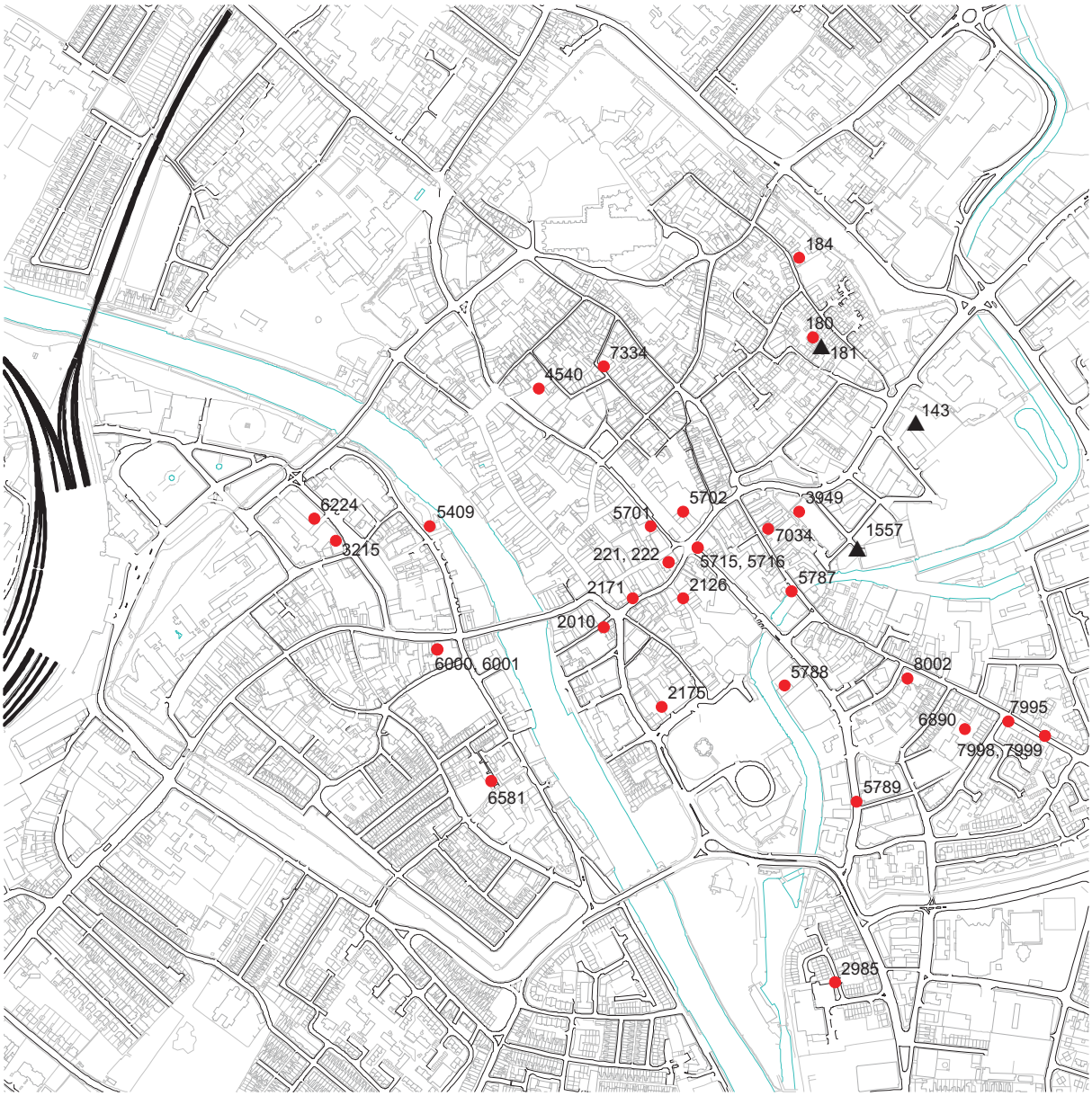

Fig 8: Sites with archaeobotanical studies of material of Anglo-Scandinavian date in York (tentatively dated cases marked with triangle) referred to in the text and for which reliable grid references could be found

Key: 143—Adams Hydraulics I EAU 90/01; 180—Aldwark (21-33) (Ebor Brewery) 73-4; 181—Aldwark (36) 83 AML 59/89; 184—Aldwark (7-9) 85 AML 58/89; 221—All Saints (York) EAU 96/47; 222—All Saints (York) EAU 98/30; 1557—Carmelite St EAU 91/15; 2010—Clifford St (2) EAU 2000/17; 2126—Coppergate (16-22) (Anglo-Scand); 2171—Coppergate (5-7) 74; 2175—Coppergate Helmet; 2985—Fishergate (46-54) 85-6 (Priory); 3215—Tanner Row (24-30) 83-4; 3949—Hungate 50-1; 4540—Little Stonegate (rear 3) EAU 99/21; 5409—North St (York) 93 EAU 93/14; 5701—Parliament St (4-7) EAU 2000/22; 5702—Parliament St (44-5) 94 EAU 95/08; 5715—Pavement (6-8) 72; 5716—Pavement (6-8) 72 (preliminary); 5787—Piccadilly (22) 87 EAU 95/53; 5788—Piccadilly (38) EAU 92/09; 5789—Piccadilly (41) EAU 92/20; 6000—Micklegate (1-9) 88-9 EAU 93/22; 6001—Micklegate (1-9) 88-9 EAU

2000/14; 6224—Rougier St (5) 81; 6890—St Georges School ARCUS 208; 7034—St Saviourgate (9) 95 EAU 98/14; 7334—Swinegate (12-18) EAU 94/13; 7995—Walmgate (104-12) EAU 92/03; 7998—Walmgate (118-26) AML 60/89; 7999—Walmgate (118-26) EAU 2000/20; 8002—Walmgate (41-9) EAU 2001/26

During the first phase of building on the site (in post-and-wattle construction), dated to the early 10th century, a series of narrow tenements was laid out, apparently extending from the old street frontage downslope towards the River Foss (the boundaries of some of these tenements were still respected by 19th century buildings in Coppergate). In yards behind the tenements, pits continued to be dug. Artefactual, stratigraphic and biological evidence pointed to the use of the buildings on these tenements for a variety of activities and the plant remains were especially informative with respect to one particular craft: dyeing (for details, see further below). But the fills of pits (and other layers) at this period continued to give evidence for food eaten by the inhabitants—much the same as in the preceding phase. There were also layers with a distinctive component of material thought to have been brought from woodland floors; especially characteristic here were vegetative remains (and seeds) of wood sorrel (*Oxalis acetosella* L.), and leaf fragments of holly (*Ilex aquifolium* L.), together with a suite of mosses from woodland floor or tree-bole habitats (taxa such as *Isothecium myosuroides* Brid., *I. myurum* Brid., *Neckera complanata* (Hedw.) Hüb., *N. crispa* Hedw., and *Thuidium tamariscinum* (Hedw.) Br. Eur.). As mentioned above with regard to the earlier phase of Anglo-Scandianvian occupation at this site, these mosses were also found in cess pits where it seems they had clearly served as 'toilet tissue', but in other contexts they may have been used for some other purpose (insulation of the post-and-wattle structures? in roofing?). Also frequent in these deposits were remains of heather which, although a possible dyeplant, might also have been brought as brushwood for fuel, or for roofing, or perhaps in some cases arrived incidentally with turves. For this phase of the stratigraphy, samples from 136 contexts were examined, of which more than a third were floors from within the buildings, and approximately one-fifth were pit fills.

The next main phase of building and use of the site (in the mid 10th-early 11th century) saw the construction of a series of partly-sunken rectangular structures built of massive oak planks. In archaeobotanical terms, much the same kinds of remains were recorded from deposits of this period; again, dyeplants were abundant in many layers, there were foodplants in quantity in many of the pit fills, and the woodland component continued to be recorded. Although pit digging and construction work in connection with the sunken timber buildings may have accounted for the reworking of some material from earlier deposits, there was such an abundance of well-preserved remains, and there were sufficient primary contexts, to suggest that the continuity of use was a real phenomenon. Of the 88 contexts examined archaeobotanically, nearly half were pit fills with only a very small number (less than 10%) being floors.

The latest phase of Anglo-Scandinavian occupation (early-mid 11th century) saw renewal of some of the earlier plank structures in one part of the site. The rather few deposits of this phase examined archaeobotanically (26 in all, the great majority of them pit fills) mostly yielded somewhat smaller assemblages than earlier deposits of the same context type. As before, some of the pit fills clearly contained food remains from faeces, but others gave some hints of the presence of short turf, more probably imported than growing at or near the site. One particular indicator for this was heath

grass (*Danthonia decumbens*), of which fruits, spikelets and 'cleistogamous' spikelets (cleistogenes) were all found; the last of these are structures occurring in the culm-bases of the plant and thus most likely to be transported to the site of deposition only in whole plant fragments (Kenward and Hall 1995, pp. 653). Whilst fruits of heath grass were found throughout the site, cleistogenes were only recorded from the latest phase of Anglo-Scandinavian occupation.

Despite the extraordinarily good survival of abundant plant remains at Coppergate permitting interpretation of a wide range of activities, some very basic matters remain unresolved. In particular, the nature of the roofs of the various substantial structures built there is still unknown. Some layers composed largely of willow brushwood from the post-and-wattle phase may have come from collapsed roofs, and the small amounts of grass/cereal straw culm and culm-nodes recorded throughout the sequence may have originated in thatching, but there is no convincing case where a concentration of material likely to have originated in thatch has been identified. It may be that renewal of roofing material involved wholesale removal and disposal well away from the site—it would probably have been too bulky to discard in the pits at the rear of the site and perhaps also too valuable a resource to waste (once composted, smoke-blackened thatch or turves would have been ideal material for use on fields, for example).

5.6.2.2 Other sites in the Coppergate-Pavement area (Fig 8)

Elsewhere in the same part of York as Coppergate, Anglo-Scandinavian deposits have been revealed by a number of smaller excavations. Of these, the earliest was at **Pavement (6-8) 72** ('Lloyds Bank' site), where four small trenches were dug from a cellar floor and excavated under the difficult circumstances of cramped space and artificial light. With hindsight, and especially in the light of the analyses of contemporaneous material from 16-22 Coppergate, the deposits from Pavement can be seen to be rather homogeneous both archaeologically and archaeobotanically, with the assemblages of plant remains dominated by weeds of waste ground and damp places, especially abundant being celery-leaved crowfoot (*Ranunculus sceleratus* L.), stinking mayweed, 'red' goosefoot (*Chenopodium* Section *Pseudoblitum*), with nettles (*Urtica dioica* and *U. urens*) and elderberry. Evidence for food remains was rather sparse—perhaps largely because the deposits revealed included no pit fills; hazel nut was regularly recorded (perhaps representing 'snack food'), but it is commonly found at other sites in floors and other occupation layers where there are few other plant food remains. The sequence of rather thin layers at Pavement remains rather difficult to interpret unless they are floors or yards onto which large numbers of seeds of these weed and waterside taxa fell either from plants growing in the vicinity or from passing feet. Leather fragments were a frequent component of the Pavement deposits and it has been suggested that tanning took place in the area. No definitive botanical evidence for this has been found (the concentrations of bark and elderberry seeds, both adduced as evidence for this craft activity by Buckland *et al.* (1974), might equally be explained in other ways) and the leather itself stands as waste from leatherworking, a process occurring somewhat after tanning (cf. evidence from Layerthorpe Bridge, below).

Re-examination of the original samples from Pavement (Hall 1998) has revealed a small amount of evidence for the dyeplants observed at Coppergate. Indeed, dyeplant remains, especially the clubmoss *Diphasiastrum complanatum* (L.) Holub (see further below), might almost be used as a chronostratigraphic 'marker' for deposits of Anglo-Scandinavian date in York (though its persistence and distinctiveness to the trained eye as a fossil may also mean that it could be recorded in post-Conquest contexts where redeposition has occurred). Thus various remains of dyeplants of the kinds recorded at 16-22 Coppergate have been recorded from boreholes beneath All Saints Church, Pavement (**All Saints (York) EAU 98/30**), from 22 Piccadilly (**Piccadilly (22) 87 EAU 95/53**), and from sites in Parliament Street (**Parliament St (4-7) EAU 2000/22**) and Clifford Street (**Clifford St (2) EAU 2000/17**) all close to or adjacent to adjacent to Coppergate, as well as from a ?Anglo-Scandinavian deposit at **Aldwark (7-9) 85 AML 58/89**, and from early medieval layers excavated on the SW side of the Ouse at **Tanner Row (24-30) 83-4** and 1-9 Micklegate (**Micklegate (1-9) 88-9 EAU 93/22** and **Micklegate (1-9) 88-9 EAU 2000/14**). These sites are all considered in more detail below.

Traces of one of the dyeplants so common at Coppergate, *Diphasiastrum complanatum*, were also recorded from deposits associated with an Anglian helmet discovered at the Coppergate Development site, York (**Coppergate Helmet**), though it is a matter for speculation what the significance of the single fragment of this plant recovered from one of the contexts examined, and of the two fragments from the other, may be. The fill deposits in and around the helmet presented an interesting dating challenge, and the biological remains in the pit may have been of Anglian or Anglo-Scandinavian date, or both (NB: the brief account which follows integrates evidence from plant and insect macrofossil remains). Two bulk samples from this important but enigmatic feature were examined: one from the sediment within a lining of oak planks giving an Anglian (probably 8th century) date by radiocarbon assay; and one from between the lining and the natural clays into which the pit was cut. A small (0.5 kg) subsample of the latter was also examined. The assemblages of plant and insect remains in these deposits were essentially similar, indicating an area of disturbed ground with annual and perennial weeds and an associated insect fauna—particularly prominent were annual nitrophile weeds, amongst which three goosefoots were present (*Chenopodium ficifolium* Sm., *C. hybridum* L. and *C. murale* L.), all species of disturbed soils (including cultivated ones) and manure heaps. To judge from the insect remains, there was certainly foul matter, perhaps dung, and litter on surfaces amongst the plants. There was nothing to suggest that the pit had been used for waste disposal—apart from the ubiquitous elderberry seeds and hazel nutshell, there were no remains of edible plants—although there were small quantities of plant and animal remains which must have originated in or around buildings. Aquatic and aquatic marginal species seem likely to have arrived as 'background noise' or in floodwater. It has been suggested, particularly on the evidence of the invertebrate remains, that the pit was open for a long time, with gradual accumulation of insects. It was perhaps a shallow well (it appeared to have been truncated during earlier building works), dug and lined in the Anglian period, in primary use for an unspecified period, then abandoned. During abandonment and perhaps as late at the Anglo-Scandinavian period, the helmet was dropped or placed in the pit, which was later backfilled with surface deposits from nearby.

Another site excavated in this part of York yielding highly organic early medieval deposits lay to the NW of the large site at 16-22 Coppergate and on the N side of the street. Samples from a single trench at 5-7 Copeprgate (**Coppergate (5-7) 74**) came from four vertical sequences in the excavated faces, all apparently from 'layers' (there was no evidence for the fills of cuts) dated rather broadly as Anglo-Scandinavian to Norman. The 18 small subsamples of various sizes examined gave rather rich assemblages dominated by weeds of waste places and cultivated land; there were few 'useful' taxa, though hemp was recorded in a high proportion of samples and there were a few records for foodplants, especially apple and barley, though neither was present in even half of the samples. Some grassland/swamp taxa of various kinds may have originated in hay or some other cut vegetation. There were no records of dyeplants from these deposits, though the original material was not re-examined after dyeplant remains had been recognised from Anglo-Scandinavian deposits at 16-22 Coppergate and then subsequently at 6-8 Pavement; although this might suggest this sequence is of post-Conquest date, the absence of corn marigold (*Chrysanthemum segetum*) from the 5-7 Coppergate samples (it is unlikely to have been overlooked!) perhaps argues for a date in the 9th-mid 11th centuries.

Immediately N of the 16-22 Coppergate site, and also on the other side of the modern street, at **All Saints (York) EAU 98/30**, some highly organic ?Anglo-Scandinavian deposits were obtained from test boreholes under and next to the church. The excellent waterlogged preservation was very like that seen across the road at the 'Viking Dig', with—as noted above—fragments of dyeplants present as at that site, along with linseed, hop, and a few charred cereal grains, all recorded even from very small samples (mostly only a few tens of grammes in the initial assessment).

A little to the N, at **Parliament St (4-7) EAU 2000/22**, four extremely richly organic deposits, a cut fill and three ?dumps, were investigated from a 'rescue' excavation carried out in a lift-shaft pit under circumstances where the proper archaeological development control measures were not observed by the developer. The four GBA samples each of 2 kg were found to contain some of the best preserved plant material from York (though with the benefit of being examined rather soon after excavation), the abundant plant remains including leek leaf epidermis which retained some of the green coloration of live material. The assemblages were all rather similar in having food remains, two of them with uncharred cereal chaff, perhaps pointing to the presence of animal (e.g. pig) faeces, rather than human. The food taxa included linseed, apple, leek, blackberry, and bilberry, as well as rowan, pea, and field bean. As noted above, dyeplant remains were present (madder, woad, greenweed and clubmoss were all recorded) and there were achenes of hop. Altogether, these were very typical Anglo-Scandinavian remains when compared with material from Coppergate, except for the quantities of uncharred chaff.

This kind of chaff was also rather frequent in deposits (mostly spot-dated by pottery to the 10th-11th centuries) at **Spurriergate 7-15 (rear of) EAU 2000/80**, a little to the W of the last site, where there was also evidence for food waste in most of the nine samples examined in an assessment. Further W, again, at a site on the edge of the 'Ness' between the Rivers Ouse and Foss at **Clifford St (2) EAU 2000/17**, five contexts were examined, all dumps, and using subsamples of 1-2 kg. One

assemblage yielded typical Anglo-Scandinavian dyeplants and some mineralised material (faecal concretions and mineral-replaced plant food remains, together with worm eggs). A second sample yielded few remains, and was perhaps largely daub, whilst a third contained charred oat chaff and spikelets, barley and rye, and two lentil seeds (the last, at least, perhaps reworked from Roman levels). The fourth assemblage contained further charred oat grains (some of them sprouted), traces of dyeplants and some cornfield weeds, whilst the last, again, yielded faecal concretions, plant food remains and worm eggs. Clearly at this distance form the 'core' area of Coppergate-Pavement, some different activity is leading to the formation of some deposits without the characteristic preservation of highly organic material; the samples with mainly charred preservation are somewhat reminiscent of those from sites at the SE end of Walmgate (see below).

Immediately S of 16-22 Coppergate, at the site of the former ABC Cinema (**Piccadilly (22) 87 EAU 95/53**), one pit fill and one ?disturbed natural deposit dated as '?Dark Age' were examined during an assessment exercise; the '?disturbed natural' was barren of plant remains, the fill yielding a small flora including hemp, and traces of two dyeplants commonly recorded from Anglo-Scandinavian deposits in York. In 10th-mid 11th century deposits at this site—from which 18 contexts were examined, mainly 'build-up/dump' layers—a very variable content of plant material was observed, though several samples yielded well-preserved organic remains. The plant macrofossil assemblages were dominated by weeds of waste places (including land with impeded drainage, perhaps not surprising so close to the river Foss), and again there were several records for dyeplants characteristic of Anglo-Scandinavian deposits in York. The traces of foodplants recorded included a concentration of wheat/rye 'bran' (in the one cut fill examined), and there was perhaps some material which had originated in turf or other short grassland vegetation.

Towards the NE end of the area with substantial organic deposits of Anglo-Scandinavian date in the heart of York, a site at **St Saviourgate (9) 95 EAU 98/14** provided an opportunity to examine several pit fills with good preservation by anoxic waterlogging. These deposits mostly yielded assemblages rich in wood chips and seeds of annual nitrophile weeds, the latter very typical of vegetation developing on manure heaps. There was also some evidence from one deposit dated 10th-11th century, for food and faecal waste in the form of taxa like summer savory, apple and 'plum, with some wheat/rye bran (and worm eggs). The very typical dyeplants seen in other Anglo-Scandinavian deposits were noticeably absent here, suggesting the site lay in an area with different usage or activities at this period.

5.6.2.3 Other sites in York with (probable) Anglo-Scandinavian deposits

5.6.2.3.1 Sites NE of the Ouse and NW of the Foss

Several excavations in and near Aldwark have revealed early medieval deposits, some probably of Anglo-Scandinavian date. At a site adjacent to 1-5 Aldwark, material from five contexts assigned to the pre-Conquest (but post-Roman) period were examined archaeobotanically (**Aldwark (adj 1-5) EAU 88/05**). Small numbers of plant remains were present at low concentrations, mainly weeds of waste places and cultivated ground, some indicating longer-term abandonment or communities

marginal to tracks or hedges (plants of the phytosociological Class Artemisietea). Some 11th century material from this site was also examined: from eight contexts, mainly deposits from the first phase of construction of a large earth bank, plus two pit fills and a slot fill. Some of the 'bank' deposits were described by the excavator as lenses of peat and/or brushwood, but their analysis took place at a time when a close examination of the matrix as well as the contained macrofossils was not routine and the records pertaining to the samples from these layers are somewhat limited in value. The 'bank' deposits together contained quite large assemblages dominated by plants of disturbed places (including wet ones) and perhaps grassland, so the excavator's 'peat' was probably redeposited occupation material, though traces of peatland plants *were* present. There were also occasional records for linseed, and traces of charred cereal grains, but the flora was otherwise primarily of 'wild' plants. One pit fill clearly contained faecal material, the other being almost barren. The slot fill was rich in remains—a very mixed assemblage, but primarily weeds.

By contrast, at another site (just) inside the line of the Roman defences, at **Aldwark (7-9) 85 AML 58/89**, seven ?Anglo-Scandinavian pit fill contexts from four pits, examined via 24 subsamples in an assessment, were found to be rich in evidence for food and faeces (there were faecal concretions in five of the contexts, and wheat/rye bran in four), with a range of other food plants: various plant parts of leek, sloe, plum, bullace, apple, opium poppy, celery seed, dill, blackberry, ?bilberry, raspberry, linseed, and field bean, as well as traces of charred cereals. The dyeplant dyer's greenweed (*Genista tinctoria* L.) was present in trace amounts in one sample.

Further along Aldwark, just outside the SE corner of the Roman defences, from two contexts described as 'soil layers' formed over a Roman road and probably of Anglo-Scandinavian date at **Aldwark (36) 83 AML 59/89**, small amounts of charred and uncharred plant material of no particular interpretative value were recorded. Further S again, at the **Aldwark (21-33) (Ebor Brewery) 73-4** site, a single sample from a stratum of mosses 20-30 mm thick overlying 20-30 mm of heather, itself on a 100 mm-thick alder brushwood raft in a large ditch, contained 11 moss taxa, principally *Pleurozium schreberi (Brid.) Mitt.*, with *Hypnum cupressiforme* Hedw. and *Hylocomium splendens* (Hedw.) Br. Eur., and a range of other types, basically from heathland (definitive details of the stratigraphy are given by Hall, R.A. *et al.*, 1988). It is very likely that they and the heather were collected together.

5.6.2.3.2 Sites close to the River Foss

From excavations at **Layerthorpe Bridge EAU 2000/64** material from some 17 samples from ten contexts firmly or tentatively assigned to the Anglo-Scandinavian period (plus perhaps some more, wrongly attributed as Roman, see above) were examined. The deposits comprised river silts, dumps, peaty organic sediments, and the fills of a timber-lined channel. Most of the samples yielded rich assemblages, with one timber-lined ?sluice/overflow fill containing an extraordinary diversity of material, being rich in bark sclereids (see further below) with good evidence for heathland turves, ?thatch/fuel (charred and uncharred *Cladium* leaf and cereal chaff and spikelets), food waste, traces of dyeplants (in the form of *Diphasiastrum* stem fragments and woad pod remains). The presence of some decayed leather fragments and unusual concentrations of the beetle *Trox scaber* (Linnaeus) led to the

conclusion that this deposit may well have contained waste from tanning (for more detailed arguments see Hall and Kenward 2003 and the Technical Report for the site). One of the waterlain deposits dated to the Anglo-Scandinavian period contained material thought to be broken flax stems and other debris (presumably 'scutching' waste from fibre extraction), abundant charred *Cladium* leaf, bark sclereids, and some evidence for turves; sclereids were abundant in some other deposits. A cut fill was unusual in containing remains of heather within concreted material (perhaps waste from tanning or dyeing?); elsewhere there was considerable a amount of evidence for burnt and unburnt turves, including one context from which a 'spot' sample was found to consist largely of the kind of partly-charred material that would be expected on paring a slice of heather-dominated heathland or moorland turf, the burning having occurred either prior to cutting (as with the traditional practice of burning a 'switchen, swizzen or swidden', recorded for the North Yorks Moors by Hartley and Ingilby, 1990, 76ff.), or during use in the town.

Close to the last site, at **Adams Hydraulics I EAU 90/01**, plant remains were, by contrast, limited to a little charcoal in a levelling deposit of 10th century date and two pit fills of 11th century date, whilst a further phase of evaluation at this site, **Adams Hydraulics III EAU 91/05**, provided a single 10th/11th century pit fill, from which only a few uncharred elder seeds and charred ?rye grain were recorded. Material of 10th century date from the evaluation of deposits to be affected by large-scale development in the **Hungate area EAU 2000/29**, immediately adjacent to the last site, was rather limited—there was surprisingly little plant material in the few deposits examined. One occupation deposits yielded traces of the characteristic nutlets of bog-rush (*Schoenus nigricans* L.), which may relate to imported cut wetland vegetation or perhaps fen peat.

Further 'downstream', at **Hungate 50-1**, eight samples were examined from one pit fill and five 'levels' (layers), dated as 'Late Anglo-Saxon' or Anglo-Danish, and coming from a brushwood and clay bank, though no details of their size are available. They contained a wide range of uncharred material including wetland taxa and weeds of cultivation, especially cornfield weeds and nitrophiles, but also some *Prunus* stones and several grassland plants. Hop and ?flax were both present, but the tentative identifications of 'vegetables' are rather suspect (NB: as mentioned previously, a number of the taxa are not regarded by the *original authors* as necessarily satisfactorily identified at the level of species!). At nearby **Carmelite St EAU 91/15**, a single linear cut fill was dated as Anglo-Scandinavian to early medieval; the single sample examined contained a few plant remains of no interpretative value.

South of the Foss, along the modern street called Piccadilly, two evaluation exercises have produced material of Anglo-Scandinavian date. At **Piccadilly (38) EAU 92/09**, sandy build-up of 10th/11th century date on a Roman cobbled surface proved to contain some nitrophile weeds, but was otherwise notable for abundant freshwater molluscs (it was probably a fluviatile deposit and represents the state of the Foss prior to damming in the 11th/12th century for the formation of the King's Pool), whilst on the other (landward) side of the street at **Piccadilly (41) EAU 92/20**, a 10th/11th century clay dump was barren of plant remains other than charcoal.

5.6.2.3.3 Walmgate and Fishergate areas

Rather further away from the presumed influence of the River Foss, in Walmgate, Anglo-Scandinavian deposits have regularly been recorded during interventions, though only one fairly large excavation has been possible in this area and a proper impression of the scale of 9th-11th century occupation and activity at this considerable distance from the Coppergate-Pavement focus cannot easily be gained.

At the largest of the excavations, at **Walmgate (118-26) AML 60/89**, five 9th-11th century contexts (three pit fills, a gully fill and the basal backfill of a well) were examined. A pit/cistern fill proved to be rich in plant remains with clear evidence for foodplants and faeces: this included remains of fig, apple, summer savory, and linseed, with oat and wheat/rye 'bran' and faecal concretions, the fig perhaps arguing for a post-Conquest date. A rather similar assemblage was obtained from the gully fill. Other pit fill assemblages were mostly of weeds, but there was also a peatland/heathland component, whilst the well backfill sample mostly produced weed seeds, a rather small group but with most taxa quite frequent. From a single 10th-11th century accumulation layer overlying a paved surface a single sample was examined; it yielded a small assemblage with rather few remains of little interpretative value. Subsequent work undertaken for a synthesis of Anglo-Scandinavian York (Hall and Kenward 2004) involved examination of a single sample and a reconsideration of the earlier data (**Walmgate (118-26) EAU 2000/20**): perhaps most significantly, although there was some good organic preservation, there appeared to be a complete lack of Anglo-Scandinavian 'signature' dyeplants. There was some food waste, albeit nothing like the quantities seen in the centre of York, though with some assemblages quite rich in charred remains of oats (cf. Clifford Street, above). Evidently there was simply less organic waste accumulating at this site, the one furthest yet seen from the 'core' in central-SE York, perhaps reflecting a lower density of occupation (i.e. more 'rural' than 'urban') so that organic materials were more easily recycled.

Nearby, at **Walmgate (104-12) EAU 92/03**, three 10th-11th century pit fills again provided some evidence for (presumed human) waste. Two of the three samples examined were mostly faeces with food (apple, sloe, and 'bran', but also charred oat chaff which clearly had a different origin); the third sample contained further charred chaff including cultivated oat spikelets. Meanwhile, at **St Georges School ARCUS 208**, on the opposite side of Walmgate from the last site, a single spread of charred grain and chaff of Anglo-Scandinavian date was investigated during another evaluation. A single subsample of 250 ml was found to comprise more or less pure grain and chaff, mainly cultivated oats with a little barley and traces of flax seed (there were also some weed seeds, but the level of identification was very low). A subjective impression has been formed of a regular occurrence of charred oats in deposits of this period in this part of the city, though the possible significance of this (storage, processing, stabling?) has yet to be considered.

The most recent excavation in Walmgate to expose Anglo-Scandinavian deposits was at **Walmgate (41-9) EAU 2000/04**, where samples from ?floors, a 'layer', and a cut fill were dated to this period. From one of seven GBA samples (and some remains from some bulk-sieved deposits from same contexts processed in connexion with work at the site for the Channel 4 television programme *Time Team*), there came some characteristically 'sooted' and 'toasted' plant remains and material which

may have entered the deposits 'dry' and was never fully rewetted, including ?*Scirpus* sp. stems and rye rachis (ear stalk). A likely source for such material is thatch. Interestingly, some other samples contained various propagules from wetland plants which might easily have arrived with cut wetland vegetation for thatch. Another floor yielded some traces of dyeplants (it may be no coincidence that this is the site in Walmgate closest to those in the centre of York with rich Anglo-Scandinavian deposits). Lastly, the presence of sea arrow-grass (*Triglochin maritima*) in three samples and sea aster (*Aster tripolium* L.) in two others calls for some comment. These saltmarsh plants have been discussed by Kenward *et al.* (1986, 264) in terms of an origin in herbivore dung from animals grazed on saltmarsh downstream of York, but the importation of saltmarsh hay is perhaps as likely, or more so.
A further set of samples from subsequent excavations at this site (**Walmgate (41-9) EAU 2001/26**) included material from a floor of 10th/11th century date. The plant assemblage was very typical of those seen in other Anglo-Scandinavian deposits in central York, with a trace of *Diphasiastrum*. Components which might represent straw and turf were also noted, but the material from this early phase of the site was not selected for later re-investigation. However, a sample from multiple thin layers of ash perhaps related to kilns which *was* examined subsequently as part of a study of post-Conquest deposits (**Walmgate (41-9) PRS 2002/26**) and phased as 12th century contained remains of woad, dyer's greenweed and *Diphasiastrum*, and was either almost certainly of Anglo-Scandinavian date (or was later but contained reworked material from this earlier period).

Beyond the medieval walls (and presumably well beyond the Anglo-Scandinavian city), in Fishergate, late 10th-12th century occupation deposits pre-dating the Gilbertine Priory of St Andrew (founded 1195) were investigated bioarchaeologically (**Fishergate (46-54) 85-6 (Priory)**). Of these, the earliest, dated to the late 10th-mid 11th centuries, comprised three pit fills which yielded only a little charcoal and traces of charred cereals and hazel nutshell (see also comments for this site under Anglo-Scandinavian/early post-Conquest material below).

5.6.2.3.4 Sites SW of the Ouse

Close to the modern course of the Ouse in **North St (York) 93 EAU 93/14**, 8th-11th century dumps and build-up from 12 contexts were assessed. The larger assemblages recovered were mainly of weed taxa, though hemp, hazelnut and hop were all recorded from 8th/10th century deposits, whilst one 10th century sample contained remains of several waterside and aquatic plants together with some tentatively identified clubmoss (*Diphasiastrum*) remains and dyer's greenweed stem fragments. As mentioned above, these dyeplants were also present, as 'markers' for the period, elsewhere in this part of the city. Material of ?9th-10th century date in **Rougier St (5) 81**, a little to the W of the North St site and well away from the modern line of the river, comprised the fills of a single pit; there was a very limited group of mainly foodplants and weeds, some of which were mineralised, and the evidence indicated foul waste including faeces.

A little to the S, in Micklegate, excavations at Nos. 1-9 (**Micklegate (1-9) 88-9 EAU 93/22** and **Micklegate (1-9) 88-9 EAU 2000/14**) ('Queen's Hotel' site)provided an opportunity to explore deposits associated with Anglo-Scandinavian wooden

structures—the material assessed included samples from pit fills and ?floor layers. The 12 samples examined for an assessment produced some large and well-preserved assemblages of uncharred plant material including evidence for faeces and foodplants from the pit fills. Remains of dyer's greenweed were present in four samples (and also abundant in a spot sample examined separately—there were, literally, handfuls of the plant). For the purposes of subsequent synthesis of Anglo-Scandinavian data for York (Hall and Kenward 2004), 20 of the 89 samples of deposits dated to this period were selected for analysis. Most of the 1-2 kg subsamples proved to be quite richly organic and the material was broadly similar to that from some contexts at 16-22 Coppergate: bran-rich pit fills with faecal concretions and worm eggs, as well as some dyeplant remains, especially dyer's greenweed. There were some modest-sized concentrations of uncharred cereal chaff (rather rare at Coppergate but common in some of the samples from 4-7 Parliament St, see above); other frequently recorded remains included linseed, hazelnut, apple, large mosses of the kinds regularly recorded at 16-22 Coppergate, hop, leek, some dill, celery seed, and summer savory, and traces of opium poppy and wood sorrel—a suite very similar to that from the major Anglo-Scandinavian site NE of the Ouse.

A little to the SW of the Queen's Hotel site, evaluation trenches at **Skeldergate (64-74) EAU 2000/53** revealed some deposits dated to the 10th-11th/12th century: dumps, a 'build-up', and pit fills. Most productive were the pit fills (mostly from one large pit) in three of which there were quantities (sometimes large) of remains of *Genista*, in one case with fuller's teasel and agrimony (*Agrimonia eupatoria* L.) fruits, perhaps all associated with textile working: the *Genista* as a dyeplant, the teasel used in cloth finishing, and the burred agrimony fruit representing another potential dyeplant (providing a further source of yellow) or simply arriving with fleeces. There were also some food debris from this deposit. Another pit fill contained 'strawy' debris (with bracken, bog myrtle (*Myrica gale* L.), and further fuller's teasel fruits), perhaps largely representing stable manure. Hazel nuts from this site showed the typical Anglo-Scandinavian character of apical cuts. The *Genista* remains in one of the pit fills included some basal stem fragments that were many-branched and somewhat thickened, suggestive of 'stools' resulting from repeated cutting of plants that were not harvested by pulling but which were being managed.

Somewhat higher up the river slope, in **Skeldergate (58-9) 73-5 AML 61/89**, a proportion of the (often richly organic) deposits, including some pit fills and in particular features recorded during excavation as 'moss-lined pits' were probably of Anglo-Scandinavian date, but no detailed phasing is currently available and this body of potentially very interesting early medieval material remains inadequately investigated (the report cited here deals with an assessment of 60 samples of broadly Anglo-Scandinavian to 15th century date, undertaken in the absence of phasing).

5.6.2.4 Other Anglo-Scandinavian sites in Northern England

5.6.2.4.1 Urban centres

5.6.2.4.1.1 Beverley

(NB: Some material of this date may have been included in the discussion of Anglian deposits, above.)

Three excavations in Beverley have yielded material which can be dated to the late Saxon/Anglo-Scandinavian period. At the site of the **Dominican Priory (Beverley) 86-9** some ?pre-12th century pit and cut fills pre-dating the Priory gave rather limited plant macrofossil assemblages, though there were some concentrations of charred cereal grains (barley, bread wheat, cultivated and wild oats) and chaff (mostly not identified further than wheat/barley), with associated charred arable weed seeds and a very few uncharred remains (including hemp). At **Lurk Ln 79-82**, mid 10th-mid 11th century levels included two ditch fills and a pit fill, from which three small samples were examined. A wide range of taxa was recovered, including some foodplants or flavourings (celery seed, strawberry, hop, plum, linseed, blackberry, raspberry, elderberry, bilberry and wheat/rye bran) from the pit fill, which was clearly a faecal deposit. The ditch fills were rich in a mixture of weeds, with some wetland and woodland plants, but mainly plants indicating disturbance. At a site in **Highgate 77**, the earliest occupation deposits were tentatively dated to the 10th century; the lower of the two layers assigned to this phase yielded a few annual weed seeds and other plants typical of urban occupation deposits, the upper one a rather larger group (though still mainly weeds). The succeeding highly organic horizons dated to the late 10th-late 11th century produced a long list of taxa, again mainly weeds, though with some wetland and dry grassland plants—a mixture typical of so many medieval (*sensu lato*) occupation deposits. 'Useful' plants were sparse, but this in part probably reflects the small samples used, and probably also the inexperience (at the time) of the analyst (ARH).

5.6.2.4.1.2 Chester

The only material of Anglo-Scandinavian date investigated in Chester appears to be that from a recent site at **Bridge St (Chester) PRS 2002/16**. All eight samples examined from deposits dated *c* 900 CE to *c* 1066 CE yielded at least some wod charcoal at the assessment stage. Four of them, from a series of fills of a single feature, were considered worthy of further examination. The feature from which they came has been interpreted as a hearth pit and, with the exception of some elder seeds and some cereal 'bran' and cereal caryopses, all the plant material recovered was charred or partly so. In a few cases, fossils were reduced to silica (cf. Robinson and Straker 1991)—through the same combustive processes. At the assessment stage, these deposits were thought to contain charred peat fragments and, indeed, the presence of charred sedge nutlets in all four assemblages was thought to be consistent with this. However, closer examination revealed that most if not all of the fragments thought to be charred peat in fact contained fragments of seed-coat (testa) of pea, or in some cases field bean (both were certainly represented by the specimens of the diagnostic 'hila' or seed attachment scars), together with some uncharred wheat/rye and oat 'bran', and they should therefore be seen as charred

food debris, presumably from cooking of food consisting in large part of pulses and whole or milled grain. More 'conventional' remains of food plants were the charred grains of oats (including cultivated oats), barley, rye and bread/club wheat, as well as charred seeds of blackberry, field bean and perhaps also pea.

It may be, in fact, that peat *was* being used as a fuel (hence the sedge nutlets), but was almost completely consumed, leaving only some fragments which consisted of pale yellowish material on one side and brownish material on the other (seen in the sample from the uppermost fill of the pit). Some of the charcoal (identified as coming from hazel roundwood) may also represent fuel used in the cooking which evidently occurred at this hearth. The presence of grassy, non-woody material—perhaps tinder—may be indicated by some of the charred and 'silicified' herbaceous material noted in at least two of these hearth samples, but very little other plant material was recognised, merely a few charred weed seeds.

The remaining samples from contexts assigned to this phase at this site yielded only small amounts of charred plant material: a few cereal grains and some hazel nutshell. There was one record of traces of uncharred seeds of fig—from a deposit described as the 'cessy' fill of a cut (and found in a small assemblage with a few other probable plant food remains). If truly pre-Norman Conquest, this represents a very rare record for fig, a species well-known from Roman and from post-Conquest medieval (and later) deposits. In view of its abundance in later deposits at this site, the possibility of contamination in the ground, during sampling, or during processing, should all be considered.

5.6.2.4.1.3 Durham

The plant remains from **Saddler St (61-3) 74**, whilst representing an important early attempt at systematic study, have an interpretative value limited by the very broad dating (6th-13th century on the basis of some radiocarbon dates); they are thus only somewhat arbitrarily considered in *this* section. The samples came from drain and pit fills and from midden deposits, seven samples being examined. They were found to be quite rich in uncharred remains with a few charred bread wheat and oat grains; flax seeds were present in more than half the samples, but the assemblages were dominated by weeds of waste places, especially nitrophiles. Two samples from a latrine pit contained moderate numbers of blackberry seeds and some 'plum' stones. The few mosses recorded represented a variety of habitats.

5.6.2.4.2 Rural sites

Almost nothing is known of 9th-11th century life in this region outside of the few urban centres for which the evidence has just been presented. Four widely scattered rural sites have provided between them just a little information. At **Old Penrith 77 & 9** *CUM* two distinct deposits of charred plant remains from a 'grain pit' were investigated. The material was flax and oats (the former radiocarbon dated to 1030±100 BP, i.e. ce 920±100); the flax was described by the archaeobotanist as being 'cake', presumably 'fused' during charring. At **Waterton EAU 96/40** *NLI*, on the W bank of the Trent, NW of Scunthorpe, a 10th century gully fill yielded a few poorly preserved charred barley and wheat grains and some charred bark and charcoal. A

site on the Yorkshire Wolds at **Cottam 93-6** yielded only small amounts of charcoal and charred cereals, the latter amounting to a very few poorly preserved specimens, in late 9th-early 10th century ditch and pit fills (site COT95).The other rural site with deposits assigned to this period and for which an archaeobotanical study has been made lies in the far NW of N Yorkshire: **Ribblehead AML 2398** (9th century); it has produced only a little charcoal.

5.6.2.5 Summary and future prospects

Our archaeobotanical knowledge of the Anglo-Scandinavian period in Northern England is extremely heavily skewed by the immense body of data from York, and in particular from a single site at 16-22 Coppergate. On the other hand, this intensively studied site has provided a baseline for studies of other deposits within the city, and—potentially—elsewhere, if deposits of this period come to light (though the evidence so far indicates very little occupation material for the mid 9th to mid-late 11th centuries outside of this important urban centre. To understand York at this period, some appreciation of the town in its wider landscape is vital, however.

5.7 After the Norman Conquest (1066-1540 CE)

5.7.1 Material dated across the Conquest

The difficulties of dating many archaeological deposits closely mean that much of the corpus of archaeobotanical data with which this review is concerned cannot easily be grouped to provide a series of simple sub-divisions of the medieval period. Inevitably, some material dating to the period at or just after the Norman Conquest—an event which, in its effects must, in any case, have been somewhat diachronous across the northern counties of England—will have been considered under the Anglo-Scandinavian heading above. This section deals primarily with evidence whose dating suggests it is clearly post-Conquest (12th century and later), but for a few excavations (all from towns), some material has been dated broadly to the period covering the later years of the Anglo-Scandinavian period and the early years of Norman power and no indication is given in the relevant report that it is definitively either pre- or post-Conquest. (All sites with medieval material discussed in the review are included in Figs 9-12.)

5.7.1.1 York (Fig 9)

At a site in **Swinegate (12-18) EAU 94/13**, within the area of the Roman fortress, samples from fourteen contexts of 11th/12th century date were examined during an assessment; they were from dumps, build-up, and pit fills. Overall, rather few plant remains recovered; they were mainly weeds and hazel nutshell, but there was also some probable evidence for stable manure (hay/straw), as well as flax capsules and seeds. Nearby, in **Little Stonegate (3) EAU 99/46**, a 10th/11th century pit fill gave an assemblage with rush and celery-leaved crowfoot seeds and *Daphnia* ephippia (cf. Kenward forthcoming) indicative of impeded drainage and periods of standing water.

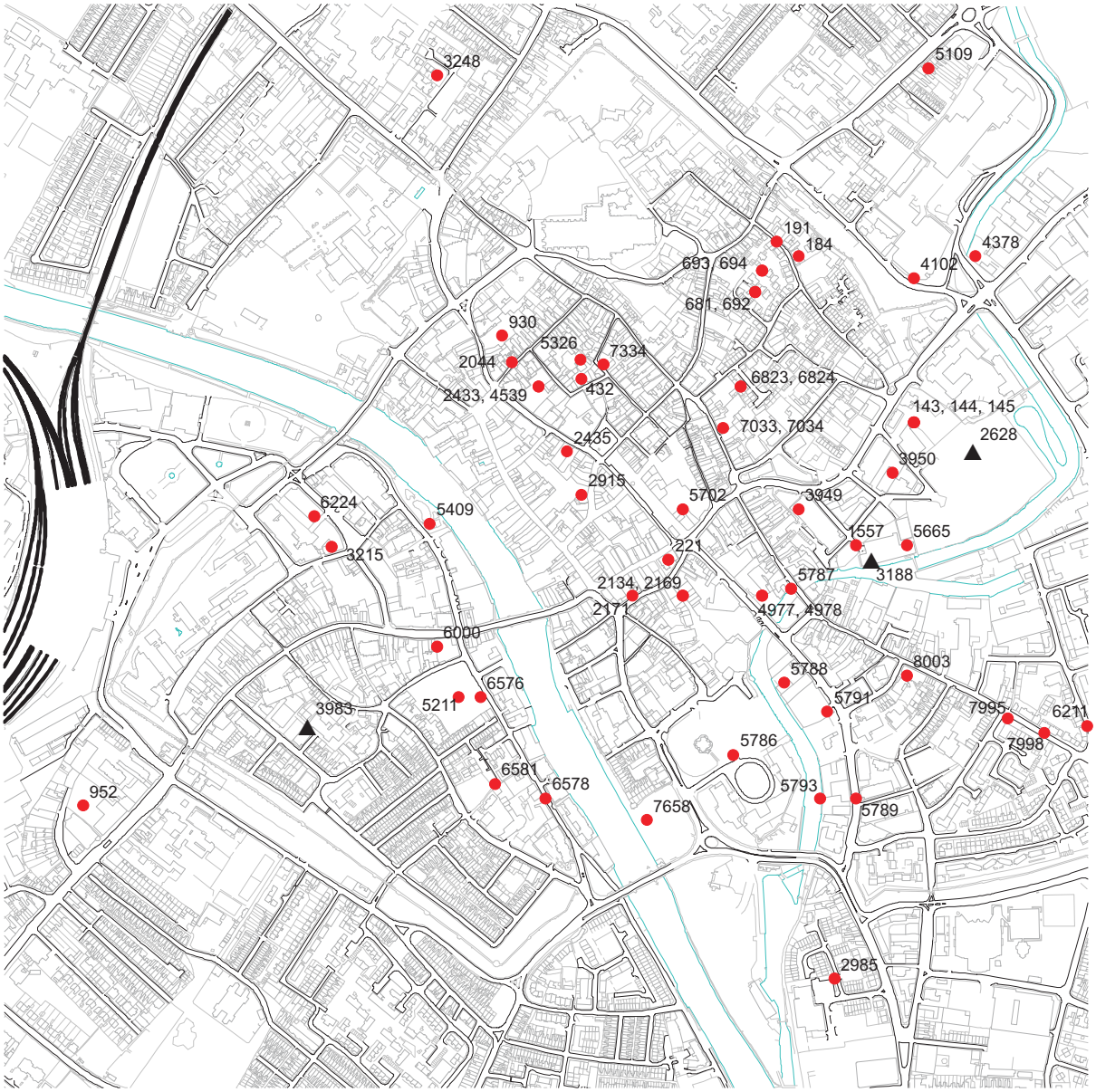

Fig 9: Sites with archaeobotanical studies of material of medieval date in York (tentatively dated cases marked with triangle) referred to in the text and for which reliable grid references could be found; it includes some with material spanning the period of the Norman Conquest where dating cannot be refined

Key: 143—Adams Hydraulics I EAU 90/01; 144—Adams Hydraulics II EAU 91/12; 145—Adams Hydraulics III EAU 91/05; 184—Aldwark (7-9) 85 AML 58/89; 191—Aldwark (adj 1-5) EAU 88/05; 221—All Saints (York) EAU 96/47; 432—Back Swinegate EAU 94/13 (near to location for 3359—Grape Ln (8) (York) EAU 94/13); 681—Bedern 73-6 (Foundry); 692—Bedern AML 56/93; 693—Bedern AML 57/93; 694—Bedern AML 58/93; 930—Blake St EAU 86/07; 952—Blossom St (14-20) EAU 91/18; 1557—Carmelite St EAU 91/15; 2044—Coffee Yd EAU 89/12; 2134—Coppergate (16-22) (hair moss); 2169—Coppergate (16-22) EAU 96/09; 2171—Coppergate (5-7) 74; 2433—Davygate (British Gas) EAU 97/51; 2435—Davygate Centre EAU 98/09; 2628—Dundas St EAU 90/09; 2915—Feasegate (BHS store) EAU 98/16; 2985—Fishergate (46-54) 85-6 (Priory); 3188—Garden Pl EAU 90/08; 3215—

Tanner Row (24-30) 83-4; 3248—Gillygate (45-57) 92 EAU 92/22; 3949—Hungate 50-1; 3950—Hungate area EAU 2000/29; 3983—Ideal Laundry EAU 91/03; 4102—Jewbury 82-3; 4378—Layerthorpe Bridge EAU 2000/64; 4539—Little Stonegate (9) EAU 98/27; 4977—Merchant Adventurers Hall EAU 96/01; 4978—Merchant Adventurers Hall EAU 96/44; 5109—Monkgate (50-2) (York) 95 EAU 95/20; 5211—Skeldergate (64-74) EAU 2000/53; 5326—Norman Court 95 EAU 95/21; 5409—North St (York) 93 EAU 93/14; 5665—Palmer Ln 92 EAU 92/05; 5702—Parliament St (44-5) 94 EAU 95/08; 5786—Piccadilly (17-21) EAU 91/01; 5787—Piccadilly (22) 87 EAU 95/53; 5788—Piccadilly (38) EAU 92/09; 5789—Piccadilly (41) EAU 92/20 (also location for 5790—Piccadilly (41) EAU 99/45); 5791—Piccadilly (50) EAU 92/08; 5793—Piccadilly (84) EAU 91/16; 6000—Micklegate (1-9) 88-9 EAU 93/22; 6211—Rosemary Pl 94 EAU 94/47; 6224—Rougier St (5) 81; 6576—Skeldergate (14) EAU 91/06; 6578—Skeldergate (26-34) EAU 91/10; 6581—Skeldergate (58-9) 73-5 AML 61/89; 6823—St Andrewgate 93 EAU 93/02; 6824—St Andrewgate PRS 2002/12; 7033—St Saviourgate (9) 95 EAU 95/51; 7034—St Saviourgate (9) 95 EAU 98/14; 7334—Swinegate (12-18) EAU 94/13; 7658—Tower St (1-2) (York) EAU 95/35; 7995—Walmgate (104-12) EAU 92/03; 7998—Walmgate (118-26) AML 60/89; 8003—Walmgate (41-9) PRS 2002/26.

Further sites, falling outside the area mapped here are 998—Bootham Engineering Works EAU 2000/45; 4370—Lawrence St (148) 93 EAU 94/25; 4372—Lawrence St (D C Cook) EAU 2001/40; 6916—St Johns Coach Park EAU 2001/15.

Somewhat to the S, at **Parliament St (44-5) 94 EAU 95/08**, the 'fill' deposits encountered in an evaluation excavation were dated to the 11th-13th centuries, with the earliest layers dated 11th-12th century and thus perhaps representing the latest part of the Anglo-Scandinavian period. Some of the earlier material here comprised very decayed faeces, containing concretions and, amongst the food debris, fig, opium poppy, grape, apple, wheat/rye 'bran' and ?leek leaf epidermis (the fig and grape, at least, suggesting a post-Conquest date, to judge from the scant evidence for these two taxa from securely dated mid 9th-mid 11th century deposits at 16-22 Coppergate and elsewhere in the city). The remaining contexts, where dated, were assigned to the broad category 'mid 11th-mid 13th' centuries and they, too, yielded rather poorly preserved human faecal material (including concretions) in most cases; the plant remains were generally somewhat decayed (perhaps a result of dewatering in the 20th century, cf. Kenward and Hall 2000), though some *Allium* (?leek) epidermis was recorded from one sample.

Elsewhere within the City walls, at **Aldwark (7-9) 85 AML 58/89**, 11th-12th century material comprised the fills of two pits, a 'loam' layer, and two deposits associated with the demolition of the Roman fortress wall; the eight small samples examined mainly contained seeds of weeds and other plants typical of urban environments along with traces of charred cereal grains.

Two phases of the archaeological sequence at **Walmgate (118-26) AML 60/89** were dated to this period, i.e. 'across' the Conquest. The 11th-12th century material examined comprised samples from the backfill of a robbed bedding trench and two pit fills. The first of these gave a diverse group of plant remains, but essentially weeds of various kinds; one of the pit fills had a distinctive peatland component, perhaps from imported turves and/or heather brushwood, but also with food remains (wheat/rye bran, field bean, linseed) which, with faecal concretions, point to presence

of faeces. The second pit fill also yielded some evidence for peatland and perhaps other litter but the assemblage was otherwise mainly dominated by weed taxa. A group of samples from deposits dated to the 11th-13th centuries came from contexts interpreted as floors and an occupation spread. The samples from floors mostly yielded large groups of uncharred plant remains, the more abundant being weeds or short damp turf taxa, but with a great diversity of habitats represented. There were very few foodplants and these in trace amounts only; some of the floor deposits contained a high concentration of wood fragments, though it is not recorded if these were from working or decay of structural or other wood. The assemblage from the occupation spread was essentially rather similar (these deposits presumably all formed in more or less the same way).

Nearby, at another site in Walmgate, **Walmgate (41-9) EAU 2001/26**, an interior floor dated as 11th/12th century yielded unusual material in the form of matted charred 'strawy' debris, amongst which were grains of free-threshing wheat and rye. Vegetative material included traces of charred leaf saw-sedge and rye rachis. An origin for this material in a thatched roof seems quite likely.
Lastly in this part of city, from a borehole sunk as part of an evaluation at **Piccadilly (84) EAU 91/16**, an 11th-12th century sample was found to contain an assemblage mainly of weed seeds, with abundant wood fragments (including some wood chips), and charcoal.

Outside the City Walls on the NE side of the Ouse, deposits at **Fishergate (46-54) 85-6 (Priory)**, two contexts (a beam slot fill and a ditch fill) were dated to the mid 11th-?mid 12th century; they yielded only very small amounts of charcoal, charred hazel nutshell and oat grains. A single pit fill from the next phase, dated ?late 11th-?12th century yielded evidence of food waste from human faeces (including apple, opium poppy, sloe and blackberry) and perhaps traces of hay or manure. The remaining 42 contexts from this broad phase (and only dated to 11th-12th centuries) comprised the fills of pits, ditches, post-holes and other features. The samples examined mostly contained very few plant remains or a few mineralised food plants and/or charred cereals and/or hazel nutshell, whilst a few pit fills provided small assemblages of weeds and some wetland taxa.

To the SE of the city, at **Lawrence St (D C Cook) EAU 2001/40**, a single posthole fill dated 10th/11th century yielded some evidence for charred peat, perhaps from turves.

In the area of York SW of the Ouse, at **Tanner Row (24-30) 83-4**, five 11th-12th century contexts, mainly a from a timber-lined pit, were investigated. They yielded a rather limited flora, but the pit was evidently used for disposal of faeces, *inter alia*, and clubmoss and dyer's greenweed were also recorded suggesting either an Anglo-Scandinavian date for the fill, or the presence of reworked pre-Conquest material.

5.7.1.2 Beverley

At **Flemingate 95 EAU 95/48**, a ?11th/12th century context, the basal fill of a ?soakaway, was examined; it gave some evidence for possible stable manure (compressed herbaceous detritus, though not predominantly grassland taxa). Also in Beverley, at **Lurk Ln 79-82**, samples from mid 11th-late 12th century pitfills and layers

gave a rather limited range of taxa but with further evidence of faecal material (as in the preceding period at this site, see above) and a few edible fruits. On what are likely to have been the fringes of the town in the early medieval period, a deposit of organic material of 'pre-12th century' date at **South Beckside 2000 EAU 2000/15** proved to consist mainly of food remains (including *Prunus*, apple, hawthorn, flax, and leek) whose preservation was very good.

5.7.1.3 Durham City

A mid 11th-12th century occupation deposit (a clay containing organic matter) was investigated at **Claypath AML 4899**. There were remains of a few crop plants: barley and oats (one charred grain of each) and two uncharred cereal grains; flax seeds were present in fairly large numbers. There was a variety of seeds of weeds (from arable and waste ground), as well as some grassland and wetland taxa (perhaps from hay, though the author does not specifically mention this).

5.7.1.4 Newcastle

At a single site in Newcastle, material dated across the 11th/12th centuries was examined at **Blackgate DEAR 41/94** from a series of bulk samples from six contexts interpreted as rampart deposits, dumps, and spreads; some charred and uncharred material was recorded from the 'washovers', including cereals and nitrophile weeds, and the material was considered to have potential for further archaeobotanical analysis.

5.7.2 Medieval

Rather than attempting to make groupings, the following section deals with *all* material dated within the period between the late 11th century and about 1540 under a series of headings relating to settlement size. For excavations where there were long sequences of deposits, the dated phases recognised are considered as far as possible in chronological order. Since the bulk of the evidence available is from excavations within modern towns, coming from occupation deposits which are also urban in character, it is perhaps most convenient to deal with this large body of information first. (The relevant maps divide N England up by English Heritage Region as follows: Fig 10: Yorkshire and Humber; Fig 11: NE England; Fig 12: NW England.)

5.7.2.1 The larger towns

5.7.2.1.1 Doncaster

A single excavation in this town has explored plant remains from medieval deposits in Low Fisher Gate (**North Bridge 93-4 EAU 97/16**), where sampling and analysis were on a large scale. From the earliest post-Conquest phase, dated to the late 11th-late 12th century, a series of pit fills (mostly from pits thought by the excavator perhaps to be associated with tanning), and one burnt (?dump) deposit were examined. The burnt deposit yielded large amounts of charred hazel nutshell, with traces of charred barley, wheat and rye grains, and also charred herbaceous debris and 'silicified' rush stem fragments, whilst the pit fills gave small assemblages with a few charred and uncharred remains of little interpretative value (there were certainly

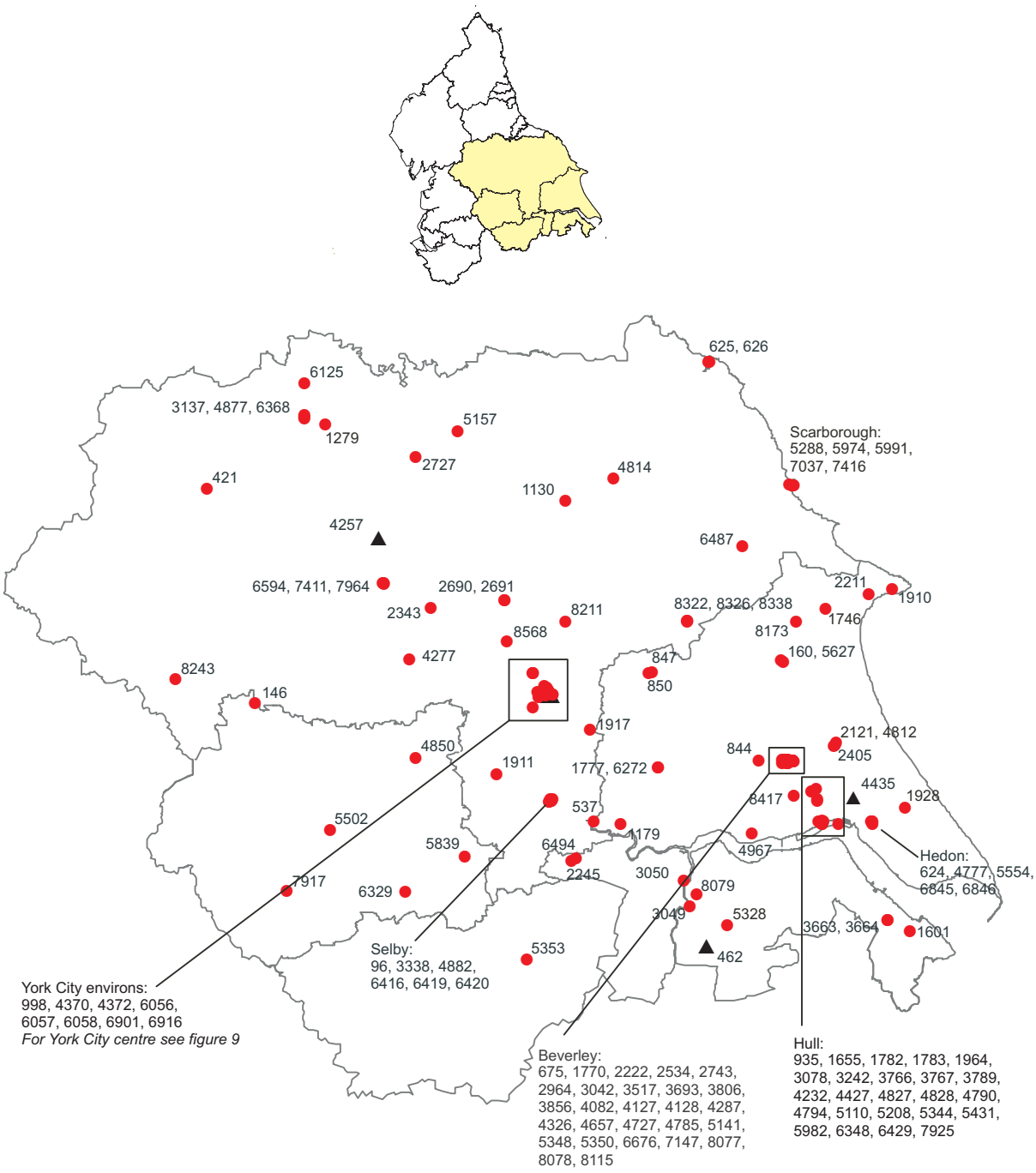

Fig 10: Sites with archaeobotanical studies of material of medieval date in Yorkshire and the Humber region (tentatively dated cases marked with black triangle) referred to in the text and for which reliable grid references could be found

Key: 96—Abbey Walk 97; 146—Addingham 71-5 & 89-90; 160—Albion St 92 EAU 92/12; 421—Aysgarth-Hawes Main DEAR 6/91; 462—Baldwin Ave DEAR 5/98; 537—Barmby on the Marsh PRS 2001/02; 624—Baxtergate (16) (Hedon) EAU 2001/29; 625—Baxtergate (63-4) (Whitby) EAU 93/26; 626—Baxtergate (Whitby) 92 EAU 92/04; 675—Beckside North PRS 2002/06; 844—Bishop Burton 93 EAU 93/03; 847—Bishop Wilton 93 EAU 93/06; 850—Bishop Wilton EAU 2001/18; 935—Blanket Row EAU 2001/12; 998—Bootham Engineering Works EAU 2000/45; 1130—Brecks Ln HA; 1179—Bridgegate ASUD 791; 1279—Brough St

Giles (hospital) 88-90; 1601—Cartergate 94 EAU 94/22; 1655—Castle St (Blanket Row) EAU 99/12; 1746—Caythorpe Pipeline; 1770—Champney Rd 93 EAU 93/01; 1777—Chapel Farm (rear) PRS 2002/14; 1782—Chapel Lane Staith 78; 1783—Chapel Lane Staithe 2000; 1910—Church Farm (Flamborough) EAU 99/16; 1911—Church Fenton ASUD 823; 1917—Church Ln (Wheldrake) 2001 EAC 35/01; 1928—Church St (Burton Pidsea) EAU 2001/28; 1964—Citadel Way EAU 2001/37; 1987—Claxton Quarry DEAR 23/94; 2121—Cooper Farm EAU 99/13; 2211—Cottage Farm CfA 95/2001; 2222—County Hall (Beverley) EAU 2001/25; 2245—Cowick 76; 2343—Crown Hotel 99 EAU 99/22; 2405—Dancing Ln/Main St ASUD 881; 2534—Dominican Priory (Beverley) 86-9; 2690—Easingwold By-pass 93 EAU 93/32; 2691—Easingwold By-pass 93 EAU 94/36; 2727—East Rd ASUD 679; 2743—Eastgate (Beverley) 83-6; 2964—Figham Common EAU 98/17; 3042—Flemingate House 93 EAU 93/07; 3049—Flixborough 89 EAU 2000/56; 3050—Flixborough 89 EAU 93/21; 3078—Foredyke EAU 98/07; 3137—Friary Fields DEAR 8/98; 3242—Gibraltar Farm EAU 97/17; 3338—Gowthorpe (16); 3517—Hall Garth 80 EAU 94/60; 3663—Healing 95 EAU 95/45; 3664—Healing 98 EAU 98/18; 3693—Hengate EAU 96/57; 3766—High St (36A-40) (Hull) EAU 94/01; 3767—High St (37) (Hull) EAU 94/49; 3789—High St/Blackfriargate (Hull) 73-6; 3806—Highgate 77; 3856—Holme Church Ln EAU 96/43; 4082—Jack Taylor Ln EAU 98/10; 4127—Keldgate (by 52) EAU 2001/35; 4128—Keldgate 94 EAU 95/03; 4232—Kingswood EAU 96/55; 4257—Kirklington DEAR 13/92; 4277—Knaresborough Bus Station WYAS 892; 4287—Knights Hospitallers EAU 92/21; 4326—Landress Ln EAU 96/25; 4370—Lawrence St (148) 93 EAU 94/25; 4372—Lawrence St (D C Cook) EAU 2001/40; 4427—Liberty Ln 99 EAU 99/57; 4435—Lime Tree Ln 93 EAU 96/29; 4657—Lord Roberts Rd EAU 99/07; 4727—Lurk Ln 79-82; 4777—Magdalen Ln DEAR 26/98; 4785—Magistrates Court (Beverley) EAU 2001/06; 4790—Magistrates Courts (Hull) 94 & 99 EAU 2000/25; 4794—Magistrates Courts (Hull) 99 EAU 2000/19; 4812—Main St (Long Riston) PRS 2002/07; 4814—Main St (Spaunton) EAU 97/50; 4827—Malmo Rd EAU 92/01; 4828—Malmo Rd EAU 97/38; 4850—Manor Farm (Thorner) WYAS 835; 4877—Market Pl (Richmond) DEAR 13/94; 4882—Market Pl (Selby) 97; 4967—Melton (South Lawn) 94; 5110—Monkgate (Hull) 76-7; 5141—Morton Ln EAU 2002/02; 5157—Mount Grace Priory 89-92 EAU 94/10; 5208—Mytongate 75; 5288—Newcastle Packet EAU 2000/38; 5328—Normanby Park Steelworks EAU 2001/10; 5344—North Back Ln EAU 2001/52; 5348—North Bar Within 95 EAU 95/54; 5350—North Beckside 93 EAU 93/05; 5353—North Bridge 93-4 EAU 97/16; 5431—Northgate (7) EAU 99/59; 5502—Oakwell Hall EAU 88/03; 5554—Old Hall (Hedon) EAU 96/22; 5627—The Outgang 96 EAU 96/37; 5839—Pontefract Castle 82-6; 5974—Quay St (22A) EAU 96/35; 5982—Queen St (Hull) 76; 5991—Queen St (Scarborough); 6056—Rawcliffe Manor 92 EAU 92/11; 6057—Rawcliffe Manor 92 EAU 92/16; 6058—Rawcliffe Manor EAU 94/08; 6125—Richmond Castle ASUD 663; 6272—Runner End DEAR 54/98; 6329—Sandal Castle 64-73; 6348—Scale Ln/Lowgate 74; 6368—Scollands Hall (Richmond Castle) ASUD 829; 6416—Selby (town centre) 93 EAU 93/08; 6419—Selby boreholes 92 EAU 92/07; 6420—Selby watermain DEAR 33/97; 6429—Sewer Ln 74; 6487—Sherburn 99 EAU 2000/06; 6494—Ship Inn (rear) EAU 99/18; 6594—Skellgarths EAU 2001/24; 6676—South Beckside 2000 EAU 2000/15; 6845—St Augustines Gate (15-19) 93 EAU 93/04; 6846—St Augustines Gate (9-11, rear) 99 EAU 2000/02; 6901—St Helens Rd 94 EAU 94/31; 6916—St Johns Coach Park EAU 2001/15; 7037—St Sepulchre St EAU 97/26; 7147—Station Yd (Beverley) EAU 91/17; 7411—Market Pl (8/9 & 10) (The Arcade) EAU 2000/59; 7416—The Bolts (24-6) EAU 90/11; 7917—Venn St (land off) WYAS 801; 7925—Vicar Ln 75; 7964—Wakemans House EAU 2001/09; 8077—Waterside Rd EAU 2001/21; 8078—Waterside Rd EAU 2001/39; 8079—Waterton EAU 96/40; 8115—Well Ln (9-17) 98 EAU 99/04; 8173—West End EAU 99/17; 8211—West Lilling EAU 2002/01; 8243—West St (Gargrave) EAU 97/36; 8322—Wharram Percy (S Manor area); 8326—Wharram Percy (silica skeletons) (also location for 8319—Wharram Percy 53-60); 8338—Wharram Percy AML 2750; 8417—Wilbert Grove PRS 2002/09; 8568—Wood Hall SEF 9404

no high concentrations of bark fragments consistent with the presence of tan bark waste). There were some possible faecal concretions in at least two contexts but no clear concomitant component of food remains to confirm this.

From the 13th century levels at this site, a mixture of external surfaces, dumps in yards, hearth deposits, and a few cut fills associated with buildings were investigated. Plant remains were mostly sparse and largely preserved in a charred state. Frequent, but always in low concentrations, were cultivated oats, barley, rye, and wheat grains (with some grains of each type showing evidence of germination prior to charring). Apart from charred hazel nutshell, other food remains were limited to occasional records for field bean, ?pea, apple, 'plum', fig, strawberry, linseed, cherry, sloe, raspberry, and blackberry. There were also some burnt ?peat fragments and frequent records for charred herbaceous detritus and heather and other peat taxa, perhaps suggesting the use of imported turf for fuel (or the secondary burning of material used, for example, in roofing).

The next phase, dated 13th-14th century, mainly provided samples from floors in buildings, external surface deposits, and a few cut fills. They yielded rather similar assemblages to those from the preceding material, though with three examples of charred saw-sedge leaf, which might represent material that had been imported as fuel or perhaps for use in thatching. The fills of a ditch, a rectangular cut, and some hearth and floor deposits were the deposits investigated for the phase dated 14th-15th century for this site. Some of the same kinds of remains as for the last two groups were recorded, but with a smaller range of charred remains and more uncharred taxa, especially in one of the fills of a cut in which there was a prominent component of perennial weeds of waste places, hedges, waysides (in the phytosociological Class Artemisietea), together with a variety of remains from trees, probably growing locally (although possibly from flood debris). These thinly-distributed remains are considered in the context of other biological remains from this site by Hall *et al.* (2003).

5.7.2.1.2 Hull

Although archaeobotanical studies have been pursued for material from a series of quite large-scale excavations in Hull, some of the work undertaken could only be of limited scope and in some cases the data obtained are, as a consequence, of rather modest value. It must, however, be remarked that a larger proportion of the studies undertaken have been published than for many urban centres. Most of the interventions discussed here have taken place in the 'Old Town', the area immediately NW of the confluence of the River Hull with the Humber and the site of the earliest settlement, Wyke-on-Hull, dating from the late 12th century. The earliest deposits, archaeologically, to have yielded plant remains are those from excavations in Sewer Lane, close to the Humber, and at a development nearby known as the Magistrates' Courts site, at the S end of High Street (the main thoroughfare of the medieval town, running N-S, parallel to the Hull waterfront). Excavations at the latter site (**Magistrates Courts (Hull) 94 & 99 EAU 2000/25**) revealed occupation deposits and feature fills pre-dating a priory founded in the early 14th century. They included the fills of a large negative feature like a ditch or pond, or perhaps a creek draining to the River Hull nearby. Assessment and subsequent analysis of selected material

from 18 contexts (initially using 33 GBA and 23 BS samples) showed that some deposits from this early phase contained few remains, but others were very rich in organic debris, especially the fills of the enigmatic large feature, where there were assemblages containing abundant remains from annual weeds of nutrient-rich, disturbed habitats, including trampled ground forms, the nitrophiles perhaps related to areas of drying mud. There were also remains of some salt-marsh plants (which may reflect some brackish-water influence if this feature was, indeed, a creek), although plant litter or herbivore dung is perhaps another likely source for some of these. Evidence for domestic activity—probably textile working—was present in the form of fuller's teasel fruits and sheep keds (*Melophagus ovinus* (Linnaeus), cf. Kenward forthcoming) and there were traces of plant food remains, but no other good evidence for craft and industry. Much of the organic material may well have originated as litter which might have been stable manure, though the insect assemblages do not support this. (Later medieval material from this site is discussed under monastic houses, below)

At **Sewer Ln 74**, close to the Humber, deposits of late 13th-early 14th century date were examined from the fills of a watercourse cut into the natural drift. Though rather small, mixed assemblages were obtained, with remains of various weeds and grassland plants, there were some traces of probable food remains (leek, wheat/rye bran), perhaps from faecal material (the site was studied too early for this to have been identified directly via either plant remains or from the presence of intestinal parasite eggs). There were regular records for hemp, teasel (not identified beyond *Dipsacus*) and flax seed and capsules, all of which might be connected with textile-working.

Close by, at **High St/Blackfriargate (Hull) 73-6**, late 13th-mid 14th century pit fills and floors, and a ?garderobe fill were investigated. Four of the pit fill samples yielded some 'grassy' detritus, and would now perhaps be interpreted as containing stable manure or something like it. Two others appear to have contained faecal material. The floor deposits mostly preserved few remains. The putative garderobe pit provided a single spot find of abundant fig seeds, with some charred date (*Phoenix dactylifera* L.) stones (the only record for the north of England at any period), and '*Sorbus* sp.' seeds (which might bear revisiting). The excavation of an adjacent site at **Monkgate (Hull) 76-7** also revealed late 13th-mid 14th century deposits: four pit fills from the urban tenement identified on this plot were examined. Three of the very small (100 g) samples gave worm eggs and faecal concretions and some food remains (including fig and strawberry); the fourth contained 'grassy' material (?stable manure). Similarly, at **Queen St (Hull) 76**, in the same area of the town, deposits of the same date described as occupation-contaminated natural, or the basal part of a sequence of occupation deposits, were examined, though plant remains were only recorded from paraffin 'flots' prepared for the analysis of insect remains. There was a consistent presence of fig and rush seeds and *Sphagnum* leaves, but otherwise only a few weed taxa. Somewhat later material (an early-mid 14th century pit fill and three floor deposits) from the same excavation, processed in the same way, gave small assemblages with some grassland taxa prominent in one of the floor deposits; fig and rush seeds were again present in several samples, but the bias introduced by examining only flots from small samples means they can have only limited interpretative value.

At three sites in this part of the town, deposits dated closely to the 14th century have been studied. At **Scale Ln/Lowgate 74**, a garderobe fill, cesspit, and two floor contexts were examined. The garderobe fill was rather rich in food remains including fig and grape and many *Prunus domestica sensu lato* (plum, bullace) stones, with much bran (presumably from faeces). The 'cesspit' fill mostly gave weed seeds, whilst the floor samples were rich in rush seeds, of which a large proportion were probably *Juncus gerardi* (these seem likely to have originated in litter on floors, though this rush probably grew in abundance along the saltmarshes of the tidal stretches of the Rivers Hull and Humber and may have been introduced to the site with flood water or on muddy feet). At **Chapel Lane Staith 78**, deposition had occurred by the River Hull. The 14th century layers of redeposited rubbish contained a mixture of weeds of various kinds, especially arable weeds, a few grassland taxa and wetland plants (including those from saltmarsh, perhaps not surprising at a site abutting a tidal river!). There were few foods—only fig and coriander. The wetland taxa included aquatics and fen and bog species, of which some may well have originated in peat, since blocks of fen/bog peat were recorded from the dumps and one is discussed in the report in a little detail. More recent analysis of material from this street, from similar kinds of dump deposits, has only involved very cursory evaluation (with an arguably inadequate investigation of plant and invertebrate remains); the material from **Chapel Lane Staithe 2000** came from 15 contexts, mainly deposits presumed to have been intertidal deposits and ?redeposited alluvium. There was no formal assessment of plant remains, but one context evidently contained a range of rubbish, including nutshell (hazel and walnut) and another yielded matted 'straw-like' material (which might have been stable manure). Cereal grain and a range of fruitstones were noted as being present in various samples.

Deposits of 14th century date from which plant remains have been studied in **Vicar Ln 75** comprised four feature fills, though, as for the Queen St material, only data for paraffin 'flots' were recorded. Seeds of rushes were present in all the four samples examined and abundant in one (the fill of small pit or post-hole), but there were few other remains.

The last of the medieval sites in Hull for which data have been published was in **Mytongate 75**. Here, six pit fills of 14th-15th century date and a 15th century hearth deposit were investigated, though there appears in one case to be some disparity between the account presented in the text of the report and the data presented on microfiche. Since the species lists are quantified differently, the material was probably recorded at different levels of detail. One large 14th century pit fill gave an assemblage with a large grassland component (especially carrot, *Daucus carota* L., and purging flax), with a trace of fig but no other 'foods', whilst a sample from a 15th century pit fill contained a small flora including moderate numbers of rush seeds and more fig seeds. Another (late) 15th century pit fill also yielded fig, together with a modest range of weeds. Other groups were small, though usually with some fig seeds (probably indicating a degree of differential preservation).

Four more recent interventions, undertaken as evaluation exercises, have given further opportunities to examine medieval deposits in Hull. At **Blanket Row EAU**

2001/12, not far from the Sewer Lane site, early 14th century material from pit fills gave evidence of organic waste which may well have originated in stable manure—'grassy' and 'strawy' debris, wood chips and some peat. Here, a small brackish-water element may have come from the tidal Humber very close to the site, either directly or through animals grazing on foreshore saltmarshes. A notable species amongst the plant remains was milk thistle, *Silybum marianum* (L.) Gaertner, probably only a weed here, but likely to have been introduced to Britain originally for medicinal purposes. Other 'useful plants included flax, fig and opium poppy. Deposits of latest medieval (15th century) date from this site were much less rich in plant remains but included some floor deposits (and deposits which seem likely to have received floor sweepings) in which seeds of mud rush, *Juncus gerardi*, was frequent, along with small fish bones, an assemblage characteristic of floor silts from several other sites (in Hull and elsewhere).

As the authors of the report on this material comment:

> 'the presence of mud rush ... seeds in floor and other deposits whose main components were otherwise coal, cinders and sand, calls for some comment. This plant has been repeatedly discovered to be one of the more frequent in deposits of this kind, as for example at the nearby Magistrates' Courts site. This rush forms dense stands in the upper parts of salt-marshes and, with regard to the area in question, Robinson (1902) describes it as 'very common on the shores of the Humber from Hessle to Spurn' and Crackles (1990) as 'frequent and sometimes in quantity on salt-marshes between Hull and Spurn' and 'on the shore of the R. Humber between N. Ferriby and Yokefleet'; its seeds might thus be expected to occur in quantity in deposits formed in areas where traffic to and from such saltmarsh was frequent, though the presence of at least some other halophytes might be anticipated. The plant is large enough to be mown for strewing, though not as tall as the commoner 'pasture' rushes such as *JJ. inflexus*, *conglomeratus* and *effusus*. It forms a component of a commodity called salt hay collected from saltmarsh meadows on the eastern seaboard of the United States and used primarily as a mulch for suburban gardens and for packing, but evidence for its collection in the past along the Humber foreshore (perhaps for strewing on floors) is currently lacking, except via the records from this and other sites.
>
> A feature of the floor deposits from [this] building ... was high concentrations of mostly well-preserved fish remains, not unlike the assemblages recovered from floor silts from the nearby Magistrates' Courts site. Most fragments recovered from the Blanket Row deposits were less than 50 mm in size, with only a very small proportion of larger bones. Hand-collected material (where present) also showed a restricted size range. Material from pit fill 298 included a fish component, with a similar range of species to that recorded from the floor deposits. Size of fragments was mainly small, except for some of the mammal bones. However, this deposit also produced a large hand-collected assemblage, which included remains of major domesticates and chicken and geese. Large fragments were present. This assemblage could be interpreted as butchery waste and domestic refuse, and clearly originated from more than one source.'

At High St (36A-40) (Hull) EAU 94/01, remains from dumps of the same date broadly indicated litter from the keeping of livestock—peat/peatland material and other plant debris (perhaps hay and/or straw), but also some evidence for food (fig, coriander) and faecal material amongst the dumped detritus. Nearby at High St (37) (Hull) EAU 94/49, an occupation (?rubbish) deposit, the post-use infill of a cess pit, and a fill of a cess pit, all dated tentatively to the 14th century, each proved to have

only poorly preserved plant remains, though the cess pit fill contained abundant rush seeds (not identified more closely at that stage). More recently, an evaluation at **Liberty Ln 99 EAU 99/57**, very close to the Magistrates' Courts site, between Market Place and High Street, produced early 14th century deposits: a garderobe pit fill, the fill of wicker-lined pit, and the primary fill of ditch. The first of these yielded a 'classic' medieval food assemblage with fig, bran, apple, and coriander; the second yielded some fennel (*Foeniculum vulgare* L.), dill, and *Sphagnum* leaves, as well as fig and bran; the third contained well-preserved ?straw and legume pods/tendrils (of ?pea). Lastly, on the E side of the River Hull, in the area subsequently occupied by the fortifications of Henry VIII, a site at **Citadel Way EAU 2001/37** provided a sample from an early 15th century or earlier ground-raising dump, but it contained few remains.

5.7.2.1.3 Beverley

The most extensive excavations of medieval deposits in this important medieval town have been undertaken at three sites in Eastgate and Lurk Lane, though parts of two sites (the Vicars Choral college in Lurk Lane and the Dominican Priory in Eastgate) are dealt with under monastic houses, below.

At **Eastgate (Beverley) 83-6** (adjacent to the site of the Dominican Priory but apparently occupied by secular tenements) the earliest post-Conquest deposits were dated to the late 11th-mid 12th century. They consisted of occupation build-up and cut fills, and were generally richly organic. As might be expected, the samples from these yielded abundant plant remains of mixed origins, including many woodland (and some marsh/fen) mosses. Hazelnut was often recorded as spot finds as well as in samples of whole sediment. There was a single record for pod fragments of woad but no other dyeplants at this early stage. A few charred cereal grains, especially wheat, were present, but no faecal deposits were identified.

In the samples from mid 12th-mid 13th century levels (occupation layers and cut fills, with pit fills especially from the middle part of the phase) a diversity of remains, especially of food plants were recorded from the richly organic sediments—there were many hazel nutshell fragments, but also 'plum' and 'cherry', walnut, and even grape. Also recorded were some charred cereal grains, especially wheat. Textile-working evidence was obtained in the form of further woad pod fragments and with them fuller's teasel head (capitulum) remains (described in more detail by Hall 1992), with weld/dyer's rocket seeds and linseed/flax capsule fragments perhaps also in this category (the archaeobotanical evidence was consistent with a diversity of artefactual evidence for textile-working from this site at this period, cf. Evans and Tomlinson 1992). There were some records for peat and probable litter plants: bracken and saw-sedge, though the latter was only recorded as nutlets, in contrast to the evidence for vegetative remains discussed for several other sites in the town, below, and may here have originated in imported peat, for example.

For the mid 13th-late 14th century period, more occupation layers, cut fills, and dumps, were examined, together with some garderobe fills from the later part of the phase. The deposits were again mostly richly organic and there was abundant evidence for plant foods, especially from pit and garderobe fills (many records were

obtained for faecal concretions and for parasitic worm eggs). The taxa present were the same as for the preceding phase, plus black mulberry, peach (*Prunus persica* (L.) Batsch), fig, ?dill, fennel, and celery seed. A group of partly-charred garlic (*Allium sativum* L.) cloves from a late 13th century deposit was a further, unusual, find. Remains of dyeplants (madder root fragments and weld/dyer's rocket seeds) were present in some layers, and there were several records for hemp and linseed and further fuller's teasel remains in the form of fruits. Evidence for continued exploitation of wetland, perhaps for peat and litter/sedge, was also obtained.

Pre-Priory levels at the **Dominican Priory (Beverley) 86-9** site, dated '?12th century', comprised pit fills and a few layers. Samples from them yielded rich assemblages of plant remains with a variety of weeds but also some cultivated and other useful plants, especially bread wheat (including sprouting grains), dyeplants (woad, dyer's greenweed), fuller's teasel and flax—all evidence related to textile-working and consistent with artefactual evidence for this period from the adjacent and contiguous site at Eastgate.

The one other excavation for which the plant macrofossil data have been published was **Highgate 77**, where a sequence of deposits, often richly organic, was investigated (the earliest material is considered above). The earlier post-Conquest material was rather less richly organic than that preceding it—layers dated to the late 11th-14th century period gave small assemblages mainly of weed seeds, probably material which had undergone differential decay. The uppermost part of the sequence sampled was a layer of loam and chalk make-up and from this, not surprisingly, only a few taxa of limited interpretative value were recovered, though oogonia of the freshwater calcareous green alga *Chara* (stonewort) were consistently present and may reflect the incorporation of water-lain silts or marl in the make-up material.

All other excavations in Beverley have been of a limited nature, usually evaluations, in which small amounts of material have been examined archaeobotanically. Several of these have been undertaken within a few hundred metres of the Minster church in the SW area of the medieval town. In **Keldgate 94 EAU 95/03**, some 12th-13th century floors and pit fills were examined. All the samples investigated gave some plant remains: one assemblage appeared to be from a cess pit, another from a deposit of stable manure, and two samples from a single pit were rich in bark fragments with small fragments of bast, perhaps indicating the presence of tan bark (and worth revisiting in the light of subsequent investigations of a tanning indicator group, cf. Hall and Kenward 2003). At another site in this immediate area (**Keldgate (by 52) EAU 2001/35**), rather close to the Minster, two 'pre-occupation' watercourse fills and a 'turfline' were investigated from the medieval phases. The fills gave evidence of weld, madder, fuller's teasel (and sheep keds, *Melophagus*), as well as some charred saw-sedge leaf fragments—indicating, not least, that the deposits did not pre-date occupation! The turfline deposit appeared to be an *in situ* peat formed in an area of marsh prior to occupation, however. At **Champney Rd 93 EAU 93/01**, a little to the N, 12th-15th century material from contexts including fills of pits and a floor silt yielded rather few plant remains, though where preservation was good there was again some possible evidence for stable manure or similar; records of teasel fruits (and sheep keds amongst the invertebrate remains) may, again, relate to textile-

working in the vicinity—or at least to disposal of waste from such an activity not too far away.

Also in Champney Road, a further site (**Magistrates Court (Beverley) EAU 2001/06**) revealed pre-12th-early 13th century deposits including an ash layer, a spread overlying natural, and two pit fills and a well fill. The ash deposit was found to contain charred *Cladium* leaf fragments, and further charred *Cladium* material was present with cereal grains in one of the pit fills. The 'spread' yielded a flora typical of a marshy area (with which the evidence from insects agreed) and the well fill gave, *inter alia*, some evidence of weld and one charred *Cladium* fruit. The assemblage from the other pit fill mainly comprised aquatic organisms (both plant and insect macrofossils) and appeared either to represent a stream bed fill or, if actually a in a pit, one filled with aquatic sediment that had been redeposited wholesale. A nearby site at **County Hall (Beverley) EAU 2001/25** revealed mid 12th-mid 13th century deposits, mainly pit fills, but also an ashy spread and a floor silt. Four of the five GBA samples examined yielded charred plant remains and, of these, three contained leaf fragments of saw-sedge (*Cladium*). In two cases, perhaps, there was evidence which it was suspected might represent soot from smoke-blackened thatch—some lumps of amorphous charred organic material which, to judge from impressions on their surfaces, had evidently formed round thin wooden rods and other plant material. A little to the E, at **Lord Roberts Rd EAU 99/07**, deposits of 11th-14th century date were investigated; there were pit and ditch fills and loamy build-ups. One 13th/14th century pit fill contained some peat and material which might have been ash or perhaps fuller's earth; an early 13th century 'loam' yielded a mixture of weeds and food remains, whilst another 'loam' from this phase yielded some bracts and fruits of fuller's teasel and moderate numbers of weld seeds, perhaps indicating textile working in the vicinity. A 13th century ditch fill perhaps contained dumped foul matter like stable manure, whilst another ditch fill contained remains of weeds typical of a ditch with a high nutrient content, together with some charred *Cladium* leaf, and uncharred leaf fragments and fruits of bog myrtle, *Myrica*. On a property abutting the last, and to the rear of it, at **Well Ln (9-17) 98 EAU 99/04** samples of six deposits of late 11th-mid 13th century 'peat' and silt were recovered from the earliest levels. Although they gave the appearance to the excavator of being 'natural', they were certainly not pre-occupation deposits, but dumps, including dyeplants (dyer's greenweed, madder and weld), weeds (including taxa typical of a foul ditch), some flax seeds, and further charred *Cladium* leaf fragments. The presence of some uncharred *Danthonia* caryopses led to the suggestion that material from turves might also have been present.

Somewhat to the E of these sites, an intervention at **Station Yd (Beverley) EAU 91/17** exposed the fills of a large medieval ditch, perhaps associated with the nearby Preceptory of the Holy Trinity. The lowermost fill contained some open-water aquatic plants but also a half-achene of hemp (from retting?) and some woody plants (from scrub/hedges?); later deposits continued this theme, with some records of flax seed, though many samples were not very rich in plant remains. Nearby, in **Wilbert Grove PRS 2002/09**, two slot fills of late 12th-early 13th century date yielded abundant charred straw/reed culm, whilst a pit fill produced a few charred oat and bread wheat grains.

In the N area of the medieval town, an early excavation in Dyer Lane/Walkergate (the results of which were never brought to a report) produced some fine-grained deposits interpreted as drain fills of ?12th century date. They were remarkable in yielding some very large assemblages, in terms both of concentration of remains (mostly seeds), but also of taxa (at least 162 were recorded from five rather small samples). Most frequent were seeds of weld which were surely evidence of dyeing (not least given the toponymy of the site, on the corner of Dyer Lane and Walkergate, the 'walkers', or 'waulkers', being fullers of cloth). For the rest there were rather frequent seeds of celery, some fruits and twig and leaf fragments of *Myrica* (perhaps also used in dyeing), seeds and capsule fragments of flax, a variety of probable foodplants, including bran, and traces of teasel fruits. Not far from this site, in **Morton Ln EAU 2002/02** the tradition of dyeing in this area was revealed (in a limited way) in the secondary fill of a pit dated to the 14th-early 15th century. Predominant was a rich mixture of woody taxa perhaps from nearby scrub, though as this was not supported by the evidence of insects (which, together with some of the snails indicated aquatic deposition, for which there was, contrariwise, no evidence from the plants!), a dump of brushwood into a pond-like pit must be considered as an alternative interpretation. But there was also some herbaceous plant litter (probably including cereal straw), remains of hemp and flax (from retting?), and traces of dyeplants (weld and madder) as well as sheep keds amongst the insects. One of the two samples from the context examined yielded some taxa which might indicate cultivation of plants for herbal uses: pot marigold (*Calendula officinalis* L.), milk thistle (*Silybum*) and rather a large concentration of common mallow (*Malva sylvestris* L.), as well as some gold-of-pleasure, *Camelina sativa* (L.) Crantz (thought this last might also have been a weed of flax fields and arrived with a crop for retting).

In the SE quadrant of the old town centre of Beverley, one may mention an intervention at **Flemingate House 93 EAU 93/07** where three samples were selected for analysis from amongst the contexts sampled (two mid-12th century silts overlying natural, an early 13th century floor silt, and some undated, but probably medieval, fills of features). Plant remains were very sparse in two of the samples, but in one of the organic silts there was a small assemblage including weeds and wetland taxa and a single cultivated plant, summer savory. A little to the E of here, close to the extension of the River Hull as Beverley Beck (providing a route for waterborne trade from the early medieval period), an excavation at **North Beckside 93 EAU 93/05** revealed a variety of pit and garderobe fills from occupation deposits. A series of (undated) apparently natural fen/marsh deposits from beneath the archaeological levels and from trenches in adjacent ground was also examined. The basal peats beneath the occupation deposits were apparently undisturbed natural fen peats, as were the lower deposits in the 'natural' sequences; there was evidence in the form of rather abundant hemp achenes from one of the 'natural' deposits for what was probably retting, using a naturally marshy area. One of the pit fills was rich in plant remains which may have been straw or other litter, whilst the lower fill of a garderobe deposit was rich in cereal 'bran'; other samples mainly gave small or modest-sized assemblages mainly of weed seeds. A subsequent excavation in this area, at **Beckside North PRS 2002/06** provided an opportunity to study late 12th-early 13th century deposits, including a dump, ditch fill, pit fill, occupation accumulations, and a hearth. The samples were notable for the presence in many of them of peatland material, presumably from the natural peat deposits lying close to this area. As well

as peat, charred *Cladium* leaf material was recorded in two samples, whilst the ditch fill produced some evidence of hemp, flax, *Camelina*, and *Myrica*. Just to the N of Beckside North, at **Jack Taylor Ln EAU 98/10**, some 12th-14th/15th century dumps, fills and layers yielded a wide range of well preserved uncharred plant remains, some, from the earliest levels, indicating local environmental conditions (fen, with little indication of human activity), others, from later medieval phases, pointing to a range of craft activities (perhaps including leather working, wool cleaning and fibre extraction) and disposal of food waste (including a deposit rich in bran and fruitstones).

On the south side of Beverley Beck, two areas have been investigated. At **South Beckside 2000 EAU 2000/15**, 12th-13th century organic deposits again produced good evidence for peatland resources. All three samples examined from two layers and a gully fill contained peat or remains derived from it. The single (undated, but presumably medieval) sample from **South Beckside PRS 2002/10** was rich in plant litter, a mixture of hay, straw, wood chips, peat, and bracken; amongst these remains, which seem likely to have originated in stable manure, were seeds of weld, teasel, and flax, and some charred *Cladium* leaf fragments. To the SE, in an area known as Figham, a site at **Figham Common EAU 98/17** revealed ditch fills and natural peats of mid-late medieval date; five samples were examined and the presence of natural reedswamp peat was confirmed, whilst the ditch deposits were shown to have formed in alkaline water (perhaps not surprisingly, in an area at the foot of a chalk dip slope!), essentially still; there were rare fig seeds in one context and some charcoal in others indicating that even at this distance from the medieval town some material from human occupation was being deposited.

For several interventions in Beverley, few or very few plant remains were observed in samples of deposits dated to the medieval period, and it may be worth mentioning these as examples of the spatial 'patchiness' of the archaeobotanical record in the ground: **Holme Church Ln EAU 96/43**, **Hengate EAU 96/57**, **Landress Ln EAU 96/25**, **North Bar Within 95 EAU 95/54**.

5.7.2.1.4 York (Fig 9)

York was the largest town in medieval northern England, the seat of an Archbishop whose see included most, if not all, of the region under consideration, and has certainly been the most intensively investigated town in terms of the numbers of archaeological interventions for which some kind of archaeobotanical study has been made. However, it is the case—almost unbelievably—that virtually no data relating to plant macrofossils have been published for the post-Conquest period. To facilitate a survey of the large corpus of *unpublished* information, it is convenient to consider a series of areas within and immediately beyond the medieval walled city.

5.7.2.1.4.1 Inside the medieval walled city: the higher land NE of the Ouse and NW of the Foss

The largest excavation yielding medieval deposits in this part of the city was undertaken in The Bedern; it investigated the properties of the Vicars Choral of York Minster and is considered in the section on religious houses, below. In the area between the street Aldwark and the medieval city walls (which extend to the SE on

the alignment of the Roman fortress wall over which they were built for the entire length of the NE and NW sides of the fortress), a thick sequence of deposits was investigated at **Aldwark (adj 1-5) EAU 88/05**, continuing from the Anglo-Scandinavian period (see above). Most of the material examined came from the 12th-mid 13th century fills of a deep feature (a well perhaps, or a large ditch—the scale of the excavation, restricted to a narrow trench, did not afford the opportunity to confirm which), from a second recut of this feature, and from some pit and layer deposits. A moderately substantial study of samples from these deposits was made which found that the fills of the 'deep feature' were rich in a wide variety of remains but mainly weeds of all kinds. There were some records for faecal concretions, a spot find of puff-ball (probably *Calvatia (Langermannia/Lycoperdon) gigantea* (Batsch) Lloyd) spore-mass, but otherwise no clear indication of nature of the material accumulating. A pit fill proved to contain some fen peat and ?wetland litter, whilst one major clay layer of uncertain origin appeared—rather unexpectedly—to contain some faecal material.

For the 14th century phases, material was investigated from two dumps used to heighten the Anglo-Scandinavian bank, from the fill of a pit cut into the dumps, and from a charcoal spread over an oven associated with a building. A large assemblage of plant remains was obtained from the dumps, including a 'spot' find of what must have been imported *Sphagnum* peat, as well as some faecal concretions and traces of foodplants, but again there were mainly plants of disturbed and waste places and a few grassland and wetland types. The pit fill also yielded some *Sphagnum* peat and traces of fig seeds; charcoal, alone, was recorded from the spread.

Fifteenth century material at this site comprised samples from four contexts: two fills of a barrel well and one fill from the construction cut for it. The fills of the barrel well, perhaps not surprisingly, provided a very long list of taxa of mixed origins; charred cereals, and uncharred remains of fig, apple, and plum were all present, but in low concentrations. The construction shaft fill yielded a smaller flora of a similar kind, but including grape, field bean, and charred cereals with some faecal concretions.

Immediately to the SE of this site, at **Aldwark (7-9) 85 AML 58/89**, twelve 13th-14th century pit fills and one layer overlying the Roman fortress rampart (and dated simply as 'medieval') were subjected to archaeobotanical assessment, mostly via 1 kg subsamples. Small amounts of food remains were present amongst the moderately large assemblages of (mainly) uncharred plant remains, but including some charred cereals and charred and uncharred hazelnut fragments and a few other taxa—but the pit fills certainly did not appear to contain faecal material and the bulk of the remains in all contexts were weeds of waste places with a component which might have arrived in cut wetland or other vegetation. Indeed, a total of at least 111 plant taxa was represented across the 13 contexts represented.

Towards the southern end of the Aldwark area, at a site in **St Saviourgate (9) 95 EAU 98/14**, a sequence of deposits including two 12th/13th century dumps and a pit fill, a 13th century dump and brushwood layer, 14th and 15th century pit fills, and a 14th/15th century dump, was encountered. The samples examined from the earliest dump contexts revealed quantities of wood fragments, including chips from woodworking or timber preparation, and a wide variety of weeds; evidence for food

waste, including fig and apple seeds (and the presence of worm eggs), pointed to a faecal component in some layers. One sample yielded some *Sphagnum imbricatum* Hornsch. ex Russ., probably indicating imported peat. Faecal material, including leek, raspberry, and cornfield weeds such as corncockle and cornflower, and the rather rare (though typically medieval hare's ear/thorow-wax, *Bupleurum rotundifolium* L.) was well represented in the earlier pit fills; another fill seemed to consist largely of ash. The 14th century pit fills revealed more wood chips and weeds and gave records for the ornamental/herbal plant columbine (*Aquilegia*) and more *Sphagnum imbricatum*. Pit fills of 15th century date appeared to contain some stable manure, again with wood chips, whilst the 14th/15th century dumps yielded a wide range of weeds, but also fuller's teasel fruits, further wood chips, food waste (and evidence of worm eggs to indicate faecal matter). (NB an earlier phase of work at the site, **St Saviourgate (9) 95 EAU 95/51**, involved examination late medieval deposits from the fill of a hollow and several fills of a large pit; here again there were some well-preserved remains largely originating in human faeces).

To the rear of the area in which the St Saviourgate site lay, more recent work in **St Andrewgate PRS 2002/12** involved examination of an early 13th century deposit described as a mixed organic dump, and a mid-late 13th century 'cess pit backfill'. The dump was found to contain some 'sooted' straw/reed and some charred saw-sedge (*Cladium*) leaf, with a mixture of weeds, as well as a little peatland/heathland and grassland material, perhaps remains of turves; an origin in roofing for some of this material seems very likely. The pit fill seems to have contained organic waste such as stable manure (but not human faeces). Somewhat later deposits from this site included an early 14th century dump and four late 14th-early 15th century floors. This dump deposit contained some ?faecal concretions with fig seeds, whilst the floors, not surprisingly, yielded rather few remains, though one of them provided a single specimen of a seed thought to be thorn-apple, *Datura*, which—if correctly identified—represents a very early record for a plant likely to have originated in C and S America.

Elsewhere within the medieval walls on the NE side of the Ouse, small amounts of medieval occupation material have been examined from the area of Blake Street, Swinegate and Grape Lane, immediately to the S of the Minster, and on the promontory between the Ouse and Foss in the Coppergate/Castlegate area. At **Blake St EAU 86/07**, some 13th-14th century well fills gave small assemblages, though one, or perhaps two, contexts contained evidence for faecal material—fig was quite frequent in one sample and present in another, the second also containing a trace of grape (with confirmatory evidence from eggs of parasitic worms for the presence of faeces. A spot find which proved to be *Sphagnum* peat also came from this latter well fill. Otherwise, the assemblages primarily consisted of weed seeds.

Nine contexts were examined from those excavated from (?late) medieval levels at **Grape Ln (8) (York) EAU 94/13**. The seven GBA and five BS samples mostly yielded little more than small amounts of charcoal but one 'use' deposit contained some very decayed faecal concretions and seeds of fig, and—more unusually, fruits of the pondweed *Zannichellia*, most typical today of brackish water but probably more widely distributed inland in the past. Close by, in **Swinegate (12-18) EAU 94/13**, however, 12th-14th century organic dumps, build-ups and pit fills were found to

contain some typical medieval food remains, amongst which, hazel nutshell and fig seeds were frequently present, with apple, grape, and bran, and ?leek epidermis (with faecal concretions also often present). There was perhaps also evidence for imported bog peat. Some 'unphased' but essentially late medieval dumps, use deposits, and fills from excavations at this site yielded a few of the more decay-resistant types of plant remains: hazelnut, fig and charcoal, as well as some faecal concretions. Further SE along Swinegate, an evaluation provided some samples—though they were little more than spot finds—of presumed medieval date of which one had a high ash content and was found to be rich in burnt and unburnt peat fragments (**Swinegate (20-4) EAU 91/23**). At another site in this area, at **Little Stonegate (9) EAU 98/27**, a sequence of dumps, burnt residues, deposits in buildings, and pit fills of mainly 13th-17th century date was revealed. A total of 33 contexts was examined but only very small amounts of plant material were recovered and they were of little interpretative significance.

Other deposits in this part of York have also failed to provide more than a few poorly preserved remains or a little charcoal (this paucity cannot always have been a function of context type). Thus, two bulk samples of levelling/build-up from excavations at **Back Swinegate EAU 94/13** gave only a little charcoal, whilst at nearby **Norman Court 95 EAU 95/21**, five 1 kg subsamples of material dated 11th-15th/16th century from various feature fills and accumulations contained almost no identifiable plant remains. The same is largely true for the many samples from late 13th-15th century **Coffee Yd EAU 89/12** (including several floors associated with 14th-15th century timber-framed structures). In all, 62 'test' subsamples and 29 BS samples were examined and most produced only a few charred remains, including some cereal grains, but sometimes also small groups of uncharred remains of diverse habitats, including aquatics (mainly toad rush and water-plantain, but also the pondweed *Zannichellia*, as at nearby Grape Lane, see above). A few fig and grape seeds were also recovered and there were records for plants rarely recorded from archaeological deposits: the cornfield weeds *Caucalis platycarpos* L. and *Silene gallica* L. (small-flowered catchfly). There were also occasional *Sphagnum* leaves, perhaps from imported peat.

Not far away at **Davygate (British Gas) EAU 97/51**, samples from three assorted fills and dumps variously dated to the period 12th-15th century also yielded disappointingly small assemblages of plant remains in small concentrations, reinforcing the impression that medieval levels in this part of York—perhaps always the 'highest and driest', and lying within the area of the Roman fortress— tend to yield rather little well-preserved organic material. However, a subsequent excavation across the street and a little to the SE at **Davygate Centre EAU 98/09** revealed episodes of dumping of organic waste against what must have been the standing walls of the fortress as late at the early 13th century. The three deposits examined from 11th-13th century levels were quite rich in plant remains, albeit mainly from weeds, but including some taxa likely to have arrived in hay (some of it perhaps from saltmarsh meadows) and/or stable manure. Close by, in **Feasegate (BHS store) EAU 98/16**, 11th-13th century fills, dumps and layers contained much medieval occupation material. Seven samples were examined by means of 2 kg subsamples, with further plant material being examined from BSs of some of the same contexts. There was well-preserved plant material, mostly uncharred, from most of the

samples. The floras were dominated by weeds, sometimes with faecal material, including concretions, and grassy material, perhaps from stable manure. The evidence mentioned in the evaluation report for fen peat in one sample does not seem to be borne out on revisiting the species lists for the sample examined. Of perhaps more significance than the remains themselves was the evidence for white flecks in 16 of the samples and the presence of a void beneath a concrete floor laid previously above the deposits; by analogy with the evidence from **Parliament St (44-5) 94 EAU 95/08** (above), this suggests recent dewatering and decay with a threat to the survival of the uncharred organic remains.

At 16-22 Coppergate, the Anglo-Scandinavian deposits were overlain by a sequence of medieval layers of late 11th-15th century date (**Coppergate (16-22) EAU 96/09**), though in some parts of the area excavated, Victorian cellaring had truncated most or all of the post-Conquest stratigraphy. The deposits encountered included a variety of fills of features and other occupation deposits and so far 51 of the 250+ 'GBA' samples of post-Conquest material have been subjected to archaeobotanical assessment (together with a modest number of bulk samples—68—examined briefly during the analysis of the Anglo-Scandinavian material). There was generally good preservation of a range of plant remains, with some deposits rich in bran and other food remains, others with some dyeplants (perhaps re-worked from Anglo-Scandinavian deposits), still others mostly consisting of decayed wood; in a few cases, litter, ?turf, and/or stable manure was probably present.

On the promontory between the Foss and Ouse, at **Tower St (1-2) (York) EAU 95/35**, a deep sequence of 12th-18th century deposits was excavated. The earliest (12th-early 13th century) deposits were mainly the fills of large ditch (presumed to have been the castle moat). There was some good preservation of plant remains in these deposits, to judge from the results of an assessment exercise, though the assemblages were rather heterogeneous. Of the probable foodplants present, hazel nutshell was found in many samples, and charred oat grains regularly recorded, with fewer grains of barley and bread wheat; traces of hemp and linseed/flax capsule fragments were also present. Overall, the plant material and accompanying artefactual and other inclusions in the deposits suggested dumping of waste (perhaps including some pre-12th century material) into a water-filled ditch, though aquatic plants were sparse (which might be consistent with a ditch of recent construction or a ditch receiving regular dumps of rubbish). From the mid 13th-early 14th century levels a group of samples from ditch and gully fills and a layer was examined. A moderately diverse flora was recorded, taking the samples together, with several records for hazel nutshell and some common weed taxa; there was no particular character to the deposits but presumably occupation waste was still being dumped in water at this stage, the water remaining too polluted to have a standing aquatic flora.

5.7.2.1.4.2 Inside the medieval walled city: the edges of the King's Pool

Most interventions within about 100 m of the present course of the River Foss reveal evidence for the existence of a large body of water through the medieval period. This, the King's Pool, or the King's Fishpool, is generally thought to have been formed by damming the Foss in the vicinity of the eastern of the two Norman castles (perhaps in

part to fill its moat), and it probably extended up to the area known as 'Foss Islands' where the medieval wall was never built, defensive protection being assumed to have been afforded by marshes and open water. The present course of the river is largely a result of canalisation in the post-medieval period, however. At the NE end of this area of wetland, excavation by **Layerthorpe Bridge EAU 2000/64** revealed medieval deposits that were mostly interpreted as probable river silts and layers associated with a wattle feature, but there were also a few cut fills. Some of the samples examined during assessment of the material yielded few remains other than weed seeds and decayed wood and bark, together with wood charcoal, but some bark-rich samples also yielded the beetle *Trox scaber* and may represent waste from tanning (see also above). There was also evidence for turves, continuing that seen for the Anglo-Scandinavian period at this site (and assuming that this later material is neither wrongly dated nor re-worked). Several samples contained flax remains and in some cases there were concentrations of stem fragments with capsule debris and seeds of this plant, all perhaps most likely to have originated in material retted in the river. Radiocarbon assay of samples of flax stems from two closely associated contexts yielded calibrated dates of ce 900-1170 (Beta-129576) and ce 900-1050/1095-1140 (Beta–129573). Two unusual taxa recorded from these medieval levels were milk thistle (*Silybum*) and gold-of-pleasure (*Camelina*), the latter perhaps a flax weed.
A little downstream at **Adams Hydraulics I EAU 90/01**, a deposit presumed on stratigraphic grounds to have been naturally waterlain (from the King's Pool?) did, indeed, contain a wetland flora, though with some weeds and wasteland taxa; two further deposits also thought to have formed in this pool contained terrestrial taxa likely to have come (initially, at least) from occupation material. A second phase of archaeological evaluation (**Adams Hydraulics II EAU 91/12**) involved investigation of samples from both trenches and deposits from a large number of boreholes (though the latter group were not dated). The material from the trenches was thought to represent agricultural soils and ditch fills and plant remains in the samples from these were mostly sparse and of little interpretative value. Some of the borehole samples gave assemblages with a mixture of aquatic plants and taxa typical of occupation deposits, suggesting dumping at the edge of the King's Pool.

Material of medieval date from the evaluation of deposits to be affected by large-scale development in the **Hungate area EAU 2000/29** was rather limited, somewhat surprising in view of the riverside location, though one 14th/15th century dump or accumulation of tanning and shoe-making waste yielded a variety of plant food remains (probably with a faecal content) together with some evidence for imported (or naturally reworked?) peatland material. A 15th century pitfill also produced some peatland material and perhaps with it evidence for sawdust in the form of very fine wood fragments; evidence of the latter may very well be overlooked during archaeobotanical investigations.

A single site on the southern side of the area thought to have been occupied by the King's Pool has been investigated. An evaluation at **Rosemary Pl 94 EAU 94/47** recovered some putative medieval deposits which may represent dumping into or silting of the pool; unfortunately the material available for examination was from boreholes. Very few plant remains were recorded, the seeds present being of little interpretative value.

Further along the N side of the Foss, at **Dundas St EAU 90/09**, presumed medieval deposits from boreholes were examined—these too are likely to have formed in or by the King's Pool. The samples mostly contained very few plant remains, though one assemblage was rich in willow twigs, buds and fruits, with 'urban' weeds, and flax, fig, wheat and ?pea, along with aquatics, suggesting dumping of occupation material into the pool. A borehole sample dated 12th- 14th century from **Palmer Ln 92 EAU 92/05**, close to Dundas St, also appeared to be from material dumped into the King's Pool. The plant remains were mainly of weeds, but there were traces of *Sphagnum imbricatum* leaves and cotton-grass (*Eriophorum vaginatum* L.) sclerenchyma 'spindles' (from the leaf-bases), presumably from raised-bog peat, and moderate numbers of flax capsule fragments and a trace of flax seeds (from retting?).

From the early excavations at **Hungate 50-1**, a single layer of 'medieval' date was examined archaeobotanically—it was described by the excavator as comprising grassy material immediately overlying silt accumulating at foot of the 'Late Anglo-Saxon' bank. The one sample investigated yielded a limited range of taxa, primarily from grassland, and consistent with description as grassy; on the basis of more recent studies, it is perhaps more likely to represent hay/manure than *in situ* grassland.

A little to the W, at **Carmelite St EAU 91/15**, some seven sampled contexts were dated as medieval (including one dated 13th-14th and another 13th-early 14th century); they were dumps, surface-laid deposits, and ?alluvium, and there was also some material from boreholes. Most samples contained only a few remains of little interpretative value, though there was usually some indication (from invertebrates in the form of *Daphnia* ephippia or of bryozoa, cf. Kenward forthcoming) for aquatic deposition; one assemblage yielded remains of some weeds and perhaps traces of turf/grassland taxa.

A little further downstream, at **Garden Pl EAU 90/08**, a large number of borehole sequences plus some deposits encountered in trenches were investigated in an evaluation exercise. Many of the borehole samples appeared to be natural drift and contained no plant material but some of the upper borehole samples and those from deposits encountered in trenches contained organic material including some quite rich assemblages of uncharred plant remains with evidence for what was probably dumping along the edge of the King's Pool. No dating was available for the material at the time the work was carried out, but—to judge from other evidence in this area—it seems likely that the dumping was medieval or, at the latest, early post-medieval in date.

At the first of two evaluations of the archaeological sequence at the S end of the **Merchant Adventurers Hall EAU 96/01**, a half-timbered and stone building of early 14th century date lying between the old bridging point on the Foss (in Fossgate) and the early 20th century bridge in Piccadilly, the one 14th-?15th century levelling dump investigated proved to have no plant remains other than charcoal. However, a later investigation (**Merchant Adventurers Hall EAU 96/44**) showed that there was good preservation of plant remains in a 14th century organic levelling/dump deposit: bracts of fuller's teasel (*Dipsacus sativus* (L.) Honckeny), and capsule fragments of flax, as well as hemp achenes, *Prunus* fruitstones, hazel nutshell, grape, charred oats, wheat

and barley, and probably some faecal material, were all present in this deposit. Other samples of this date recovered during this intervention gave some evidence for peat and peatland material in small amounts, whilst a build-up deposit dated broadly 12th-14th century provided one of only rather few records for the region for pot marigold, *Calendula officinalis*.

Immediately to the E of the last site, at 22 Piccadilly, samples investigated for another assessment (**Piccadilly (22) 87 EAU 95/53**), here of late 11th-early 13th century build-up and build-up/flood deposits, yielded rather small assemblages, with some hints of food waste, and in one sample perhaps also 'grassy' material. The fills of a late 13th century linear cut also gave small assemblages, with a further build-up deposit, of the same date, having a greater abundance of plant remains, but mostly weed taxa. From the 14th-15th century part of the sequence at this site, two further fills of linear cuts, another build-up, two build-up/dump deposits, and four fills of a well were assessed archaeobotanically. Consistent with the observations for earlier deposits, rather small assemblages were obtained, especially from the build-up deposits, though one of these yielded a larger assemblage—mainly weeds with some occupation-derived material. By contrast, one of the well fills was found to be largely composed of material interpreted as woad dyebath waste of the kind seen in a few contexts at Anglo-Scandinavian Coppergate (below). The evidence of seed pod fragments firmly identified as woad and 'vegetative' remains thought also to be of this plant has been backed up (P. Rogers, pers. comm.) by a positive result in a test for indigotin, the blue colouring matter present in woad—and in most other plants yielding a blue dye.

The site furthest downstream to have offered an opportunity to study the edges of the King's Pool was at 84 Piccadilly, where a borehole sample (dated mid 13th-14th century) and three 14th-15th century 'pond silts' from trenches were examined (**Piccadilly (84) EAU 91/16**). There were some quite rich assemblages of plants from the 'pond silts', with aquatics and weeds and occupation material including teasel (one ?fuller's teasel) fruits, flax capsule fragments, and weld/dyer's rocket seeds. Other samples contained a mainly aquatic flora and there was a record for hemp seed from one of the 14th/15th century deposits.

Across the Foss, at **Piccadilly (17-21) EAU 91/01**, late 12th-late 15th century deposits were revealed through a series of boreholes and trenches during an evaluation exercise. The samples from boreholes were mostly devoid of more than traces of plant remains, though some gave what appeared to be assemblages typical of occupation material, including weeds and peatland taxa (one contained some peat itself). The samples from pit fills and ?dumps encountered in the trenches, by contrast, were mostly more productive and one sample yielded abundant evidence for woad dyebath waste, together with a single cornelian cherry (*Cornus mas* L.) stone, presumably imported (perhaps with the woad?; this plant is not native to the British Isles). Another sample evidently contained peat, perhaps from stable cleanings.

On the W side of Piccadilly, 11th-15th century build-ups and dumps were investigated during another evaluation (**Piccadilly (50) EAU 92/08**). The samples investigated mainly yielded weeds, with one (from a context described the excavator as a 'peaty

build-up') being rich in evidence for straw, perhaps from stable cleanings or a dump of straw. Further to the SE, along the same road, small numbers of samples of medieval ash and pit fill deposits were examined for plant remains (**Piccadilly (41) EAU 92/20**) but nothing of interpretative value was recovered. A later investigation on the same plot, **Piccadilly (41) EAU 99/45**, produced one basal well/pit fill, presumed to have been medieval in date, in which there was some probable faecal waste, interpreted from the presence of seed fragments of corncockle, leaves of *Sphagnum* and eggs of the whipworm (*Trichuris*).

5.7.2.1.4.3 The far SE corner of the walled city: the Walmgate area

Three excavations in Walmgate have revealed medieval deposits for which examination of plant remains has been undertaken. Few remains were recovered from an evaluation at 104-12 Walmgate, where a single sample from some dump/backfill deposits of 14th-15th century date was examined during an evaluation (**Walmgate (104-12) EAU 92/03**). Nearby, at 118-26 Walmgate, material of 13th-15th century date from six floors and other layers, including a hearth, revealed that preservation of plant material was much poorer (or that much less plant matter had been deposited) than in build-up of earlier date at the site (**Walmgate (118-26) AML 60/89**). Most samples produced a few of the more decay-resistant types, including a higher proportion of charred fossils than in earlier deposits—indeed, one layer described as 'organic' contained moderate amounts of charred oat grains and chaff. Subsequent excavations in the area, at **Walmgate (41-9) EAU 2000/04,** produced some medieval deposits containing rather few remains (the richer samples clearly included reworked Anglo-Scandinavian material—in the form of clubmoss fragments—or were wrongly dated). Later excavations at this site (**Walmgate (41-9) EAU 2001/26**) produced deposits of 13th-15th century date. A 'burnt deposit' of ?13th century date yielded some charred material like reed or straw (cf. the evidence from an 11th/12th century deposit at the same site discussed above). Material dated with certainty to the 14th century (or probably of this date) comprised an interior floor accumulation in which traces of seeds of the poppy *Papaver argemone* L. and toad rush may represent material brought on muddy shoes, whilst the basal fill of a timber-lined pit in the backyard area at this site produced an assemblage with grassy and strawy debris (which was perhaps stable manure), plus some human faeces/food waste. Further evidence for faeces was observed in a small sample from a ?14th century pit fill. A levelling deposit dated to the 15th century produced some charred chaff, perhaps *Avena*, whilst the backfill of large pit of the same date yielded only charcoal. Material from three contexts at this site was subsequently examined in more detail (reported in **Walmgate (41-9) PRS 2002/26**). One was found to consist of or contain material of Anglo-Scandinavian character (as discussed above), whilst a 12th century use deposit within a stokepit produced only a few remains, including seeds of weld and henbane and some charcoal perhaps from roundwood originally used in wattle. The plant and insect remains from a mid-late 14th century fill from within a bath-shaped pit in the backyard area seemed to point to a deposit rich in (if not largely formed from) stable manure and perhaps some other waste.

5.7.2.1.4.4 Inside the medieval walled city: SW of the Ouse

Most of the larger excavations in this part of York, already discussed in terms of the Roman and Anglo-Scandinavian parts of their stratigraphic sequences, have also

provided an opportunity to investigate medieval deposits. Thus at **North St (York) 93 EAU 93/14**, 11th-14th century material from thirteen dump, alluvium, and build-up contexts was assessed. The earlier deposits contained moderate-sized assemblages of typical urban medieval plant remains, the later ones becoming increasingly poor; no very strong indications of any activity or of dumped materials were obtained from these deposits, though evidence for lead pollution in the river during the medieval period was obtained from this sequence of sediments by Hudson-Edwards *et al.* (1999).

Further back from the riverside, at **Rougier St (5) 81**, the 12th-13th century contexts from which samples were taken were mostly cess pits, to judge from the waterlogged and mineralised remains rich in food plants (with faecal concretions and worm eggs) which were recorded. Similarly, at **Tanner Row (24-30) 83-4**, where 54 build-up, dump, and pit fill contexts of 12th-13th century date were examined, the pit fills mostly gave evidence for faeces and some contained mosses (presumably used as toilet paper), although preservation was often poor and mineral-replacement quite common. Closer to the river, a borehole survey at **Victoria House EAU 2001/51** produced a series of samples from a single borehole passing through organic occupation, presumably of medieval date. The deposits were found to contain a rich assortment of uncharred plant remains including sweet gale, ?saw-sedge leaf, holly leaf fragments, fuller's teasel fruits and weld seeds and perhaps some peaty sediment originating in turves; plant food debris were also present. This site is notable for having been shown to be generating methane, dated by radiocarbon to the early medieval period, suggesting some active decay of the organic layers.

Some of the deposits from **Skeldergate (58-9) 73-5 AML 61/89** were dated to the medieval period, though in the absence of proper archaeological phasing it is not possible to distinguish most of them within the archaeobotanical assessment report. It is likely that at least some of the pit fills referred to above are of post-Conquest date—one of two such deposits dated ?13th century according to the report certainly contained quantities of faecal concretions with wheat/rye bran, apple pips and linseed.

Elsewhere in Skeldergate, medieval material has been examined from three evaluation excavations. At **Skeldergate (14) EAU 91/06**, various medieval occupation deposits and a series of contexts from boreholes were investigated. Plant remains were present in rather large numbers in a few contexts though most samples yielded only a few. One 'organic build-up' against a 13th century wall contained abundant bracts of fuller's teasel with weld/dyer's rocket seeds (and a sheep ked—the puparium of a fly parasitic on sheep and typically falling or being combed from fleeces; Kenward forthcoming) probably together indicating waste from textile working; some other samples contained 'strawy' material, perhaps from stable manure. At **Skeldergate (26-34) EAU 91/10**, on the other hand, three occupation deposits, probably all late medieval, yielded no plant remains other than charcoal. Also in Skeldergate, excavations at **Skeldergate (64-74) EAU 2000/53** generated some deposits dated 11th/13th century of which one dump was examined archaeobotanically. It yielded abundant seeds of weld and it is tempting to see this as connected with dyeing, given the evidence for dyer's greenweed from underlying Anglo-Scandinavian deposits (see above). The presence of frequent seeds of plants

of nutrient-rich wet habitats (especially celery-leaved crowfoot and red goosefoot) may simply indicate this area was neglected riverside ground receiving some occupation waste, though an origin in water brought to the site (e.g. for dyeing) is also possible. There were also some hints of the presence of tanning waste from this deposit.

On the higher slopes of the Bishophill area, well above the river at a site in Trinity Lane (**Ideal Laundry EAU 91/03**), six samples of ?medieval material were analysed for an evaluation. Concentrations of seeds of the saltmarsh plant mud rush (*Juncus gerardi*) were recorded in two samples (?from flooring) and faecal material, including concretions containing ?knapweed (*Centaurea nigra*-type) pollen (from hay?), and perhaps also bran, together with many phytoliths (and with traces of eggs of the gut parasites *Ascaris* and *Trichuris*), was noted from another.

5.7.2.1.4.5 Outside the walls

Evaluation excavations in Gillygate, a few hundred metres outside the city wall at its northern-most corner (**Gillygate (45-57) 92 EAU 92/22**) provided samples of medieval build-up and backfill. Only a few of the more durable plant remains (including traces of charred cereal grain) were recorded. Further N, at **St Johns Coach Park EAU 2001/15**, two build-ups, one ?14th century, one ?15th century, were examined; there were few plant remains, but one sample contained some plants and insects which may indicate turf (with foul matter—perhaps from grazing herbivores) buried under a later deposit. An early excavation nearby in **Union Terrace (6-28/21-7) EAU 89/21** explored a large number of samples (40) from medieval deposits, though most were found to be barren of plant remains. One latrine fill, as might be predicted, produced some fig seeds.

In Monkgate, just to the E of the walls, one of the two 12th century ditchfills investigated during another evaluation gave evidence for some wetland taxa, but otherwise there were only remains of weeds and wasteland taxa in very small amounts (**Monkgate (50-2) (York) 95 EAU 95/20**; NB: the report erroneously lists *Luronium*; this should read *Alisma* sp.!). The presence of a few *Trichuris* eggs suggests that some faecal matter was present, but there was no archaeobotanical evidence in support of this.

NE along the road to Malton (which leaves the city at Monkgate), at a site at **Britannia Car Park EAU 2001/05**, on the contaminated ground of a former gasworks, a single sample from the primary fill of a large medieval boundary ditch dated to the 14th or 15th century was examined; a few tiny charred twig fragments which may have been heather, and a single charred sclerenchyma spindle of cotton-grass (*Eriophorum vaginatum*) were noted, perhaps evidence for burnt peat or turf.

At **Bootham Engineering Works EAU 2000/45** in Lawrence Street, along the road to Hull leading to the SE from the city, a single sample from the fills of a ?late 15th century ditch was examined. The assemblage largely comprised plant litter including remains from willow, bracken, gorse, and holly, and some food remains; more work would be needed to test whether this was stable manure or cut vegetation from the side of ditch.

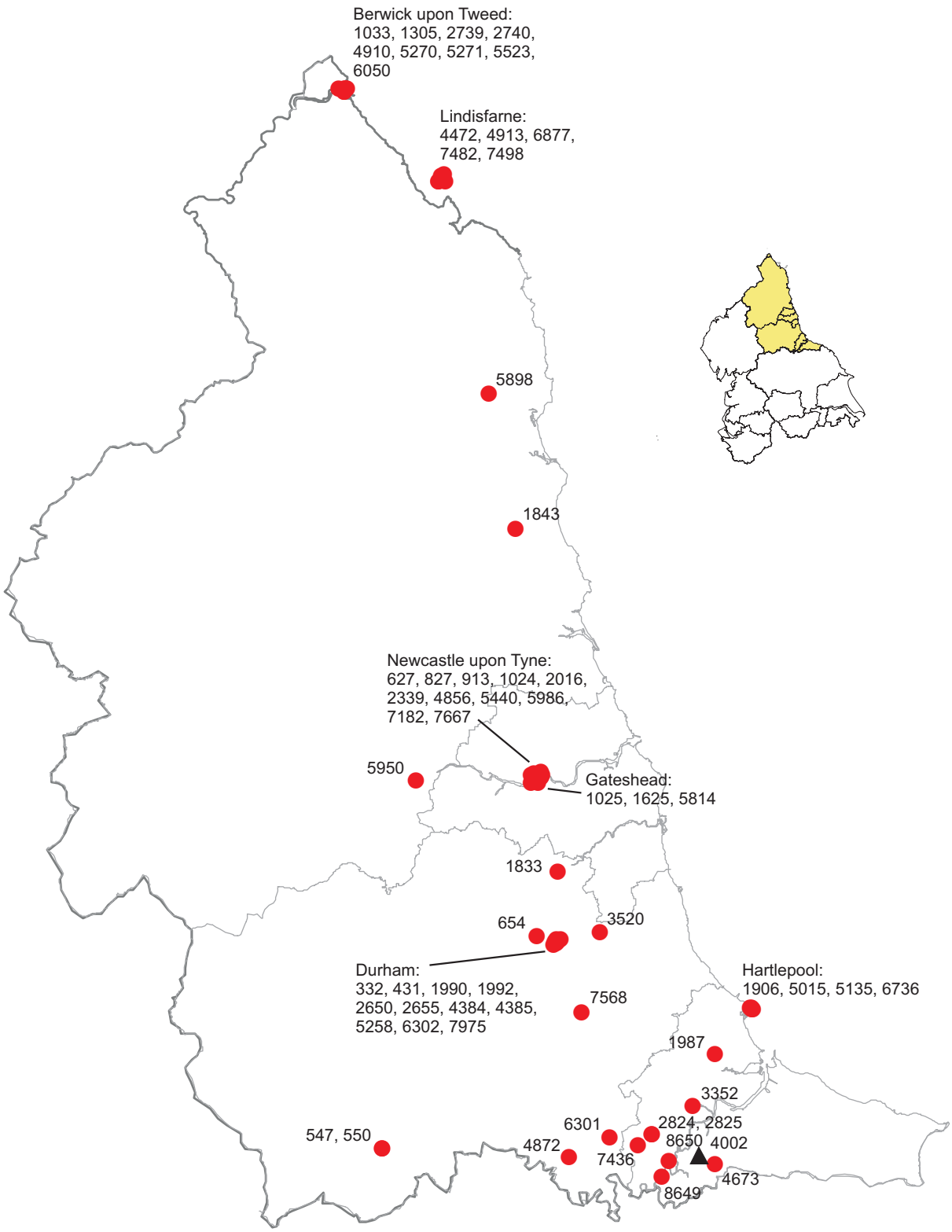

Fig 11: Sites with archaeobotanical studies of material of medieval date in NE England (tentatively dated cases marked withblack triangle) referred to in the text and for which reliable grid references could be found

Key: 332—Archibalds DEAR 8/96; 431—Back Silver St 75-6; 547—Barnard Castle 76-8; 550—Barnard Castle AML 2928; 627—Baxters Warehouse 99 ASUD 640; 654—Bear Park Kiln 96 DEAR 15/96; 827—Binns Store DEAR 12/98; 913—Blackgate DEAR 41/94; 1024—Bottle Bank DEAR 35/98; 1025—Bottle Bank LUAU; 1033—Bowling Green (Berwick) ASUD 682; 1305—Brucegate DEAR 6/99; 1625—Castle Ditch (Newcastle) 74-6; 1833—Chester le Street 78-9; 1843—Chevington Chapel DEAR 1/98; 1906—Church Close 84-5 (medieval); 1987—Claxton Quarry DEAR 23/94; 1990—Claypath 99 ASUD 636; 1992—Claypath AML 4899; 2016—Close Gate 88-9; 2339—Crown Court 85-6; 2650—Durham Almshouses DEAR 25/97; 2655—Durham Castle (Fellows Gdn) (plant); 2739—Eastern Ln 98; 2740—Eastern Ln DEAR 52/97; 2824—Elton West Garth 91 DEAR 13/93; 2825—Elton West Garth 93 DEAR 17/94; 3352—Grange Farm (Norton) 93 DEAR 24/94; 3520—Hallgarth Hall DEAR 45/97; 4002—Ingleby Barwick; 4384—Leazes Bowl 96; 4385—Leazes Bowl DEAR 11/95; 4472—Lindisfarne Midden 84; 4673—Low Farm ASUD 696; 4856—Mansion House 90; 4872—Market Pl (Darlington) DEAR 14/95; 4910—Marygate (Berwick) LUAU; 4913—Marygate 96 DEAR 23/96; 5015—Middlegate 87 AML 86/88; 5135—Morrison Hall 87 AML 52/90; 5258—New Elvet (19-20) 92; 5270—New Quay DEAR 34/98; 5271—New Quay DEAR 44/98; 5440—Northumberland St DEAR 14/96; 5523—Oil Mill Ln; 5814—Pipewellgate ASUD 735; 5898—Pottergate (Alnwick) ASUD 922; 5950—Prudhoe Castle AML 3924; 5986—Queen St (Newcastle) 84-5; 6050—Ravensdowne Barracks ASUD 682; 6301—Sadberge DEAR 14/93; 6302—Saddler St (61-3) 74; 6736—Southgate 81-2; 6877—St Cuthberts Square 2000 ASUD 665; 7182—Stockbridge 95; 7436—The Garth ASUD 803; 7482—The Palace 2000 EAC 17/01; 7498—The Winery 2000 EAC; 7568—Thrislington 73-4; 7667—Town Ditch (Newcastle) 86-7; 7975—Walkergate 2000 EAC; 8649—Yarm 94 EAU 94/44; 8650—Yarm AML 2394

5.7.2.1.5 Durham City

Several opportunities to study medieval occupation in Durham have been available, though no large-scale excavations have been undertaken. One of the larger studies (for its time, at least) was in **Saddler St (61-3) 74**, though, as discussed above, the broad dating of the deposits sampled makes the data of somewhat limited value. From a small excavation at **Back Silver St 75-6**, samples from the fills of a 13th century oven/kiln were investigated. The charcoal present was mostly ash (*Fraxinus*), with a little hazel (*Corylus*), whilst a sample of whole sediment contained a very few charred brome grass (*Bromus*) caryopses and a few other remains of little interpretive value. At a site in **Claypath AML 4899**, an organic layer forming a primary pit fill of early-mid 13th century date was investigated. A few uncharred cereal grains, together with moderate numbers of linseeds, were present; there were many weeds (from arable and waste ground), and also some grassland taxa (perhaps from hay, though the author does not mention this). Subsequent work in this area (**Claypath 99 ASUD 636**) involved examination of 60 samples from shallow pits and rubbish deposits of 11th-17th century date. Of these, 38 samples contained few or no remains—mainly uncharred durable woody seeds such as elder and blackberry; other uncharred material was abundant in some other contexts (though the report does not give sufficient detail to judge how rich in uncharred material the ‘best’ samples were).

At **New Elvet (19-20) 92**, the backyard areas of some medieval properties were explored. Six samples of about 10 litres each of 13th/14th century material were

examined, of which two contained only one seed each. Where there were larger concentrations of remains, the charred cereals present were dominated by mixture of oats and hulled 6-row barley, with bread wheat common in one sample. Legumes were quite important at this site, both larger ones—field bean (probably) and pea (possibly)—and smaller—vetches (*Vicia*), which may have been used as fodder. The latter are here at a date soon after that at which they are first documented in S England. The seeds of weeds present reflect a variety of soils. An evaluation at **Archibalds DEAR 8/96**, in North Road, involved the 'rescue' of five bulk samples of deposits containing 13th/14th century pottery. Charred material was present at low concentrations, mostly consisting of oats (*sans* chaff) but also some bread wheat, hulled barley, rye grain and chaff, and a single spelt glume-base; charred pea/bean seeds and hazelnut fragments were also recorded and a burnt bracken frond may represent material used as litter or bedding. A further sample from this site (**Archibalds DEAR 54/97**) produced a similar assemblage of charred remains.

At an excavation within the castle (**Durham Castle (Fellows Garden) (plants)**), 13th-15th century deposits gave limited evidence for charred bread wheat, oats and barley with some uncharred blackberry and elder (perhaps differentially preserved traces of formerly richer assemblages). Close by, at **Durham Almshouses DEAR 25/97** two samples of levelling from beneath a beaten earth floor yielded traces of pea, oats, barley, and bread wheat, whilst one from a dump of soil under the levelling produced a richer assemblage including all these taxa as well as some weeds—there were modest numbers (though still only a few specimens per litre) of large legumes, oats, barley, and traces of bread wheat. Also on the 'peninsula' of Durham City, an excavation at **Walkergate 2000 EAC** resulted in the assessment of 43 occupation deposits including pit fills, ditch fills, drain fills, mostly dated broadly to the medieval or ?medieval period (or undated, but presumed medieval), with some specifically dated 13th century or 14th-15th century. Bulk-sieved samples of 1.5-32 litres were processed for industrial waste as well as 'environmental' remains, and the residues were found to be rich in coal and clinker—making one suspect that, in the absence of any other indication that these materials might have been Roman, they were very late medieval or perhaps even post-medieval. There were small amounts of charred cereals, legumes, and nutshell as well as small numbers of uncharred seeds, mainly elder, *Rubus*, and *Chenopodium*. One cess pit deposit also yielded grape seeds and faecal concretions were thought to be present in some samples.

On the NE corner of the Market Place, a further study (of tenements at **Leazes Bowl 96**), examined material from 32 contexts, apparently mainly 'tips' of late medieval urban occupation material redeposited in the 16th century. They showed a rather variable organic content, the bulk of the residues being coal, cinder/clinker and charcoal. There were small amounts of non-charcoal charred plant material (mostly grains of oat and unidentified cereal, but with a little wheat and barley, including some chaff). Uncharred material represented the usual range of weeds of various kinds, with some wetland taxa and traces of plants from heathland/moorland. Three exotics were present: grape (charred), hemp and fig. There were hints of the presence of straw and hay in at least one sample, with the calciphile tendencies of some grassland taxa suggesting an origin on the limestone to the E of the city.

5.7.2.1.6 Gateshead

Work at two sites in the same area has yielded some evidence for medieval occupation in Gateshead. At **Bottle Bank LUAU**, on the slope above the Tyne, a selection of deposits was assessed using an average of 10 litres for 'flotation'. One late medieval pit fill produced some charred plant stems, perhaps rushes (interpreted as possible flooring or roofing) whilst from other deposits there were the usual representatives of weedy wasteland, with some food remains (hazel, walnut, *Prunus* stones, and flax seed).

Not far away, in **Pipewellgate ASUD 735**, on the Tyne bank, four previously evaluated medieval contexts were re-examined: the fill of a wood-lined feature, and three dumps. All the plant assemblages consisted mainly of seeds from weeds with some remains from wetland, woody vegetation, and grassland. One dump yielded some foodplants (interpreted as waste, i.e. faecal, though only on the basis of an abundance of blackberry seeds). There was a rather high count for weld (*Reseda luteola*) in all the samples, though this was not commented on in the report. As so often in medieval deposits traces of flax seed were also present.

5.7.2.1.7 Newcastle

Although several substantial excavations have been undertaken in medieval Newcastle, they have focused on the waterfront or the defences and little of the main area of medieval occupation has been studied.

The earliest investigations were on the waterfront at the Queen St and Crown Court sites. At **Queen St (Newcastle) 84-5** the earliest sampled deposits (of pre-13th century date) were described as 'natural' river deposits, though the plant remains present in them indicate that, if natural, then they also contained debris from occupation in the vicinity. The two small samples examined gave rather small assemblages, mainly weeds with a few 'useful' taxa (apple, flax, ?cultivated oats, hazel nutshell), presumably from rubbish dumped into the river; there was perhaps also a small grassland component. Deposits of early-mid 13th century date came from a clay platform and alluvium on the foreshore and against a stone revetment forming part of the earliest riverside construction at this site. Again, two small assemblages of plant remains at low concentrations, mainly weeds, were obtained. One sample contained flax and hazel nutshell; both samples contained ?cultivated oats. The next phase, dated ?mid-late 13th century, provided a more extensive opportunity to study plant remains, the samples coming mainly from organic landfills between phases of pier construction and from layers capping the landfill, as well as from a clay spread, perhaps for a road. The moderate number of samples examined gave small assemblages, all dominated by weeds of various kinds—both segetals and ruderals, the most abundant being species of *Chenopodium*, *Atriplex* and *Polygonum*, with corn marigold, and stinking mayweed. There were a few 'useful' plants, the more frequent being hazel nutshell, flax and raspberry, with occasional records for (?cultivated) oat, fig and grape, two for cherry and field bean, and single ones for fennel, strawberry, wheat, and barley.

Samples from five contexts of ?late 14th-mid 15th century date, essentially deposits associated with the use of buildings and some, at least, probably floors, plus a dump

on a street ('Fenwick's Entry'), mostly yielded only a very few remains—typically traces of charred barley, bread wheat and ?cultivated oats, with elderberry and blackberry. Even a huge compound sample of 540 litres from the dump (not processed for plant remains alone!) added only single records for fig and grape; evidently only the more decay-resistant taxa were represented here. From the mid 15th century, four contexts, all deposits associated with the third stage of use of a building, again yielded very small assemblages of remains, primarily the more decay-resistant types including some weeds; fig was present in three samples, grape in one, and charred wheat grains in one. There was an unusual record for seeds of the small-flowered catchfly, *Silene gallica*, an arable weed with a rather southerly modern distribution in Britain.

Nearby, at the **Crown Court 85-6** site, there were again ?pre-13th century 'river silts' at the base of the sequence which clearly included material from occupation: the three contexts examined provided a list of about 80 taxa, of which about half were recorded in only one sample. The majority of the taxa were weeds or neglected ground plants, but there were traces of fig, hemp, flax, hazel nut and cereal grains (oats, barley, rye and spelt wheat) and perhaps some remains from litter (heather, bracken, grassland plants). Again, this material presumably originated through dumping in the river. The succeeding mid-late 13th century deposits were dumps. A large assemblage was obtained, overall, with a wide variety of plants, the more abundant being weeds, especially cornfield taxa, but also waste-ground types, and some grassland plants (more than half the taxa were only from one context). There were mostly the same food and other 'useful' plants as in previous phase, but also apple, grape, dill, sloe, plum/bullace and bread wheat. For the early 14th century phase, material from eight contexts, a mixture of fills, river silts and layers, was examined. They yielded quite a large and mixed assemblage of remains, overall, with frequent blackberry and fig seeds presumably from food, and taxa such as weld/dyer's rocket and celery-leaved crowfoot perhaps most likely to have been weeds in the vicinity (but present in very different habitats); other food plants include dill, hazelnut, sloe, bread wheat, barley, and grape. Again, about half the taxa were from only one of the contexts.

Next in the sequence, the early 14th-mid 15th century fills, a spread and layers associated with the lane, Byker Chare, provided a rather limited range of taxa, often charred, and more than half in one context only. Charred oat grains were the most frequent remains, with blackberry, fig, unidentifiable cereal grains, elder and traces of pea, rye, grape and some other cereal grains (both spelt and bread wheat were recorded); evidently there was, again, some differential preservation. By contrast some spreads, dumps and fills dated more closely (to the 14th century) were found to contain a large number of taxa overall, with only about one-third present in only one context. The most frequent were blackberry, hazel nut, buttercup, sedge, elder and a variety of weeds—again, perhaps, suggesting some differential preservation. Amongst the same general range of weeds, additional foodplants included strawberry and field bean; most samples contained seeds of weld/dyer's rocket in some quantity and two had very large numbers, though there was no corroborative evidence for the use of the plant in dyeing and it is very likely to have grown as a ruderal on disturbed soils, especially if calcareous, in the environs. Other plant remains recovered from this site included material considered together with wool rolls used as ships' caulking,

though not necessarily also used in this way. Walton describes three items that were of plant origin: a hank of hair moss (*Polytrichum commune* Hedw.) and a roll of vegetable fibre, perhaps sisal (*Agave sisalana* Perrine.), from mid-late 13th century levels (although this seems an unlikely identification for a New World plant at such an early date), and a loose twist of cottongrass (*Eriophorum* sp.) from a deposit dated to the 13th-14th centuries.

At **Close Gate 88-9**, the earliest deposits, dated 13th-14th century, and pre-dating deposits associated with the building of the Town Wall along the riverbank, included remains which may have come from grassland that grew there previously. They yielded quite a rich assemblage (taken as a whole), with a wide range of weeds and wasteland plants, some grassland (from wet to dry) taxa, and a few foodplants, including traces of charred grain, and some fig and other fruit seeds; there was an unusual record for quite a large number of wood sage (*Teucrium scorodonia* L.) seeds—this plant is typical of open woodland, heaths and some kinds of grassland. In the mid 14th century, construction of the Town Wall was under way. The single sample from deposits of this phase was, as might be expected, species-poor, rather like a depauperate sample of the material from the preceding phase, though with seeds of dill and fig recorded, but no remains present in more than small amounts. Reclamation deposits of mid 14th-early 15th century date were, again, mainly species-poor. There was a little evidence for dumping of organic matter or for vegetation on the site—the assemblage as a whole was dominated by weeds, but with some wetland taxa and traces of food (fig and blackberry). Above these, late 14th/15th century deposits from the period of construction of the tower and river wall, were again species-poor, though perhaps with some evidence for build-up or dumping of soil, with the assemblage dominated by weeds with some damp ground taxa.

Another excavation in Closegate (**Mansion House 90**) encountered 13th-15th century deposits, again yielding rather low concentrations of remains, with some samples producing only a few woody seeds (e.g. elder). Indeed, about a third of the large number of samples (60) examined were effectively barren. Overall, a fairly wide range of food plants was recovered in charred and uncharred states, including hazelnut, cereal grains (mainly oats), and one or a few of pea, grape, fig, linseed, dill, olive (unusual, if not unique in a medieval context in England), and walnut. Also of interest were two charred rachis internodes of a tetraploid wheat (*Triticum durum/turgidum*)—tetraploid wheats have only otherwise been recorded in the region from Wharram Percy (see below) and Manor Farm, Thorner (see below), in both cases as grains rather than chaff.

A site in **Stockbridge 95**, on the eastern side of the walled area of Newcastle, allowed some samples from mid-late 13th century deposits (18 in total, though the published report presents results for only some of them) to be examined. Indeed, the archaeobotanical report is a masterly example of opacity and it is not possible to judge from it precisely what work was carried out on what material, but 18 samples are presumed to have been bulk-sieved and examined dry (despite the evident presence of 'waterlogging'). Three of the deposits produced some quite large concentrations of charred cereal grains: there were abundant charred culm nodes and rachis fragments of rye, bread wheat and barley, as well as pedicels (the stalks on which the spikelets are carried). One wonders if this might not all be from straw

used in thatching. One sample was rich in weld seeds, but otherwise only the usual cornfield and grassland plants (presumably from straw and hay) and a few wetland taxa were present.

Some more recent evaluations in Newcastle have yielded interpretatively useful plant remains. At **Binns Store DEAR 12/98** on Grainger Street, in the heart of the old town, pit and gully fills, some dated rather broadly as 14th-16th century, were evaluated. A total of eight BS of 12-36 litres in volume were examined, and they yielded small groups of plant remains, including some charred cereals (barley, compact bread wheat and ?rye and oats). Fig and dill were also both present, with (as usual) elder and blackberry; the later material produced only sparse remains and much coal/clinker.

At **Northumberland St DEAR 14/96**, on the N side of the area of the old town, a 13th-mid 14th century fill from a 'cess' pit was investigated by means of single small (300 g) and large (15 kg bulk-sieved) samples. The material was rich in linseed and flax capsule fragments, with food remains (blackberry, dill seed) and some hemp and wheat/rye bran, but most taxa were probably weeds or grassland plants. Lastly, from a site near the Quayside in Newcastle, **Baxters Warehouse 99 ASUD 640**, five occupation deposits spanning the period 11th-14th centuries were investigated via five samples of 1-5.5 litres, sieved to 0.5 mm. They yielded a modest range of uncharred plant remains, mainly from nitrophilous annual weeds with some remains from plants of wetland and grassland, even peatland (*Sphagnum*). Very unusual was a single seed of soapwort (*Saponaria*) a plant likely to have been introduced to Britain as a soap substitute (via the vegetative parts which contain saponins). There were also a few charred cereals, but no chaff.

5.7.2.1.8 Chester

Though only two very small published pieces of work have been undertaken on material from medieval Chester, both have proved to have a high information content and indicate that further well preserved material may be obtained if appropriate recovery and post-excavation strategies are in place. At **Goss St 72**, a 40g sample from a single pit fill of late 13th/early 14th century date was found to consist mostly of *Prunus* fruitstones (n = 46). The other plant remains present were mainly food remains or weed seeds likely to have been milled with food, especially corncockle—an early example in which the significance to health of this grain contaminant was discussed (see also below). Interestingly, no cereal 'bran' was recognised, though with hindsight it is highly likely to have been present (but overlooked) and the fill was probably faecal in origin, given the presence of milled corncockle seeds, and especially since at **Watergate St (12) 85**, very near the previous site, three samples from the fills of a mid-13th century rock-cut pit also contained essentially faecal material, rich in 'bran' (with *Trichuris* and *Ascaris* eggs), along with a variety of other food remains including pulses, flax and hemp, fruitstones, and *Allium* (?leek) epidermis.

More recently, work at **Bridge St (Chester) PRS 2002/16**, within about 200 m of these sites, revealed a sequence of deposits in which the medieval period was represented by layers dated to the 11th-late 15th century levels; these included various fills and layers investigated via bulk-sieved samples of 5-60 litres. The six

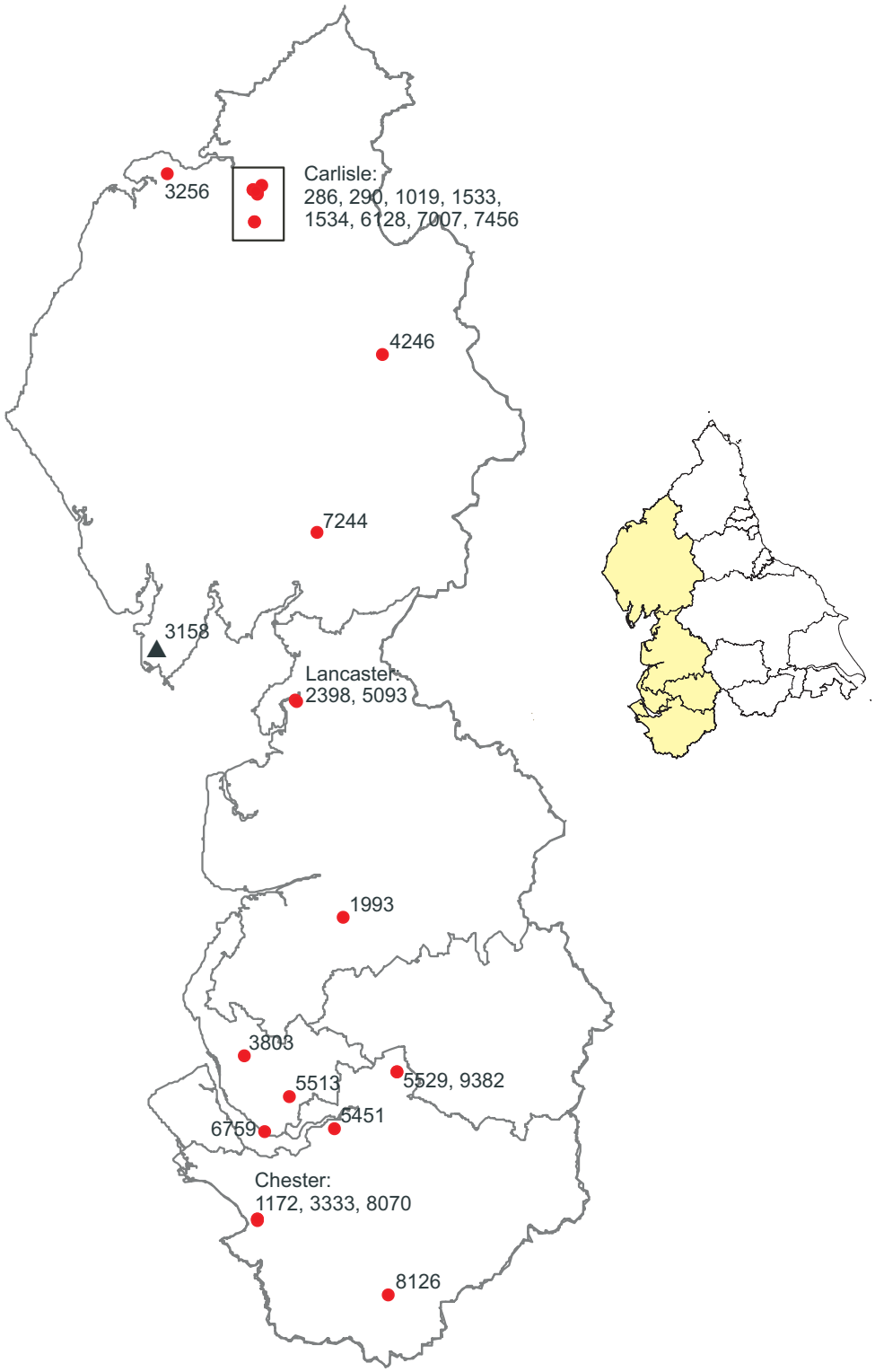

Fig 12: Sites with archaeobotanical studies of material of medieval date in NW England (tentatively dated cases marked with black triangle) referred to in the text and for which reliable grid references could be found

Key: 286—Annetwell St AML 107/89; 290—Annetwell St AML 37/89; 1019—Botchergate (53-63) OAN; 1172—Bridge St (Chester) PRS 2002/16; 1533—Carlisle 77 AML 2483;

1534—Carlisle 78 AML 3219; 1993—Clayton Hall LUAU; 2398—Damside (Lancaster) 90 DEAR 4/92; 3158—Furness Abbey 88 AML 66/89; 3256—Glasson Moss 96-7; 3333—Goss St 72; 3803—Higher Ln (Fazakerley) 94 EAU 96/05; 4246—Kirkby Thore 83; 5093—Mitchells Brewery DEAR 12/93; 5451—Norton Priory AML 1833; 5513—Ochre Brook 93; 5529—Old Abbey Farm EAU 96/13; 6128—Rickerby House HA; 6759—Speke Hall 81-2; 7007—St Nicholas Yard 96-7; 7224—Stricklandgate 87-8 AML 65/89; 7456—The Lanes AML 51/92; 8070—Watergate St (12) 85; 8126—Welsh Row (42)/Cheshire Cat LUAU; 9382—Old Abbey Farm 95

contexts from the earlier phase for which BS samples were examined (*c*. 1066 CE to 14th century) were, with one exception, fills of pits or post-holes. None were considered worthy of investigation beyond the assessment stage. Again, all samples yielded at least some charcoal (including oak and ash), and usually also uncharred elder seeds, but ancient remains representing human activity were restricted to a few charred cereal grains (mostly wheat, with some barley, and perhaps also rye).

The twelve contexts for which material was investigated during the assessment stage from 14th to late 15th century deposits at this site included three associated with one oven, and one associated with another oven. Three others were pit fills and two came from the fills of two culverts. Again plant remains were rather restricted in their range and diversity, with wood charcoal being recorded from all the samples. There were small numbers of charred cereal grains in several assemblages, but they were not noticeably more frequent in the deposits associated with the ovens; indeed, one deposit from one of the ovens yielded traces of charred bean and pea seeds, whilst that from the other yielded only traces of wheat grains. The only sample revisited during the main analysis stage was the upper fill of a pit, in which moderate numbers of fig and blackberry seeds were present, along with traces of mineral-replaced grape pips and some fragments of material which may well have been very decayed faecal concretions; there seemed little doubt that this deposit, at least, contained food waste of faecal origin. It also, however, contained moderate amounts of cinders, indicating the first clear evidence for the use of coal as a fuel at the site.

5.7.2.1.9 Carlisle

Archaeobotanical studies of deposits in Carlisle have so far been very much more concerned with Roman than medieval deposits, though most of the larger excavations have revealed medieval urban occupation deposits overlying those of Roman date. At **Annetwell St AML 107/89** a few samples of medieval date from well and pit fills were found to be quite rich in fruitstones with abundant cornfield weeds (especially corncockle and corn marigold). One of the pit fills contained fig seeds, and evidently included faecal material. Further food remains were recorded at a nearby site (**Tullie House Extension & Basement DEAR 1/91**) from a medieval pit fill—the remains were mainly fruitstones of sloe, but there were also some ‘damson’ (*Prunus domestica* ssp. *insititia* (L.) C. K. Schneider) and cherry (*Prunus* Section *Cerasus*) stones.

Two earlier reports also dealt with medieval plant remains from Carlisle, though in neither case is it possible to divine from the reports the actual sites from which the material came. The first (**Carlisle 77 AML 2483**) is mainly concerned with material

from pit fills, some sampled via columns, and a barrel well fill. Some quite rich assemblages were recorded, with weeds and waste ground taxa, especially damp ground weeds, some probable food remains, especially fruitstones and pips from the well sample, though otherwise these were sparse. Another well fill is the subject of the second report (**Carlisle 78 AML 3219**) which comprises a list of taxa and a few interpretative notes. The assemblage mainly comprised seeds of weeds in small numbers and the author notes taxa recorded here which were not present in Roman levels at the same site.

About 15 samples dating to the 13th century were analysed from **The Lanes AML 51/92**. The bulk of these were fills of pits. Whilst the charred material present consisted of barley grains with some oats (as was also the case for most of the Roman deposits), they mostly lacked the spelt grain and chaff of this earlier material. The waterlogged taxa included stinking mayweed and corn marigold in moderate abundance. In general these pits did not seem to be in receipt of much faecal material but rather a mixture of domestic rubbish and byre type waste.

Some more recent developer-funded excavations in Carlisle have offered opportunities for small-scale examination of further medieval material. At **St Nicholas Yard 96-7**, off Botchergate, the main road to the city from the SE, 16 samples from 15 contexts, including a series from an oven, were evaluated; small numbers of charred cereals and a few weed seeds were recovered, some of the latter uncharred.

5.7.2.2 Smaller towns

5.7.2.2.1 Grimsby

Preservation of plant remains was mostly rather poor in samples of pit fills, a ?ditch fill and a ?alluvium deposit at **Cartergate 94 EAU 94/22**, dated to the 13th-15th centuries, though a ?ditch fill of late 14th/15th century date contained some weld/dyer's rocket seeds, *Sphagnum imbricatum* leaves (presumably from peat), and fragments of plum stones. The presence of peas/beans may be indicated indirectly via remains of damaged (?chewed) bean weevils. One sample had traces of fruits of sea arrowgrass (*Triglochin maritima*), a saltmarsh plant, likely to have been growing along the coast near the site, and perhaps arriving in hay or dung.

5.7.2.2.2 Hedon

Hedon lies to the E of Hull and is now a kilometre inland through silting of the Hedon Haven. Several archaeological interventions, all developer-funded evaluations, have provided material for archaeobotanical investigation from this medieval port. At **St Augustines Gate (15-19) 93 EAU 93/04**, in the centre of the old town, samples from the 15th century primary fills of two large parallel boundary ditches contained modest-sized assemblages of uncharred (and rarely also charred) plant remains. The seeds were mainly weeds from but there was some evidence in one of the two samples examined for faecal material (including a grape pip) and there were moderate numbers of charred wheat grains in one sample. The moderate numbers of weld/dyer's rocket seeds in both samples probably represent plants growing as weeds. At another site in **St Augustines Gate (9-11, rear) 99 EAU 2000/02**, a 12th-

13th century pit fill and two contexts interpreted tentatively as ground-raising deposits yielded a little charred plant material—the pit fill charred gorse leaves and ?twigs and a single cereal chaff (?oats), and the latter deposits a little bread/club wheat.

Samples from a site in **Old Hall (Hedon) EAU 96/22**, in nearby Baxtergate/ Fletchergate, came from a variety of contexts, including early medieval and late medieval occupation surfaces and a medieval pit fill; they mostly contained very few remains and they were of limited interpretative value. Similarly, at **Magdalen Ln DEAR 26/98**, towards the NE edge of the town, two of the samples from amongst those collected from two pit fills, a ditch fill, an old ground surface, and a layer of 12th-14th century date, were abandoned as barren, whilst other deposits (pit and ditch fills) yielded small amounts of charred grain (mainly hulled barley, bread wheat and oats), and one ditch fill produced some charred bread wheat rachis fragments; traces of pea and bean were present in one of the pit fills, together with some charred weed seeds.

5.7.2.2.3 Howden

Two recent evaluations in this important medieval small town have offered a first opportunity to study the quality of its archaeobotanical record. At **Bridgegate ASUD 791**, ten fills of pits, ditches and postholes were examined by means of 5 litre BS samples. There were some uncharred fossils, mainly weeds and wetland plants, with modest numbers of charred cereal remains, including some barley rachis and bread wheat rachis, as well as grains of barley, wheat and oats. A second site (**Howden ASUD 839**) provided an opportunity to explore five deposits (presumed to be medieval, dating evidence not having been included in the evaluation report available); these were pit fills and burnt layers and six samples of 0.9-5 litres in size were 'floated'. Three of the samples contained modest numbers of charred grains, with traces in one other, and the last being barren. There were rare grains and chaff fragments of barley, as well as wheat and oat grains, but most of the grain was not identified beyond 'cereal'.

5.7.2.2.4 Selby

There is now a fairly substantial corpus of examples of medieval occupation material from Selby for which archaeobotanical studies have been made, all of it unpublished. In the earliest foray, a series of boreholes sunk in 1992 are thought to have penetrated deposits representing silting of the medieval ditch or stream, the Kirk Dike, cut originally in the 12th-13th centuries (**Selby boreholes 92 EAU 92/07**). Certainly the material examined was rich in remains of aquatic plants, as well as containing arable and other weeds, consistent with deposition in water close to an area of habitation. Excavation, perhaps in the same area (**Selby (town centre) 93 EAU 93/08**), revealed a sequence of peats and clays in a trench close to the main waterway feeding the R Ouse, the Selby Dam. The six contexts from which material was examined were described as 'natural', 'fish pool', 'flood' and 'dump' deposits; where plant remains were preserved, they mainly represented a natural aquatic or woodland flora. Deposits interpreted as fills of the Kirk Dike were encountered in another trench at this site, along with two 'grave' fills and some ditch and pit fills from two other trenches. Plant remains were well preserved in some of the ditch samples,

especially where there was woody detritus; one sample in this group contained a possible hedge/scrub flora with hemp, fig, grape, and flax seeds and capsule fragments, as well as heather and raised-bog *Sphagnum* spp. In another case there was evidence for faecal matter, in yet another perhaps some stable manure, whilst still further deposits indicated deposition in relatively clean flowing water. The grave fills appeared to contain material of mixed origins.

Other, more recent interventions, have all taken place in the vicinity of the Abbey, presumably the oldest part of the town. At **Abbey Walk 97**, 13 deposits, not dated closer than 'medieval' were examined—five ditch/Selby Dam fills, three ?river/flood deposits, an organic occupation/flood sediment, a cess pit fill, and two of uncertain context type; BS samples of 6.5-10 litres were used, despite the presence of both waterlogged and charred material. A wide range of plant remains was encountered, with some quite rich assemblages of charred grain and chaff (the presence of spelt glume-bases perhaps indicating some reworked Roman material), and some evidence for exploitation of peatland in the form of traces of charred heather twig and cross-leaved heath (*Erica tetralix*) remains. The other charred material mainly comprised seeds of weeds from cereal fields. The uncharred components of the assemblages were much richer in cornfield weeds, however, and also contained taxa likely to have served as food or in other useful ways; these included hemp, flax, opium poppy, caraway (*Carum carvi* L., abundant in one sample), fig, grape, and various wild-growing fruits (including bilberry, *Vaccinium myrtillus*); grassland taxa, perhaps from hay and bracken (another possible 'litter' component) were also noted, and there was a small maritime component (one each of buck's-horn and sea plantains, *Plantago coronopus* L. and *P. maritima*), and a range of wetland taxa, very typical of urban medieval material.

Nearby in **Gowthorpe (16)**, four pit fills (one of them a pot fill *within* a pit fill) were examined. They were found to comprise organic deposits, mainly containing a mixture of weeds and some food remains (*Rubus*, *Fragaria*), one with some bracken. The pit fill producing the pot yielded a rich variety of food remains, including many fig seeds, and was clearly mainly faecal (there were high worm egg counts in a subsample of the pot fill). In **Market Pl (Selby) 97**, 13 contexts dated variously within the period 'Romano-British-17th century' were explored. Only two were dated (in the evaluation report) as tightly as 14th-15th century, and the context types were not clear (unsurprising, given these were from 2m-square tree-planting holes!). Of the 13 samples examined in the evaluation, nine were chosen for subsequent analysis (on the basis of being better dated, though they still included one dated 'Romano-British-15th C. (predominantly 15th C)'. The deposits were generally rich in wood fragments with rather little charred material, mainly oat and barley grain and a little rye, but no wheat. One sample contained some uncharred rye straw. Other charred remains included a few lentils, fragments of heather twig and wood, and seeds of some typical cornfield weeds. There was a wide range of taxa in the 'waterlogged' component: abundant arable weeds, rare grassland taxa (only tormentil, *Potentilla erecta*, being fairly common), and with a tally of 'useful' taxa including hemp, flax, fennel, fig, coriander, and opium poppy. Work at a further site, **Selby watermain DEAR 33/97**, involved examination of medieval deposits from a series of trenches. Nine samples of various sizes up to 10 litres exhibited some good preservation of

waterlogged material with evidence for hay/straw, bracken, flax, and fig—a typical urban medieval archaeobotanical mixture, in fact.

5.7.2.2.5 Driffield

Neither of the two small evaluation exercises for which medieval material has been investigated in Driffield, itself, have been archaeobotanically informative (the settlement is considered at this period probably to be more rural than urban, hence its inclusion here!). At **Albion St 92 EAU 92/12**, plant remains were almost wholly lacking in the one pit fill of 'medieval' date examined, whilst at **The Outgang 96 EAU 96/37**, 12th-14th century deposits of various kinds (mainly fills of ditches and gullies) yielded only sparse plant remains even from moderately large samples (the only sample with more than a traces of plant material was unphased!).

5.7.2.2.6 Boroughbridge

A single site has so far provided an opportunity to study medieval occupation in this 'planned town' of the 12th century: **Crown Hotel 99 EAU 99/22**, thought to lie on the site of a 13th century manor house. A single 11th/12th century ditch fill and two ditch fills of mid-14th century date were examined archaeobotanically, but the three GBAs yielded only traces of charred grain and weed seeds, all very sparse.

5.7.2.2.7 Ripon

A number of archaeological interventions have taken place in the medieval centre of Ripon, though sampling has generally been rather limited, partly because the deposits did not appear to warrant more than small-scale study of plant and invertebrate macrofossils. At **Market Pl (8/9 & 10) (The Arcade) EAU 2000/59**, just off the Market Place—where 12th-15th century backfills of features were examined—two of the deposits yielded some probable food remains (seeds of fig and raspberry), and one 14th/15th century backfill was rich in silicified cereal chaff including material of wheat, rye, and barley (and of a kind of preservation more commonly seen in Roman contexts than medieval, see above). The other sample examined yielded very few remains. At the nearby **Wakemans House EAU 2001/09**, on the south side of the Market Place, the deposits of 11th-14th century date examined for plant remains were all interpreted as pit fills; four samples produced a few charred remains—charcoal, hazel nutshell, and a few charred cereal grains. One 'early medieval' deposit contained some uncharred remains (arable weeds and wetland taxa). To the SE, at **Skellgarths EAU 2001/24**, on the bank below the Minster, four assorted deposits were examined; a few charred grains were observed in 12th/13th century deposits and a modest-sized assemblage of uncharred plant remains was found in a 13th century deposit that indicated deposition in water, perhaps close to willows, with input of occupation material from nearby habitation; a 12th/13th century linear cut backfill contained some remains of fig, field bean and grain.

Mention should also be made of some highly organic deposits—almost certainly largely stable manure, though probably secondarily deposited—in a feature fill interpreted as a former stream-bed and dated to the 12th-13th centuries, which was encountered during investigations by the former Central Excavation Unit in 1982-5, in Bedern Bank. These were subjected to an assessment by Wendy Carruthers (1991),

then at the Ancient Monuments Laboratory of English Heritage, and latterly (in 2004) by ARH as an adjunct to an examination of insect remains (which had not previously been investigated). Although largely repeating the observations made by Carruthers, a few taxa such as fig, flax and hemp were noted which seemed less likely to have originated in stable cleanings and perhaps arrived in other (domestic) waste.

5.7.2.2.8 Northallerton

A single site appears to have been studied in this small town; at **East Rd ASUD 679**, a single well fill and one pit fill were examined by means of 'floated' samples of 7.5 and 10 litres respectively. The samples yielded only a few cereal grains and weed seeds, and most of the grains were noted as not being well preserved.

5.7.2.2.9 Scarborough

Several small interventions have taken place in the medieval heart of Scarborough for which limited sampling and bioarchaeological analysis have been undertaken; on the basis of the modest results obtained to date, it seems likely that much more information could be obtained through larger excavations accompanied by more rigorous programmes of sampling and post-excavation work.

The earliest study involved the examination of a single sample of organic medieval occupation material from a site in **The Bolts (24-6) EAU 90/11**, not far from the sea front. The large residue from the small (1 kg) subsample studied comprised coarse organic detritus including considerable amounts of bracken frond and stalk, with heather shoots and grass/cereal culm and nodes; also present were wood chips including ash, alder and oak and there were traces of fig, walnut, hazelnut and flax seeds and capsule fragments. Together with the heather, traces of *Sphagnum* and cross-leaved heath indicated the presence of peat or peatland materials—and overall, a strong impression was gained that the material was rich in a mixture of different kinds of litter, perhaps from stable cleaning. At **Quay St (22A) EAU 96/35**, a medieval ?floor and a domestic dump were examined. Other than charcoal, the dump was barren of plant remains, whilst the sample from the ?floor contained a few weed seeds and traces of charred and uncharred heather. Limited preservation of plant remains was also recorded in material from **Queen St (Scarborough)**, from a mid-12th century buried ground surface; the single sample examined contained only a few whole or fragmentary elder seeds and one tentatively identified charred rye grain. Lastly, an excavation at **St Sepulchre St EAU 97/26** revealed two deposits probably from the Damyet, a watercourse in the old town; one was interpreted archaeologically as perhaps representing natural silting, and one perhaps as representing rubbish thrown into the watercourse. A few food remains were present in the sample of 'natural silting'—fig, barley, raspberry, and hazel, together with a small fragment of peat, suggesting that, if natural, the silting took place close to human habitation and/or involved disposal of occupation waste. The sample of ?rubbish contained more peatland material and peat *per se*, as well as further traces of food plant remains. A more recent intervention at **Newcastle Packet EAU 2000/38** involved examination of a single organic occupation deposit within a dump over natural beach sand. The subsample yielded a typical medieval assemblage, though there was

perhaps some reworked material. The plants represented included heather, bracken, fig, apple, hazel (nutshell), and wheat/rye (in the form of 'bran').

5.7.2.2.10 Whitby

Both the earliest studies involving analysis of plant remains from medieval Whitby involved material from exacavations in Baxtergate. At the first site, **Baxtergate (Whitby) 92 EAU 92/04**, the 'medieval' occupation deposits sampled comprised make-up for, or build-up on, floors. There were some abundant rush seeds in two samples, and some *Sphagnum* shoot tips in a third, but plant remains were generally sparse. The material from **Baxtergate (63-4) (Whitby) EAU 93/26** was mostly from 'occupation deposits' of 13th-15th century date. Several samples contained some possible plant litter including grassy debris, heather remains and bracken stalk and frond, but preservation was patchy. Other remains of 'useful' plants included charred bread wheat grains, wheat/rye bran, linseed and hempseed.

5.7.2.2.11 Richmond

The earliest opportunity to examine medieval plant remains from this small town was provided through an evaluation at a site in the Market Place (**Market Pl (Richmond) DEAR 13/94**). Here, two very large (>100 litres) samples of 13th-15th century dumps revealed charred cereals dominated by hulled barley with smaller amounts of bread wheat and oats; peas were present, but no cereal chaff or rye grain (despite the large sample size). Uncharred material consisted mostly seeds of cornfield weeds with some food remains (cherry, dill, 'plum', grape, fig) and also hemp. A small intervention on the outskirts of Richmond (Victoria Road, Richmond: archive report, Department of Archaeology, Durham) produced much bracken and some flax debris which could have been bedding material, but the site was too small to interpret more reliably. More recently, an excavation at **Friary Fields DEAR 8/98** explored medieval deposits from the fills of ditches and pits, six BS of 11.5-29 litres in volume being examined. The plant remains were mainly charred, but there was also some waterlogged material (mainly woody seeds of elder and blackberry). The charred material was not well preserved, consisting mainly of cereal grains and large weed seeds (the former including bread wheat, with some 6-row barley and also some large legumes). Another intervention, at **Richmond Castle ASUD 663**, investigated two contexts archaeobotanically—a rubbish dump and a layer beneath it—from the exterior of the former medieval curtain wall of the castle. The 5 litre sample from the 'rubbish' deposit yielded mixed remains, but had a low overall concentration of fossils; the layer beneath was described as 'peaty' and yielded mainly remains of weeds and there might, indded, have been a 'turf' component (represented by ?heather and tormentil). Also at the castle, a site at **Scollands Hall (Richmond Castle) ASUD 829** provided a single 13th/14th century layer from a passageway. The rather large flot of charcoal from the 9.2 litre sample 'floated' also contained traces (one each!) of barley and bread wheat grains.

5.7.2.2.12 Yarm

At least two excavations in Yarm have revealed evidence of medieval plant remains. The earlier intervention (**Yarm AML 2394**) provided waterlogged material from a late

medieval well fill. The one sample examined was found to have a very heterogeneous plant assemblage amongst which was a modest-sized group of charred bread wheat and oat grains and abundant rush seeds, together with some hazel nutshell, barley grains and oak and birch charcoal. At a second site, **Yarm 94 EAU 94/44**, some 13th-14th century ditch fills were investigated. There was moderately good preservation of uncharred plant remains in some of the samples—fig, sloe, blackberry and raspberry were all present—with a few charred grains of wheat and oats. Generally, the assemblages consisted of weed seeds, including some taxa consistent with the less ephemeral vegetation of waysides, hedges or ditchbanks.

5.7.2.2.13 Darlington

In the Market Place at Darlington, samples from 12th-14th century ditches and pit fills (including 13th/14th century latrine fills) were investigated through an evaluation exercise in which sampling was commendably thorough (**Market Pl (Darlington) DEAR 14/95**). Charred oat grains were common (along with charred oat chaff—perhaps human food rather than fodder for animals), with barley, nutshell and legumes (including field bean) present, as well as heather and arable weeds. The latrine fills contained some partly-waterlogged material likely to be worthy of more detailed study but funds for further analysis were not available.

5.7.2.2.14 Hartlepool

Several excavations of the medieval parts of Hartlepool have been accompanied by archaeobotanical studies, and of these two have been published. At **Church Close 84-5 (medieval)**, late 11th-early 12th century deposits were investigated in which there was evidence for cultivation on the site following Saxon monastic activity (above). The commonest charred remains from contexts associated with buildings were oats and bread wheat, together with weeds of disturbed ground, grassland and heathland; barley and rye grains were present but not common and there was a little chaff and a few arable weeds. Later material at this site was dated as mid 13th-mid 14th century and came from ovens within a building, and from some drain fills. The plant remains were mostly grasses and sedges, perhaps representing kindling from ovens or litter from floors; there were also large amounts of amorphous burnt organic material which could not be identified more closely.

The deposits encountered at a site in **Southgate 81-2** were primarily 12th/13th century dock infill (though the dating is ambiguous, to judge by the published archaeological account). The charred and waterlogged material examined showed that the quantities of plant remains present varied greatly, but most samples contained a range of food taxa: charred bread wheat and oats, with a little barley, charred and uncharred grape, and charred field beans and peas were all recorded. In addition, there were uncharred remains of weeds of waste and cultivated places, of grassland taxa, and also quite a lot of hemp seeds. Lastly, at **Middlegate 87 AML 86/88** material dated to the 12th-post-17th centuries, from deposits such as layers in buildings, feature fills, and yard deposits was investigated through 38 samples of 0.4-28 litres. The remains were mainly charred: bread wheat and oats and some weeds, but no chaff. Features interpreted as cess pits at this site yielded a modest range of

food plants: uncharred/mineralised fig, grape, apple/pear, sloe/plum and oat with hemp and linseed.

5.7.2.2.15 Alnwick

A single site (**Pottergate (Alnwick) ASUD 922**) has provided 'early-late medieval' pit fills and layers, with ten deposits examined via BS samples of 5 litres These mainly yielded charcoal, coal and clinker, these last two suggesting a late, perhaps even post-medieval date, assuming these materials do not represent Roman occupation. There were only small amounts of charred grain and weeds, a little charred hazel nutshell (and traces of heather 'wood' in a late medieval deposit and also in an ?alluvium deposit, perhaps originating in roofing). One further late medieval sample produced a modest-sized assemblage of grains with a trace of barley chaff.

5.7.2.2.16 Berwick-upon-Tweed

At the earliest site in Berwick where archaeobotanical work was undertaken, **Oil Mill Ln**, three 'spot' samples were investigated—from a floor in a 12th/13th century structure, from a floor of 13th/14th century date, and some ?thatch/matting from a 13th/14th century structure. Charred oats were predominant in the floor samples, whilst the 'thatch/matting' consisted of unidentified dicotyledonous stems (which, though this was not suggested by the original author, might have been flax or hemp, these being amongst the few herbaceous dicotyledonous crop plants to yield quantities of stem that might serve as thatch or to be found in quantity in occupation deposits).

More recent assessments in the town and along the waterfront are demonstrating the high potential of archaeological deposits in medieval Berwick. Thus at **Bowling Green (Berwick) ASUD 682**, a sample of the fill of what was probably a defensive ditch of Edwardian (late 13th/early 14th century) date consisted mainly of peaty material, evidently formed in standing water, since the presence of *Daphnia* and insects is mentioned (though no detailed examination of invertebrates was carried out). The identifiable plant remains were, however, mostly nettle and tormentil achenes, with some pondweed (*Potamogeton*, presumably living in the ditch) and a trace of heather.

At **Brucegate DEAR 6/99**, in the central part of the walled area of the old town, samples from an evaluation excavation of medieval pit fills and a ?boundary ditch fill lying between the medieval and later town walls were examined. Only a few charred grains were found in most samples, but one pit fill contained numerous barley grains in a matrix of ash, the grains mostly sprouted, and the sprouts being 70-80% of the length of the grain, suggestive of material that had been used initially for malting.

Somewhat to the S, but still within the walled town, a site at **Marygate (Berwick) LUAU** involved archaeobotanical investigation of 31 floated samples of 10-50 litres (though the botanical report offers no detailed information as to the nature of the contexts). Most samples contained remains of a range of common waste ground and cornfield weeds, including weld, cornflower, corncockle, corn marigold, knotweeds, wild radish, brassicas, henbane, and hemlock. Two pit fills were dominated by

heather, mainly flowering shoots, and perhaps evidence for dyeing. Food remains included cereals, hazel, walnut, 'damson', cherry and flax. At a site in **Eastern Lane 98**, off Marygate, medieval deposits, mostly highly organic, were examined from 18 fills of pits and a well from two burgage plots. Subsamples of 5 litres of each of the samples were bulk-sieved, from which it was apparent the matrix also included some coal, charcoal and clinker. Uncharred remains of heather, moss and bracken were especially common in many samples (though the moss was not identified). The charred component was dominated by cereal grains, though there was only a small assemblage. Other charred material included a few weeds, traces of heather, cross-leaved heath, gorse, some cereal chaff (all rachis fragments), and a trace of legumes. The uncharred material was mainly arable weeds and ruderals with taxa representing a variety of other categories, as usual—grape, hemp, flax, cherry, fig, and some more heathland/moorland plants (from peat or turf?), and a small wetland component. Unfortunately, full analysis was not taken forward.

At a site at **Ravensdowne Barracks ASUD 682**, 12th-15th century deposits of various kinds, including midden and gully fill contexts, were examined via seven samples of 10.8-24 litres and of these one (from a midden) was thought worthy of further analysis. It yielded only charred material, mainly grains of bread wheat, oats, and barley (with many 'indet.' grains) and a few peas and traces of weeds.

On the riverside at Berwick, two groups of samples from a site at New Quay provided evidence for later medieval activity (through dumping of waste with a distinct organic content). Data published as **New Quay 96** represent the results from a series of five samples totalling 16 litres containing modest numbers of charred and (mainly) waterlogged remains, including a little heather, weld, dill and fig, but otherwise mainly weeds from cornfield or waste ground sources. Another group of samples (**New Quay DEAR 34/98**) were investigated from four deposits from the lower levels of the trenches (sample of 9-31 litres being examined). There were, again, small amounts of charred remains, one assemblage containing abundant oats, but otherwise traces of wheat and rye, with grape, heather wood, and heath grass (*Danthonia*); the rather wide range of uncharred remains included various exotics (hemp, fig, flax, grape), a few grassland and heathland taxa (especially heather), as well as representatives of woodland/scrub, wetland (perhaps from peatland/peat) and the usual waste ground and arable weeds. Within the last category was a very unusual record for the now extremely rare cornfield weed summer pheasant's eye, *Adonis aestivalis* L.).

5.7.2.2.17 Kendal

A single study has been made of medieval plant remains from Kendal. At **Stricklandgate 87-8 AML 65/89**, deposits associated with town yards and boundaries were investigated via 21 small samples, which yielded small amounts of charred material. Oat grains predominated the assemblages, with rye common and wheat and hulled barley present, as well as peas.

5.7.2.2.18 Lancaster

Two evaluation exercises in Lancaster in which medieval material has been explored have been accompanied by archaeobotanical studies. The earlier, at **Damside**

(Lancaster) 90 DEAR 4/92, revealed moderate numbers of nettle and blackberry seeds from three samples from two deposits, a 'layer' and a pit fill. At the Mitchells Brewery DEAR 12/93 site, 11 samples from pit and well fills were found to be dominated by charred oat grains, hazel nutshell and cornflower seeds; publication of the results of full analysis of this material is awaited.

5.7.2.2.19 Nantwich

At a site at Welsh Row (42)/Cheshire Cat LUAU, three BS samples of 10 litres each were examined from extensive medieval deposits interpreted as possible peats and a silt. The 'peats' yielded abundant uncharred remains and proved, not surprisingly, to be richly organic occupation deposits rather than natural peats. Cornfield weeds were well represented, but 'useful' plants were limited to hazel nutshell and flax seed. As usual there were some wetland taxa. The record for cf. *Onobrychis* is presumably *Coronopus squamatus* (Forskål) Ascherson (as for Sewer Lane, Hull, see below). The silt mainly yielded annual nitrophile weeds and some wetland taxa.

5.7.2.2.20 Middlewich

A single pit fill sample was examined from a site in this town; no information about its provenance can be gleaned from the report other than a number (531, Middlewich EHy). The BS of 10 litres used to carry out a rapid assessment yielded only a 50 cm^3 flot which contained some charred oats (poorly preserved) and unidentified glume-bases, plus oak charcoal and abundant uncharred seeds of three taxa, which seem most likely to be of recent origin.

5.7.2.3 Urban sites of special kinds

5.7.2.3.1 Religious houses

Studies have been made of plant remains from excavations of religious establishments in four urban centres: Beverley, Hull, Newcastle and York though, as might be expected, preservation of remains is generally limited at sites where construction was in stone and well-organised disposal of organic waste seems to have been normal.

Two religious houses in Beverley have been studied: the College of the Vicars Choral (Bedern) in Lurk Lane, and the Dominican Priory in Eastgate. At Lurk Ln 79-82 the deposits associated with the monastery that were examined archaeobotanically were of 15th century date and comprised the fills of a single garderobe pit. The samples were, not surprisingly, rich in food remains, although preservation was sometimes poor in a depositional context where there was much chalk from, for example, the pit linings. There were abundant seeds of fig and strawberry, with smaller amounts of fennel, grape, *Rubus* and *Prunus* species, and traces of apple, dill and coriander. With these were a few weeds (especially weld/dyer's rocket) and maybe a grassland component (?from hay).

On the other side of Beverley Minster from the Lurk Lane site, excavations in Eastgate revealed evidence for the Dominican Priory (Beverley) 86-9. The earliest

deposits associated with the priory were 13th century pit fills and floors in samples of which rather small numbers of plant remains were recorded. They included some wetland taxa (?from thatch or litter), and weeds, but there were no remains which seemed likely to have served as foods. A tank fill of ?14th century date, by contrast, yielded rich assemblages of uncharred material, mainly weeds but with some wetland, grassland and food plants (hazel nut, barley, fig, 'plum' and cherry). The latest deposits examined were floors/levelling of 14th century date; not surprisingly, they contained very few plant remains: a few charred cereals (wheat, barley) and charred/uncharred seeds of weeds.

The single religious house in Hull for which plant remains have been studied is the Augustinian Friary revealed at the **Magistrates Courts (Hull) 94 & 99 EAU 2000/25** site. Here, fills of cuts, graves, coffins, and pits and floor deposits associated with friary (dating to the period *c*. 1316/17-1600 CE) have been examined. Preservation of plant remains was rather localised but there was unusually good preservation of uncharred material from some of the grave fills, including probable straw, hay and peat, some food remains, and even leaves and twigs of box and seeds of hyssop (*Hyssopus officinalis* L.), the last two probably representing ritual use before or during burial (see below). Unfortunately, it seems likely that the 'litter' material was reworked from earlier deposits, good preservation presumably being assured through rapid reburial. There seems little doubt that the remains of box and hyssop are contemporaneous with the burials, however. Other deposits associated with the Friary during its life generally yielded few plant remains. One levelling layer from the North Chapel gave an assemblage with possible evidence for stable manure (although it may, again, represent reworked material) and a variety of indicators (from both plant and insect remains) for aquatic deposition—perhaps reflecting the origin of a component of the sediments used for levelling.

In Newcastle, early (1965) excavations at the Carmelite Friary exposed ?14th century wattle lining a trench beneath some stone buildings—the feature is described as *not* being a reredorter but perhaps functioning as a latrine (**Carmelite Friary (Newcastle) 65**). A sample of wattle (posts and woven rods) proved to consist of alder and birch, whilst a plank and a turned bowl base from the feature were both identified as oak. Fills of the feature—which might have shed light on its function—appear not to have been examined.

In York, medieval deposits were extensively exposed and well-sampled in the area of The Bedern. Here, evidence for the College of the Vicars Choral was recovered during the period 1973-81 via a series of large open-area excavations. Because of the complicated history of excavation, it is perhaps easiest to consider the evidence under four headings, relating to the four main areas of excavation in which medieval deposits were encountered. So far, the archaeobotanical (and other biological) material from only one of these areas (the 'Foundry') has been published, though in a very abbreviated form.

From 'Area X', a large area immediately to the SW of the street known as Bedern, a variety of contexts (38 in all) of 13th-early 15th century date were examined (**Bedern AML 56/93**), mainly pit and gully fills associated with the Vicars Choral College. Notable amongst these was a series of what proved to be latrine pit fills. Indeed, at

this site plant remains were usually only present in quantity in pit fills of 14th-15th century date, where there was good evidence for food in human faecal material, though much of the material had been 'mineralised' in faecal concretions (such concretions were present—usually in large amounts—in nine 14th-15th century contexts). There was an abundance, too, of some seeds of food plants, especially fig and strawberry, with smaller amounts of a variety of others (hazelnut and elder, as well as grape, oats, barley, wheat, summer savory, field bean, linseed). There was also some evidence (more from the insects recorded than from the plant remains!) for the presence of stable manure in some contexts.

On the NE side of Bedern, two areas were opened. From 'Area II' of these excavations (**Bedern AML 58/93**), samples from thirteen late 13th-early 15th century contexts were examined, mostly occupation deposits again associated with the Vicars Choral college and including some pit fills with good organic preservation. The pit fills gave good evidence for foodstuffs (especially fig seeds) but also other fruits (hazel, sloe, blackberry, elder, grape, apple, strawberry, grape) and small amounts of flavourings (coriander, fennel, summer savory, opium poppy), as well as wheat/rye bran and leek (leaf fragments), and these deposits were probably all faecal in origin. The foodplants were accompanied by a range of probable weed taxa. Some, such as cornfield weed seeds, probably arrived with the food—corncockle seed fragments, presumably milled with the grain, were well represented, for example. But there were also some weeds growing in the vicinity, such as weld, nipplewort, docks, nettles and so on. Similarly, in 'Area IV' of these excavations NE of the road (**Bedern AML 57/93**), eight early 13th-early 15th century contexts of various kinds (mainly pit and other fills) were examined, the material again mostly coming from deposits associated with the Vicars Choral College. Plant remains were rather sparse in the samples, though some of the pit fills contained human faecal material, usually with fig seeds present.

The last area of this site complex for which examination of plant remains was undertaken (excavated as Areas I and II, SW of Bedern) came to be known as the 'Bedern Foundry' on account of the evidence for industrial activity—mostly metal-working in the form of casting of copper alloy cauldrons and lead objects (**Bedern 73-6 (Foundry)**). The earliest medieval deposits investigated archaeobotanically here were mid-late 13th century pit fills. All of the three samples examined probably contained some human faecal material: wheat/rye bran was abundant in two of the assemblages and other food remains included fig and strawberry, and there were traces of black mulberry, apple, linseed, ?leek, grape, celery seed and opium poppy, as well as a small peatland component and some grassland taxa, though the last were not as prominent as in some later contexts.

From the early-mid 14th century, samples from two pitfills, a vat fill, a richly organic floor, and a (basal) barrel well fill, were all examined. Faecal material was again present in several assemblages (including the 'floor'!), with fig, strawberry and wheat/rye bran the most abundant food plants recorded, but also pea, field bean, grape, apple, oat bran, and hazelnut and occasional charred oat and barley grains. Other taxa included fennel and tentatively identified parsley (*Petroselinum crispum* (Miller) A. W. Hill), celery and dill seed. Again, there were small peatland and grassland components, especially in the well fill (in which there were abundant

Sphagnum leaves). There was no evidence of food in the well fill. An unusual record for aquilegia or columbine, *Aquilegia* cf. *vulgaris* L., from the backfill of a stone-lined vat, represents a rare example of a possible ornamental or even medicinal plant.

Mid-late 14th century deposits from which plant remains were sought at the 'Foundry' site comprised three pit fills and a silt layer overlying an oven. On the botanical evidence obtained, one pit fill certainly contained faecal material, the other two perhaps containing some, but having a larger proportion of grassland taxa (e.g. from hay or stable manure), whilst the silt layer was almost barren of plant remains. The food plants were principally wheat/rye bran and fig, with ?leek, oat bran, fennel, strawberry, linseed, apple, 'plum', and grape. The record for dyer's greenweed from one of these deposits is perhaps more likely to represent imported cut grassland vegetation than dyeing, given the archaeological context. Unusually, there was no good evidence for peatland taxa.
Five late 14th-early 15th century deposits were examined: two 'organic layers', a pit fill, a clay floor and a ?dump. As might be expected, the pit fill yielded wheat/rye bran and organic concretions, though these are perhaps more likely to represent stable manure than human waste as there was a large component of grassland taxa with traces of peatland, but very few food remains other than the bran (which was not, of course, necessarily from *human* food). Peat fragments were prominent in all the 'organic layers', perhaps from material imported as fuel. The floor was, not surprisingly, barren of plant remains.

The evidence for possible stable manure, and for peat, may be consistent with the need for both materials at this site—the former for tempering the casting moulds, the latter as a source of fuel.

The earliest post-Conquest material sampled during excavations of the Gilbertine Priory of St Andrew in York (**Fishergate (46-54) 85-6 (Priory)**), and dating to the period late 12th-mid 16th centuries, consisted of grave deposits, dumps of soil, floors/levelling, pit fills, and 'soil build-ups'. Although the deposits were extensively sampled and intensively examined, most samples yielded no more than a little charcoal and/or a few weed seeds (there were a very few assemblages with taxa typical of waste places in the vicinity of occupation). Some fen/bog peat was recorded in a few contexts from the middle part of this phase (early-mid 14th century), from a deposit interpreted as a dump formed from the robbing of the lining of a pit or drain.

5.7.2.3.2 Hospitals

A single urban site known or thought to be a hospital has been subject to archaeobotanical scrutiny, albeit only through an excavation of limited extent. At **Lawrence St (148) 93 EAU 94/25**, York, 11th-13th deposits associated with an aisled hall thought to be part of St Nicholas's leper hospital were investigated. Plant remains were very sparse—there was little charred material included some legume seeds, perhaps bush vetch, *Vicia sepium* L., whose significance is difficult to establish in the context of occupation deposits associated with a building of this kind. Rural hospitals are considered below.

5.7.2.3.3 Castles

Material has been investigated from three sites where medieval castles were established, one urban, the others rural (see below). From **Pontefract Castle 82-6** *WYR*, the only case for which the results been published, one context from the 'pre-kitchen area', dated to the 13th-14th century, yielded a single hazel nutshell fragment and some charcoal (though the latter intriguingly included box and box/holly).

5.7.2.3.4 Cemeteries

The only medieval urban cemetery (other than those associated with religious houses) where plant remains have been reported is the Jewish cemetery in Jewbury/Foss Bank (**Jewbury 82-3**), York. The samples, essentially spot finds from burials, were mostly fragments of coffin wood. All of the identifiable wood from the 21 samples was pine, perhaps Scot's pine, *Pinus* cf. *sylvestris*; there were very few other plant remains, including charcoal, of no interpretative value.

5.7.2.4 In the medieval countryside (Figs 10, 11, 12)

We have frustratingly few large assemblages of plant remains from sites of medieval date other than those clearly from urban occupation deposits. The most extensively investigated villages, such as the DMV at Wharram Percy, lie on well-drained sites where preservation is generally limited to charred material, but in any case the ease with which organic waste of all kinds could (it is assumed) be disposed of on the fields surrounding the habitation means that accumulations of uncharred plant remains seem rarely if ever to have formed, in stark contrast to the situation in the densely-occupied towns. Thus most archaeobotanical studies of rural archaeological material can be summarised very briefly. The first group considered here are deserted medieval villages, then rural sites associated with a particular function or activity, such as castles, moated sites, hospitals, and so forth, and finally a group of miscellaneous rural sites.

5.7.2.4.1 Deserted Medieval Villages

Perhaps one of England's best known DMVs, Wharram Percy *NYR*, on the Yorkshire Wolds between Malton and Driffield, was the subject of excavation through regular summer seasons over a period of 40 years. This long period saw the gradual development of planned strategies for the sampling and recovery of plant (and other biological) remains, so it is not surprising that the material considered in the earlier reports is little more than a series of 'spot finds' (some detail is presented here as an example of the scale of the study and the nature of the evidence). Plant remains reported in the first major summary of the work undertaken at this site, **Wharram Percy 53-60** (published long after this phase of excavation, in 1979) were from three samples—a 13th century pitfill, a 14th century charcoal deposit, and a medieval ?hearth fill. The pit fill gave 128 grains of which most were hulled 6-row barley with a few (?bread) wheat and oats. The charcoal deposit contained a few grains (wheat, probably rivet, *Triticum turgidum* L.), 6-row barley, oats and pea. Lastly, the ?hearth deposit gave 200 charred grains, of which 85% were bread or rivet wheat, 14% hulled 6-row barley, and 1% oats, with a few dock, vetch and pea seeds. A further concentration of charred material, this time from a 13th century context (a deposit from an oven or kiln with chalk walls in an area described as a quarry), has been

described in an unpublished report (Wharram Percy AML 2750). Here, six ~8 litre samples were examined, from which 7,224 charred plant 'fragments' were recorded altogether. The grain—mostly very badly preserved—comprised bread wheat, barley, and oats with a few barley rachis fragments suggestive of 2-row hulled barley (*Hordeum distichon* L.) and perhaps also 6-/4-row hulled forms (there were some twisted grains). In addition, one or two ?rye grains were present, as well as many legumes (mainly pea, with one field bean) and a few presumed weeds (*Vicia* and various others). There were also considerable numbers of cereal straw nodes and many culm-bases. This was interpreted—perhaps surprisingly, in view of the straw debris!—as a deposit of fully processed grain, perhaps preserved during drying before storage.

A third report on plant remains from Wharram is a further example (cf. Welton Wold and Goodmanham, above and The Arcade, Ripon) in which silicified material was observed. The material is described as coming from a late 13th/14th century rubbish pit fill, rich in charcoal, from which eight samples were examined (Wharram Percy (silica skeletons)). Silica skeletons of wheat awns, grass culm-nodes and lemma/palea and glume fragments, associated with charred wheat (mostly bread wheat), barley and oats grains and chaff were all recorded; the chaff mainly consisted of rachis internodes of wheat and barley. The cornfield weed corn gromwell, *Buglossoides arvensis* (L.) I. M. Johnston, was present in seven of the samples—the nutlets of this plant (as suggested by its former inclusion in the genus *Lithospermum*) have a hard outer coat impregnated with calcium carbonate and silica, enabling them to survive charring with ease.

The most recent post-Conquest medieval evidence to be published for Wharram Percy comes from the southern manor area (Wharram Percy (S Manor area)) where seven samples—five from a grain drier, and one each from a slot and a ditch—were investigated. As with the Anglian levels from this site, there were low concentrations (though quite high overall counts) of charred grain of wheat, hulled barley and oats, with some peas and traces of hulled barley chaff and a few weeds; again there were traces of heathland material and *Danthonia* (described in the report in terms of imported heather for fuel/thatch). Material from a single 13th century deposit (from one of a series of chalk quarries) included rather high concentrations of wheat, much of it identified (albeit sometimes tentatively) as bread/club wheat, with some barley (including the 2-row form, in contrast to the 6-row material from earlier levels), and quantities of pea seeds.

At Thrislington, near Bishop Middleham, on the S part of the Durham plateau, excavations of a DMV took place in 1973-4, again before the era of intensive sampling. Material of ?13th century date was collected from a small number of negative features (mainly pit fills), and (notably) a 'storage pit' in the solar of the manor house at this site (Thrislington 73-4). About two-thirds of the charred remains from the nine samples from the storage pit were bread wheat, the rest cultivated oats; with these were a few cornfield weeds, notably corn gromwell. There were a few sparse waterlogged remains, too, from what may have been a pit lining. Corn gromwell was also identified (a single seed) from a slot fill, along with a little charred wheat. The fill of a pit in the yard of one of the tofts yielded seeds of marsh cinquefoil,

Potentilla palustris (L.) Scop., in a lime deposit (presumably introduced with water? one wonders if this was actually lake marl).

A third DMV, recently investigated via an evaluation exercise, is at Waterton *NLI*, on the W bank of the Trent, to the NW of Scunthorpe. The deposits sampled included a 13th/14th century pit fill (**Waterton EAU 96/40**), which contained small numbers of very eroded cereal grains (including barley, ?bread wheat, oats) and pulse cotyledons (including pea).

5.7.2.4.2 Castles in the countryside

At **Barnard Castle AML 2928** *DUR*, samples of 14th century moat deposits produced uncharred remains of a mixture of arable and waste ground weeds, grassland, woodland, fen, waterside, and water plants, whilst at **Prudhoe Castle AML 3924** *NHU*, in 12th-13th century material, mainly from hearths, occupation layers, drains, middens and kitchen areas (from which 30 samples, mostly ~1 kg in weight, were examined), only charred material was preserved. Two samples from this latter site yielded modest quantities of remains, with oats the most common in both, but also some bread wheat; rye and barley were also both recorded. The chaff present suggested that the oats were of the cultivated rather than wild species. One sample contained abundant hazel nutshell, but weed seeds were rare, suggesting—perhaps not surprisingly—that cleaned grain was brought to castle. A few emmer/spelt grains (probably the latter) were present, an example of conservatism in the NE regarding this crop.

5.7.2.4.3 Moated sites (other than castles) and manors

Although there is a huge number of medieval and post-medieval moated sites in the region, especially in the Vale of York and Holderness (Le Patourel 1973, has provided a comprehensive catalogue for the pre-1974 county of Yorkshire), excavations of them appear to have been few and investigations of biological remains from those few lamentably limited. Many moat fills are likely at some stage during their formation to have been repositories for material (including plant remains) relating to the lives and activities of the inhabitants of the platform enclosed by the moat, though problems of dating (especially if fills have been mixed through cleaning in the past) must be acknowledged. One site recorded by Le Patourel where plant remains were encountered was at **Rest Park 63** *NYR*, between Sherburn-in-Elmet and Selby, where a spot find of a 'basket' containing plant material was recovered from deposits dated as medieval/post-medieval from the S arm of the inner of two moats. The plant remains in the basket were identified as capsules of flax with seeds (see further regarding retting, below). Unfortunately 'the basket was too decayed for comment' (in the absence of more detail, it might be speculated that this was actually flax stem material in criss-crossing bundles giving the appearance of a woven or plaited object).

Moat fills at **Cowick 76** *EYR*, somewhat to the S of Rest Park, were dated to the period post-CE 1323-?late medieval. The two samples from two contexts in a column yielded a large assemblage of taxa, though most occurred in small numbers, with rather few aquatic and waterside plants but a variety of weeds. Woody taxa were rather well represented (by buds and bud-scale, thorns, and other parts). Traces of

chaff and charred wheat and oat grains were observed, and rare seeds of grape, fig, fennel and various fruitstones of *Prunus*, as well as apple, with some other cultivated plants (box, field bean) being represented by pollen rather than macrofossils (a further discussion of this material is presented by Greig (1986).

A single moated site has been investigated in N Lincolnshire, at **Normanby Park Steelworks EAU 2001/10**. For the initial evaluation exercise, it was mainly deposits from the moat that were examined, but a single sample from the moat platform was also inspected. Plant remains from the moat fills were mostly aquatics and woody taxa representing the vegetation presumed to have been growing in the environs; the 'platform' sample yielded some charred wheat grain and silicified awns (perhaps also of wheat).

Excavations of an important moated site at Wood Hall, near Womersley, at the very southern tip of N Yorkshire, were undertaken for several years in the 1990s and organic preservation was noted on several occasions from the fills of the moat. No detailed published information yet exists, unfortunately. An evaluation report (**Wood Hall SEF 9404**) dealt with material from three contexts of moat fill, the earliest of which was dated to the period between the excavation of the ditch and the mid 15th century. The 5 kg subsample mainly yielded aquatic taxa and weeds; no overtly 'useful' taxa were recorded.

To the W, on the NE outskirts of Leeds, a site at **Manor Farm (Thorner) WYAS 835** yielded samples from 45 deposits associated with a presumed manor. An unusual find was a charred wooden pit-lining of beech (*Fagus*). The 10 litre samples yielded a little charred grain, including specimens identified (from grains!) as *T. durum*, *T. spelta* and *T. monococcum* (these identifications, in the absence of diagnostic chaff, must be considered to be highly suspect).

As part of a developer-funded intervention at **Church Fenton ASUD 823**, between York and Leeds, two moat were fills examined archaeobotanically. The two samples of 5 litres (dried prior to examination!) yielded mainly wetland/marsh taxa with little evidence for waste material.

On the outskirts of the modern city of York, at Rawcliffe Manor, a series of small-scale excavations explored a moated manor site, though plant remains usually proved sparse, even in the waterlain deposits. The earliest excavations (**Rawcliffe Manor 92 EAU 92/11**) provided an opportunity to sample the fills of features associated both with the moated site and a possible fishpond. One fill of the moat cut yielded some aquatics and woodland (hedge?) taxa and there were some charred cereals and a ?field bean or pea from a medieval hearth deposit, but otherwise plant remains were rare. A later intervention (**Rawcliffe Manor 92 EAU 92/16**) explored various feature fills (unfortunately, many were undated though they are likely to be medieval). Again, plant remains were generally extremely sparse or lacking, although a sample from one cut fill (probably a pond or moat deposit) was found to contain aquatics. However, it is likely that some recent material was also present (the stratigraphy was often very shallow). The latest archaeobotanical work at this site (**Rawcliffe Manor EAU 94/08**) was concerned with 14th/15th century occupation deposits associated with the aisled hall on the (?moated) clay platform. Almost no

plant remains were preserved (except for a little charcoal throughout), though there was some very slight and tentative evidence (in the form of uncharred heather and ?*Erica tetralix* leaves and charred moss stems) for imported peat, peatland plants or turf in one sample, which might indicate roofing or fuel.

In the far SE of the region, two sites fall into the 'moated' category, though both are associated with monastic houses and might better be considered under the next heading. At Hall Garth, Beverley, close to the Minster, a sequence of pre-14th century to recent deposits was examined (**Hall Garth 80 EAU 94/60**), though the history of sampling, processing and analysis was somewhat erratic and a detailed account of the plant remains is difficult to construct. Through the sequence of samples of pre-moat deposits (in a ditch) and moat fills there was generally a mixture of aquatics and weeds, with perhaps rather more remains of aquatics in the earliest deposit examined. Flax seeds were also present at this horizon (perhaps from retting). At most levels there were indications that some dumping of rubbish probably occurred.

The other site in SE Yorkshire, **Northgate (7) EAU 99/59**, at Cottingham, near Hull, was examined during an evaluation. Three deposits associated with an Augustinian Priory founded *c*. 1321 were investigated: one moat fill yielded aquatics, wood chips and twigs, and was unusual in producing some fruits of *Geranium* (some tentatively identified as *G. robertianum* L. and others as *G. purpureum* Vill. in L. on the basis of fruit coat characters); this genus is scarcely represented in the fossil record, certainly in the form of uncharred remains, perhaps because the seeds, like those of small legumes, have a rather large food reserve and quickly rot. The fruit walls seem more resistant to decay and in some species are also diagnostic. A deposit interpreted archaeologically as representing dumping into the moat appeared to be ash with only small amounts of plant material, but a pit fill yielded some charred cereal grains, chaff and weeds, perhaps from burnt straw.

At the NW end of the Vale of York, a site at Kirklington, between Masham and Thirsk (**Kirklington DEAR 13/92**) revealed ditches and a platform formed on what may have been a natural mound. Although not dated, it is likely that at least some of the material is medieval. The 'moat' fill appeared to be largely the result of natural accumulation, with remains of trees and shrubs and large numbers of aquatics, especially the horned pondweed, *Zannichellia*. The water was probably static, even stagnant; there was no evidence for the deposition of rubbish (cf. Cowick, above, and Hall Garth, just mentioned).

Three moated sites have been investigated on the lowlands to the N of the Mersey. At a site on the outskirts of the modern city of Liverpool (**Higher Ln (Fazakerley) 94 EAU 96/05**), a sample of mid 11th-late 13th century ?moat fill mainly yielded remains of plants likely to have been weeds, presumably reflecting local conditions or the nature of deposits dumped in the water at the earliest stage of infill. Amongst these were traces of hemp seed, the only crop plant present. Subsequent infill, dated 12th-15th century, continued the pattern in the earlier part with weeds being recorded, but also with some debris from trees or shrubs and a small aquatic component; hemp was again recorded, as well as capsule fragments of flax (were both retted here?).

To the E, near Risley, Warrington *CHE*, three moat fills and two deposits associated with buildings nearby were examined during an assessment exercise (**Old Abbey Farm EAU 96/13**). The moat fills gave good preservation of plant remains and further work was carried out on two of them (**Old Abbey Farm EAU 98/23**; **Old Abbey Farm 95**). These two fills, from a phase dated mid 13th-mid 16th century, provided plant assemblages containing a mixture of wetland and woody and herbaceous terrestrial plants, including quite a wide range of weeds and much wood debris, including some wood chips. Flax seeds and capsule fragments were quite well represented, here perhaps from retting rather than food waste (evidence for which was limited to a modest range of remains of fruits including apple, strawberry and bullace—although all might have been growing wild in the vicinity). Traces of *Sphagnum* remains perhaps arrived with imported peat.

Rather further N in the historic county of Lancashire, a site at **Clayton Hall LUAU**, at Clayton-le-Woods, near Leyland, explored some pond and moat fills, although plant macrofossils were only observed in samples used for pollen analysis. The moat was found—on this basis at least—to lack true aquatics, whilst the pond (not surprisingly) yielded wetland taxa (*Juncus*, *Ranunculus* Subg. *Batrachium* and *Eleocharis*).

Excavation at a moated site in the Pennines at Gargrave, near Skipton *NYR* (**Higher Land 77-81**), revealed various contexts of 13th-14th century date associated with a building surrounded by the moat. Most of the plant remains recovered were spot finds of charcoal, amongst which oak, ash, birch, hazel, and alder were all identified. There was a little grain (bread wheat) from one layer (and ?also pea). A further excavation at this site (**West St (Gargrave) EAU 97/36**) explored the moat fills, *inter alia*, and an assessment of deposits from this feature and its margins gave a little more evidence for charred grain (barley and hexaploid wheat) from an undated, but probably medieval, pit-wall deposit, and some ?bread wheat from a further context of medieval date, though the moat fills were effectively barren of plant remains.

A last site which can probably be considered here is **Oakwell Hall EAU 88/03**, near Birstall *WYR*, where samples from three organic contexts associated with a 15th century sunken timber building were examined. A fairly wide variety of plant remains was recovered, the more abundant being common weeds (stinging nettle, dock and chickweed), but with a diverse range of woody taxa: oak, ash, birch, holly, willow, hazel, and even elm (as bud-scales) were noted; there was remarkably little sign of human activity (other, presumably, than the evidence for weeds). Overall, it bore a great resemblance to other moat or large ditch assemblages of the medieval period.

5.7.2.4.4 Rural monastic houses

Evidence for plant remains from religious houses established in the countryside appear to be even more fugitive than for their urban counterparts: shallow stratigraphy and well-organised waste disposal no doubt account in large measure for the paucity of data. Waterlogged preservation—at least of wood— has been noted at Norton Priory, near Runcorn, Cheshire, where stumps of posts of 12th century buildings, wattle from a ditch of this period, and fragments of wooden coffins from the lay cemetery, as well as wooden vessels of 13th-16th century date have all been reported (Green 1989). It was found that oak had been used for the large

structures and coffins, that the wattle was of hazel and willow ('probably *Salix alba*'), and that the turned wooden bowls were of alder. Charcoal from a bell pit at this site was identified as alder, oak and hazel. Another report relating to material from this house, **Norton Priory AML 1833**, prepared in 1975, was concerned with three spot samples from a drain of *c.*1300 and from a cloister drain of *c.*1500. The somewhat limited extent to which the kind of material encountered was thought to be identifiable at this period is amply illustrated by quoting the report *in extenso*: 'These samples were examined at the Jodrell Laboratory, Royal Botanic Gardens, Kew. They state that it is a compost-like material consisting of partially decayed leaves and other material. Further identification was not attempted.'

Material examined from **Mount Grace Priory 89-92 EAU 94/10**, near Northallerton *NYR*, mostly came from 14th-16th century deposits from the kitchen area of this Carthusian house. Although 35 samples from 10 contexts were bulk-sieved, and a further 10 samples examined via test subsamples of 2 kg, plant remains were limited to charcoal.

At the last site in this category, Furness Abbey, near Barrow-in-Furness *CUM*, a single ?ditch fill context from a sewer trench, probably medieval in date, was examined (**Furness Abbey 88 AML 66/89**). The sample contained well-preserved uncharred material dominated by remains of alder, grasses and nettles; there was no evidence for diet or economy.

5.7.2.4.5 Rural hospitals

One excavation has investigated a hospital in an isolated rural situation. At a site near Brompton-on-Swale, near Richmond *NYR*, at the N end of the Vale of York, late 12th-15th century deposits associated with this establishment were intensively sampled and a large number of samples (197) of 30 litres were bulk-sieved (**Brough St Giles (hospital) 88-90**). The charred material, taken as a whole, was dominated by cereal grains with some chaff and a range of weed seeds as well as some grassland (?turf) taxa and flowers and twigs of heather, as well as a few leaves of gorse in at least two contexts. The grain consisted of about one-third each of oats and bread wheat, with about one-sixth each of rye and unidentifiable specimens, the remainder being barley and undifferentiated wheat. Linseed, field bean and pea were all recorded here, as well as sloe and hazel nutshell. There was no evidence for medicinal plants.

5.7.2.4.6 'Industrial sites'

Several excavations of what might be termed early industrial sites have been undertaken in the region. At **Midtodhill Kiln DEAR 2/92**, near Bewcastle *CUM*, some ?medieval material from a probable post-use deposit consisted of uncharred monocotyledonous plant debris. In the North York Moors, near Rosedale *NYR*, a site with evidence for 14th century iron-working (**Rosedale West 74-7**) yielded some charcoal from all three areas excavated: all of it was identified as oak. The excavation of a 13th century pottery kiln near Durham City (**Bear Park Kiln 96 DEAR 15/96**) revealed a flue deposit from which a bulk sample of 15 litres yielded abundant

charcoal, mostly oak, with some diffuse-porous types, as well as a little coal and even a few charred barley and oat grains.

5.7.2.4.7 Miscellaneous rural sites

It is perhaps easiest here to follow the geographical divisions used for Roman rural sites, above. Starting in the far SE of the region, the first excavation of relevance to this review is from the S part of the former county of Humberside (now NE Lincolnshire), at Healing, near Grimsby (**Healing 95 EAU 95/45**). It yielded pit and ditch fills of 12th-16th century date, but almost no identifiable plant macrofossils were recorded from the small group of samples examined during an evaluation exercise. A further study, **Healing 98 EAU 98/18**, mainly concerned with ditch and gully fills, investigated subsamples of 2 kg from four of the seventeen samples submitted. One context, a primary enclosure ditch fill, yielded remains of some aquatic plants (and aquatic invertebrates), and was evidently essentially waterlain, but with some occupation material too.

To the W, near Scunthorpe, a site at Bottesford, **Baldwin Ave DEAR 5/98** *NLI*, permitted the investigation of the fills of a massive ?medieval ditch; samples of 19 and 23 litres of sediment were bulk-sieved, but plant remains were poorly preserved and sparse in a sediment that had clearly not formed by natural silting, but probably included waste from industrial activity; rather surprisingly, burnt seaweed was present, but there were also remains of wheat, rye, oats and barley, with some weeds, especially stinking mayweed.

On the Holderness claylands N of the Humber, several interventions have encountered medieval rural deposits. On the E fringes of Hull, at the village of Bilton, samples of fills from a ditch and a pit associated with an oven, all of presumed medieval date were examined during an evaluation exercise (**Lime Tree Ln 93 EAU 96/29**). No plant remains were recovered from a large sample examined from the ditch fill, but a small sample from the pit fill proved to be quite rich in charred plant remains, including bread wheat, barley and oats, the last including some cultivated oats; there were also a few field bean seeds and much of finer fraction consisted of chaff, most of which was probably oats. On the N edge of Hull, at sites in Kingswood and Malmo Road, a series of evaluations (and subsequently some larger-scale excavations) were undertaken on low-lying alluvial deposits close to the R Hull. At Malmo Road, plant remains in a medieval construction cut fill (**Malmo Rd EAU 92/01**) were very sparse—only traces of charred cereal grains (bread wheat) and ?pea—whilst a ditch fill (**Malmo Rd EAU 97/38**) yielded only traces of charcoal and a single charred seed.

At the first of two sites in Kingswood, two deposits of medieval date were investigated during the initial evaluation: an ash dump in a ditch and some ?alluvium (**Kingswood EAU 96/55**). There were only traces of charcoal in the ash dump but the ?alluvium gave a little evidence for saltmarsh plants (*Salicornia*, *Triglochin maritima*, *Juncus* cf. *gerardi*), indicating brackish influence (the river is still tidal well upstream of this point). Subsequent work at this site (**Foredyke EAU 98/07**) involved the analysis of a single ditch fill sample of 11th-13th century date from which a characteristic ‘tall-herb’ flora of the ditch side (including an unusual record for hedge

garlic, *Alliaria petiolata* (Bieb.) Cavara & Grande), but also with wood chips, some fen peat, food waste, and hemp achenes, indicating that the ditch was used for dumping. Various fills of a 14th-16th century garderobe were also examined. The fills were mixed deposits with some remains of food from faeces, as well as peatland and wetland materials. A sample from the fill of an 'industrial' pit yielded charred pea and bean seeds.

Further N in Holderness, several medieval rural sites have been explored, usually producing rather modest archaeobotanical results. Thus, for example, At **Church St (Burton Pidsea) EAU 2001/28** *EYR*, at the N end of the Spurn Peninsula, a pit fill yielded only traces of charred bread/club wheat. At Long Riston, to the E of Beverley, four separate interventions have taken place. At **Cooper Farm EAU 99/13** in Main Street, two late 11th-early 13th century ditch fills were investigated. Charred plant remains were sparse, but both deposits seemed to contain some charred peat and this was probably the source for most of the identifiable charred plant remains. Nearby, at **Dancing Ln/Main St ASUD 881**, eight contexts, mainly feature fills, yielded some modest-sized assemblages with charred grain (mainly barley, with bread wheat and oats); two contexts produced field bean. Uncharred heather 'wood' was noted in some quantity in one of the samples, the upper fill of a drainage gully, but there were few other uncharred remains. At a third site, **Main St (Long Riston) PRS 2002/07**, a variety of contexts were investigated: from the late 12th-early 13th century a slot fill and a primary ditch fill; from the 13th-early 14th century phase a ditch/pond fill; and from the 14th-15th century a burnt layer, posthole fill and pit fill. These samples produced a few charred cereal grains with ?pea (in the slot fill), uncharred ?twig epidermis of gorse (in the earlier ditch fill), and some charred bean cotyledons, cereal grains and pea seeds (in the posthole fill). A spot find from beneath a 'cow burial' consisted of compressed uncharred plant fragments which might represent herbivore gut contents or dung (but only a tiny sample was available).

Close to the eastern tip of Flamborough Head, where the chalk of S and E England finally disappears from the terrestrial geology of the country, a site at **Church Farm (Flamborough) EAU 99/16**, provided a medieval floor silt and a feature fill for evaluation. There were only traces of weeds in the floor, and traces of charred cereals and hazel nutshell in the other deposit, together with some modern seeds.

At least three rural sites of medieval date on the Yorkshire Wolds (other than Wharram Percy, considered above) have been excavated. At one site along the **Caythorpe Pipeline** at the E end of the Wolds, a post-hole and some ditch fills produced an assemblage dominated by bread wheat, with some chaff of the same, and traces of barley, oats and rye grain; flax was also recorded and stinking mayweed, perhaps indicative of heavy soils, was moderately common. Not far away, at **West End EAU 99/17**, Kilham, near Driffield, two pit fills and a quarry pit fill yielded between them traces of ?bread/club wheat, ?barley, field bean and ?pea.

To the SE, at **Bishop Burton 93 EAU 93/03**, near Beverley, plant remains from a buried medieval soil and a spread of burnt material sealed by it, were limited to a few fragments of charred hazel nutshell and a little grain, of which only one was identified further (as oats). On the scarp slope of the Wolds, at Bishop Wilton near Pocklington

EYR, four separate evaluations (**Bishop Wilton 93 EAU 93/06**, **Bishop Wilton 93 EAU 93/09**, **Bishop Wilton EAU 2000/43** and **Bishop Wilton EAU 2001/18**) all generated some samples for archaeobotanical study. A sample from a presumed kiln floor deposit from the first intervention yielded three charred ?bread wheat grains, whilst further, late medieval, deposits associated with a kiln from the second proved to be quite rich in roundwood charcoal, and there were also modest numbers of rather poorly preserved charred barley (some part-germinated), with traces of ?oats and ?bread wheat. The three cut fills from the third intervention yielded no remains other than traces of charred grain and one, or perhaps two, field bean seeds. The latest investigation, of a 14th/15th century layer (and another layer, undated, but probably medieval) provided modest numbers of charred cereals, mainly bread/club wheat, with a few barley grains and some oats, as well as traces of pea and bean; the presence of some detached coleoptiles suggests that the grain had begun to sprout, perhaps for malting.

In the SE of the Vale of York, two interventions in Holme-on-Spalding-Moor have yielded some evidence for medieval activity. At **Runner End DEAR 54/98**, some ?14th-15th century ditch and pit fills gave evidence for quantities of burnt peat-like material in one sample, with some charred sedge, dock and ribwort plantain propagules, as well as monocot root/rhizome. Remains of marshy pennywort (*Hydrocotyle vulgaris* L.) might also easily have originated from burnt peat. At **Chapel Farm (rear) PRS 2002/14**, also in Runner End, three 14th-15th century deposits (two fills of a barrel/timber-lined pit and a ditch fill) were examined by means of 3 kg GBA subsamples. The ditch fill assemblage was rather uninformative, but the pit fills had some extremely unusual preservation of plant (and insect) remains amongst what appeared to be recrystallised lime—the remains were uncharred and very pale, presumably 'bleached' by the highly alkaline environment of deposition. One assemblage contained fragments of tree leaves (perhaps oak, buds of which were present), bracken frond fragments, and some weed seeds, all in an excellent state of preservation by waterlogging.

At least some of the material examined from deposits at **Melton (South Lawn) 94** *EYR*, to the W of Hull, appears to be medieval (though it is difficult to divine this from the publication report). Inspection of the species list for material from at least one context (106), in fact, very much supports a medieval date, even without the stratigraphic record, for there are traces of pea and field bean and the wheat remains include modest numbers of bread wheat rachis nodes (and lacks the evidence for spelt seen in Roman deposits at this site—see above). This assemblage also almost entirely lacks any of the taxa which may have been introduced through the burning of turves, evidence for which was present in the material from the earlier period, as at so many other sites of late Iron Age and Romano-British date in the area.

In the central Vale of York, not far from the city of York itself, an evaluation at **Church Ln (Wheldrake) 2001 EAC 35/01** explored 22 fills of pits, post-holes and gullies (15 of which were dated to the medieval period, the rest being post-medieval or undated). The samples (of 3-27 litres) mostly yielded some charred cereal grains, but these were usually sparse and only one sample (from a ?boundary ditch fill) produced more than two grains (other than oats) per litre. Barley, wheat and oats were all present, along with pulses, hazel nutshell and hawthorn pyrenes. Two

assemblages contained ?flax seed, and there was a single tentatively identified barley rachis fragment. A single fill was rich in uncharred elder seeds and some *Rubus* remains.

From a site on what must have been the very far SW fringes of York—or, rather, an outlying village—in the Middle Ages, samples from a medieval ditch fill and layer (plus two other, effectively undated, deposits) were examined during an evaluation in **St Helens Rd 94 EAU 94/31**. There were few plant remains, the largest group coming from an undated pit fill, which included some weed seeds with several seeds of the floating aquatic, duckweed (*Lemna*).

Some 20 km N of York, near Easingwold *NYR*, three samples of fill from a medieval ditch yielded rich assemblages dominated by aquatics and with no evidence for disturbance (**Easingwold By-pass 93 EAU 93/32**). In further material, from various deposits sampled during a watching brief, and from the main excavations (examined as a supplement to those discussed under **EAU 93/32**), plant remains were mostly very sparse or entirely absent, save for a little charcoal, but an assemblage of wetland/aquatic taxa from one sample of unknown context type and date (though probably medieval) contained hemp achenes and seeds and capsule fragments of flax, suggesting an episode of retting (**Easingwold By-pass 93 EAU 94/36**).

In the Vale of Pickering, a site at **Sherburn 99 EAU 2000/06** *NYR* provided a single 12th/13th century ditch fill in which charred herbaceous material, perhaps from turves or peat, was found, together with traces of charred bread/cub wheat grains.

In the N York Moors area, three non-industrial sites of medieval date have furnished plant remains, though in the first case this was only in the form of a little charcoal. From two samples from layers associated with the latest phase of a 13th/14th century oven at edge of village of **Appleton le Moors 94**, and probably of 14th century date, remains of oak, ?ash, and willow/poplar/aspen were all identified. At **Brecks Ln HA**, Pockley, near Helmsley *NYR*, the fill of a single cut rich in charcoal was examined via a 10 litre sample; it yielded wood charcoal and some bread wheat grains, with a little oats, barley and pea, as well as corncockle as a contaminant. Not far away, at **Main St (Spaunton) EAU 97/50**, samples from a ?12th-14th century dump and a medieval pit/well fill were examined; the latter yielded a few charred remains of heather, perhaps not surprising in this area on the southern fringes of the upland, moorland part of the N York Moors.

From the lower reaches of the Yorkshire dales, at a site at **Addingham 71-5 & 89-90**, deposits associated with a feature interpreted as a corn-drying oven cutting were examined. The two samples produced almost nothing but charred grain (though no quantification is given in the published report). The assemblages consisted of up to 80% oats and up to 10% rye, with a little wheat and barley; a total of two arable weed seeds was recovered. Charcoal of hazel, hawthorn [*sic*] and oak was also noted. There was some evidence for the grain having begun to sprout before charring. Because this occurred prior to winnowing (though this is presumably interpreted on the basis of the two weed seeds and the presence of some chaff still attached to the grain!), the author suggested the harvest took place under wet conditions rather than indicating use of sprouted for malting. The charcoal exhibited narrow growth rings,

perhaps another indicator of poor growing conditions in the summers at the time this material was alive.

Further N and W, in the Pennine district proper, a single site has been investigated. For an evaluation undertaken during pipeline work between Aysgarth and Hawes *NYR* (**Aysgarth-Hawes Main DEAR 6/91**), three samples yielded vast numbers of charred bread wheat grains, probably representing deliberate disposal.

In the former county of Cleveland, several excavations of rural medieval sites on the fringes of the Teesside conurbation have been undertaken. Excavation at **Ingleby Barwick**, near Middlesbrough, produced two degraded bread wheat grains from five samples, whilst evidence for plant remains from a medieval farm at **Claxton Quarry DEAR 23/94** comprised charred cereal grains (bread wheat, hulled barley, and oats were dominant), with, intriguingly, some charred seaweed also present. A site at **Low Farm ASUD 696**, Thornton, near Middlesbrough provided two samples from 13th century linear feature fill. Full analysis of the samples was undertaken (though no sample size is given in the report), one sample yielding abundant 'indet.' cereals and bread/club wheat, a few pea seeds, bread wheat rachis, oat grains, and traces of hazel nutshell. The other produced moderate numbers of bread wheat grain and some small legumes.

Not far away, at **Grange Farm (Norton) 93 DEAR 24/94** in the outskirts of Stockton-on-Tees urban area, a large number of bulk samples from post-holes and gullies produced assemblages dominated by bread wheat, but with hulled barley, rye and oats also present—though seed concentration was low (there were less than 40 seeds in total from 48 samples!). Nearby, at **Elton West Garth 91 DEAR 13/93** and **Elton West Garth 91 DEAR 17/94**, on the W outskirts of Stockton, initial investigations of medieval deposits yielded poorly preserved grains of bread wheat and oats with a little barley and rye; later excavations gave well-preserved material of the same taxa (except for rye), with flax and peas/beans; bread wheat chaff was abundant. A site at **Sadberge DEAR 14/93**, between Stockton and Darlington, perhaps exposing part of a small village, was investigated archaeobotanically by means of samples from a pre-15th century ditch fill, a 'medieval' rubbish pit, and another medieval deposit of uncertain kind. The three bulk samples examined contained only low concentrations of poorly preserved bread wheat, spelt, oats, and apple/pear (from the ditch fill) and traces of hulled barley, bread wheat and oats (from the pit fill); there were also a few weeds or chaff fragments and some uncharred material which may have been recent in date.

To the N of the Tees basin, at **Middle Chare 78-9**, Chester-le-Street *DUR*, samples from two contexts representing silting of a ditch were examined (the dating appears not to be better than 'medieval'). The samples yielded two short lists of plant remains, mainly taxa likely to be found in or near a ditch: there were large concentrations of celery-leaved crowfoot achenes in each sample, suggesting nitrification, and—consistent with this—*Bidens* and *Polygonum* spp. were also recorded. There were also some plants likely to have grown in wet and perhaps also dry grassland habitats. Between Durham City and Hetton-le-Hole, a site at **Hallgarth Hall DEAR 45/97**, Pittington, provided an opportunity to examine the fills of some gullies; they produced

only traces of charred material—one grain each of oat and barley—but also some heather charcoal.

Further N, in SE Northumberland, a site at **Chevington Chapel DEAR 1/98** explored deposits from a prehistoric or medieval long kiln, a pit fill, and a ditch fill. There were a few charred and uncharred remains in the samples, the latter almost all from the ditch (a typical ditch group of taxa, but not otherwise very informative); the charred remains included a few grains and gorse debris from the kiln.

On the island of Lindisfarne (Holy Island), close to the Northumberland coast, to the S of Berwick-upon-Tweed, several studies of medieval plant material have been made. Three samples with preliminary dates in the range 11th-15th century and with a total volume of 29.5 litres from midden deposits SW of Holy Island Village (**Lindisfarne Midden 84**) produced small numbers of charred cereal grains (?bread wheat, wheat, barley, and oats) and chaff (bread wheat, barley), a single ?pea, one very tentatively identified field bean, and traces of hazelnut, with remains of a few weeds, grasses, and sedges. In **Marygate 96 DEAR 23/96**, three samples from the fills of a 14th-15th century pit containing human skull fragments mainly yielded charred material. This comprised cereal grains (mostly bread wheat with some oats and barley, and a single ?rye grain) and associated weeds, but there was also some charred seaweed, present as fragments in moderate numbers in two of the samples. The uncharred seeds recorded may have been of recent origin. More recently, at **The Winery 2000 EAC**, samples from six contexts—midden layers and fills of pits—produced small amounts of charred barley, wheat, oats, pulses, sedge nutlets, and ?seaweed variously from subsamples of 10-35 kg. One pit yielded some ?cess concretions. At a site in **St Cuthberts Square 2000 ASUD 665**, seven contexts were examined (though the report available offered no information concerning date—beyond 'medieval'—or type); there were modest-sized assemblages of uncharred remains, and a few charred ones, in some contexts (with a recommendation for further analysis). One last site, **The Palace 2000 EAC 17/01**, led to the evaluation of 28 fills of pits, postholes, and other features, as well as some 'layers', of medieval and later date, using BS samples of 4-26 litres There was perhaps some charred material originating from peat in one medieval pit/posthole fill (?heather was recorded from it), and there were small amounts of charred grain and occasional legume seeds. In all, 12 contexts yielded some ?seaweed, perhaps not surprising on a small island like this!

A single 'published' site in the NW of England falls in this category: **Kirkby Thore 83**, between Appleby and Penrith *CUM*, where two medieval contexts, a ploughsoil and a deposit from hollow way (in which both medieval and Roman pottery were recorded), were investigated by means of a total of 50 litres of sediment. There were moderate amounts of charred barley and oat grains, with some other charred grain and weed seeds in the ploughsoil; the sample from the other deposit was almost barren. More recently, an evaluation at **Rickerby House HA**, on the outskirts of Carlisle, produced some fills of medieval features, mainly ditches and some pits, and two deposits associated with a kiln. The 25 BS samples of 10 litres yielded some well-preserved charcoal, cereal grains and hazel nutshell (the last of these in only one sample). The pit fill and kiln deposits, in particular, yielded charcoal and grain; the cereals recorded were bread/club wheat, oats, barley and rye, with some seeds of wild legumes. One

context contained abundant oat florets though the species concerned was not indicated.

5.7.2.5 Summary and future prospects

The medieval period is rather well served archaeobotanically in N England, though with a bias towards evidence from urban centres, reflecting the greater accumulation of deposits with high concentrations of remains, whether charred or not, where human settlement is densest and opportunities for disposal of waste presumably less efficient. Towns E of the Pennines are once again rather better known than those to the W and one wonders if there have not been some missed opportunities in, for example, Chester, Liverpool and Manchester to explore their medieval levels more thoroughly because the provision of archaeobotanical expertise has tended to lie on the eastern side of the region. The case of York is also instructive: despite the intensive excavation and archaeobotanical post-excavation work in the city over a period of more than 30 years, the corpus of data for the post-Conquest medieval period is still small, energies having been so far expended perhaps disproportionately on the rich Anglo-Scandinavian and Roman deposits (reflected also in the limited extent to which the results of excavation of medieval deposits have been published). Carlisle has a similarly biased record, but in favour of Roman deposits. One priority would seem to be the drawing together of the corpus of unpublished material, especially for the urban centres of York and Beverley—whilst opportunities to explore comparanda from other towns, especially those W of the Pennines should not be missed. In the countryside, any well-dated medieval material is worthy of archaeobotanical consideration, especially where there is preservation by waterlogging.

5.8 The post-medieval period (1540-1900 CE)

5.8.1 Material dated across the medieval/post-medieval boundary

As for previous sections, there is a body of material whose dating is too broad to be placed in either medieval or post-medieval periods (the boundary between which is, in any case, not unequivocally agreed and which can only rather rarely be divined from reports). For the present purpose, all deposits dated across the end of the 15th century are considered here, except for some cases from religious houses where the material concerned *clearly pre-dates dissolution* and has been considered above. The same general classification of sites is used here as for the medieval period proper.

5.8.1.1 Urban secular sites

5.8.1.1.1 Doncaster

Deposits from excavations at a site in Low Fisher Gate (**North Bridge 93-4 EAU 97/16**) dated to the period 15th-16th century were mainly the fills of one enormous cut, plus some ?flood silts reworked as garden soils, and floors in buildings. Most samples yielded only a few remains—often just a few of the more decay-resistant types—but some of the fills of the very large pit were rich in plant macrofossils,

especially vegetative material of gorse and heather, and in one sample uncharred saw-sedge leaf fragments, perhaps most likely to represent thatching material. Another fill of this cut was rich in willow twigs with a flora which may have originated in hedge or riverbank vegetation. This material is considered further by Kenward *et al.* 2004).

5.8.1.1.2 Huddersfield

A single intervention in the centre of this West Riding industrial town, at **Venn St (land off) WYAS 801** explored late medieval to post-medieval deposits from 29 contexts; the 35 samples of up to 30 litres bulk-sieved showed six contexts to have waterlogged preservation, so smaller samples of 250 cm^3 were sieved to 0.3 mm. The deposits yielded modest-sized assemblages of uncharred remains—mixed weeds, grassland, and some wetland taxa—which the report's authors suggest represent vegetation *in situ* or washed/blown into features, with no very clear suggestion of dumped material. There appear to have been no 'useful' plants and the material was not, apparently, litter from stable manure (insects were present but not assessed). However, the assemblages stand as an extremely rare find of material from this part of the region and indicate the need to bear the possibility of preservation of plant (and other biological) remains when interventions are planned and executed.

5.8.1.1.3 Hull

At **Sewer Ln 74**, eight fill contexts from one large pit were dated to the period 15th-mid 16th century. Most of the plant taxa recorded were weeds and grassland plants, the latter rather more prominent (representing hay and/or manure?) with seeds of common daisy (*Bellis perennis* L.*)* and carrot unusually frequent, although at low concentrations. There was perhaps a small saltmarsh component which may also relate to cut vegetation or manure (though the site was very close to the Humber estuary). Apart from some records for fig, foodplants were sparse; there were unusual records for pot marigold (*Calendula officinalis*), perhaps a pot-herb, and vervain (*Verbena officinalis* L.), perhaps a medicinal herb, though both might easily have been part of the ruderal flora of an occupation site of this kind. Nearby, in **Queen St (Hull) 76**, two floor deposits of late 15th-16th century date were examined, though only material from paraffin 'flots' was reported. The two assemblages were rich in rush seeds, with some fig and weeds in one of them.

Not far from this site, in **Blanket Row EAU 2001/12**, late 15th-16th century ashy deposits including floor silts yielded few plant remains, whilst close by at **Castle St (Blanket Row) EAU 99/12**, deposits from late 15th/16th century pit or gully fills included least two pit fills (perhaps from the same pit) containing material thought to be stable manure, whilst another assemblage yielded remains of greater celandine (*Chelidonium majus* L.) and feverfew (*Tanacetum parthenium* (L.) Schultz Bip.), two plants perhaps in use medicinally in the area at some stage, and another pit fill had some food waste including fig and blackberry.

On the E side of the R Hull, in the area occupied by the citadel of Henry VIII, an excavation at **Citadel Way EAU 2001/37** investigated a mid 15th-late 17th century

?buried surface. Overall the plant remains were consistent with what might be expected to have formed through the burial of, for example, weedy pasture or grassy waste ground vegetation.

5.8.1.1.4 Beverley

One deposit whose dating spans the medieval/post-medieval boundary has been examined at **South Beckside 2000 EAU 2000/15**; the 14th-17th century 'organic layer' contained peat and peat-derived material, as for the earlier deposits at this site.

5.8.1.1.5 York

Within the heart of the city, at **Bedern 73-6 (Foundry)**, four late 15th-early 17th century pit fills and a dump were examined. Three of the pit fills seem to have contained human faecal material and the fourth may well also have done; only one assemblage was of any size, and this gave a variety of foodplants, including abundant fig and blackberry, with some coriander, fennel, strawberry, 'plum', raspberry, and grape. It also contained abundant *Sphagnum* leaves (from toilet tissue?). The dump deposit had a low organic content and almost no identifiable plant remains. In **St Andrewgate 93 EAU 93/02**, nearby, an evaluation revealed a 15th/16th century deposit which may have been a floor. The sample from it contained a few uncharred plant remains including a rather odd mixture of hemp seed, *Sphagnum* leaves, and holly leaf epidermis, together with charred oat grains and uncharred seeds of a few cornfield weeds.

Close to the edge of the King's Pool, at a site in **Palmer Ln 92 EAU 92/05**, one of the borehole samples investigated was dated as a ?late medieval/early post-medieval dump in the Pool. The flora mainly comprised waste ground weeds, with a trace of fig and (again) abundant *Sphagnum* leaves (of which some were the raised-bog species *S. imbricatum*). Further pond silts (here dated to the 14th-16th century) were encountered at **Piccadilly (38) EAU 92/09**. With the usual aquatic flora were traces of flax capsule fragments and perhaps also stem material of flax (and in one sample also some tentatively identified teasel bracts), and a variety of weeds. Most samples gave a small grassland component which may have originated in occupation debris, although the possibility that there were areas of grassland around the King's Pool cannot be ignored. At the S end of the area thought to have been occupied by the King's Pool, just N of the eastern of the two castles in York, deposits interpreted as representing activity after the infilling of the moat, and dated late 14th-early 16th century, were investigated (**Tower St (1-2) (York) EAU 95/35**). Samples from a cut fill and two pit fills were subjected to archaeobotanical assessment, but there were only traces of plant remains, amongst them foods in the form of hazelnut, charred oat, barley and bread wheat and two wetland taxa.

A single site in the Walmgate area has produced material dated across the medieval/post-medieval period. At **Walmgate (41-9) EAU 2001/26** a samples from a late medieval/early post-medieval interior floor yielded many rush seeds, probably mostly *Juncus inflexus/effusus/conglomeratus* and some other wetland, perhaps representing strewn vegetation on the floor.

On the SW side of the Ouse, in Skeldergate, various late medieval/early post-medieval occupation deposits from trenches and borehole sequences yielded only sparse plant remains, though one borehole sample contained a few weeds as well as two charred wheat grains and a ?flax seed fragment **(**Skeldergate (47-51) EAU 96/18).

5.8.1.1.6 Knaresborough

A number of deposits of late medieval/early post-medieval date from an excavation at Knaresborough Bus Station WYAS 892 were examined, using samples of 1-5 litres: four garden soils, a gully fill and a ?natural subsoil. They yielded only one fragment of charred cereal chaff, a few charred weed seeds, and a little charcoal.

5.8.1.1.7 Bridlington

Three deposits investigated from a site in North Back Ln EAU 2001/52 comprised a medieval/early post-medieval fill and a fill and a dump that were not really dated; there were small amounts of poorly preserved charred grains in all three deposits.

5.8.1.1.8 Gateshead

At a site in Bottle Bank DEAR 35/98 a pit fill of late medieval/early modern date with good waterlogged preservation was examined; there were seed fragments of corncockle, seeds and capsule fragments of flax, and some weeds.

5.8.1.1.9 Newcastle

Accumulation continued along the riverside through the late 15th and early 16th centuries, though at Queen Street no material was dated to this transitional period. For the Crown Court 85-6 site, 15th-16th century material came from spreads, and from cut and hearth fills. Not surprisingly, there was a much smaller range of taxa than in the earlier, often organic, deposits, and many of the remains that were recovered had been charred. Oat grains were frequent, as were uncharred seeds of elder. There were also some grains of bread wheat and a trace of hulled barley and rye, but otherwise only a small group of weed taxa. Two other contexts, one from inside a room, the other a clay dump, and dated broadly to the mid 15th-late 17th centuries, yielded only a few of the more decay-resistant types; fig and elder seeds and charred oat grains were all recorded.

At Close Gate 88-9, deposits dated 15th-early 17th century were interpreted archaeologically as general build-up, perhaps both dumping onto and cultivation of garden or allotment plots. One group of three samples contained only elder seeds, probably indicating differential preservation, but the remainder were species-rich, with taxa indicating disturbed and cultivated soil—mainly ruderal and segetal weeds. There was little evidence of the coarse organic debris often associated with dumping. Remains of hemp, fig, strawberry, blackberry, and linseed were all recorded, and notably also the culinary and medicinal herb and ornamental plant hyssop (*Hyssopus officinalis*).

5.8.1.1.10 Berwick-upon-Tweed

Some of the material from **New Quay 96** may be dated from the earliest part of the post-medieval period; see above for a discussion of this site.

5.8.1.1.11 Chester

At **Bridge St (Chester) PRS 2002/16**, samples from 21 contexts of late 15th-mid 17th century date, comprising various fills of pits (the majority, probably all from garderobes), drains, and a ?cellar, were investigated, all via BS samples of 5-100 litres. Four samples were selected for re-examination after the assessment. The more frequent plant remains were seeds of fig (in two-thirds of the assemblages) and other probable food remains included blackberry, raspberry, hazel nut, and grape. Strawberry was rather frequent in one of the assemblages rich in fig seeds (from one of the garderobe pit fills), but the range of foods represented was still quite limited: other taxa, usually only found in small amounts in one or two samples, included linseed, apple, and sloe; there was also a single record of charred field bean remains.

The other prominent component of the assemblages from deposits of this phase was a variety of remains of gorse (*Ulex*, perhaps all *U. europaeus* L.). The parts recorded were charred (and partly-charred) flower-buds, charred, uncharred and mineral-replaced leaves (i.e. spines), and charred pods and twig fragments. Clearly, dried flowering stems of gorse were being used at this time, most probably as fuel, the uncharred and mineral-replaced material presumably representing that which had not been burnt prior to deposition in the pit concerned. Remains of gorse were most abundant in one of the garderobe fills, and recorded from two of the other fills of this feature, but were also found in the fill of another pit and the fill of a further cut whose probable function was not established. Other plant remains in these deposits were a mixture of weeds of various kinds, perhaps largely arriving with cereal crops or straw, or growing in the vicinity of the deposits as they formed, but none was ever present in more than small amounts.

5.8.1.2 Urban monasteries

Material dated broadly to the period from the late 14th to the 16th centuries at the Gilbertine Priory of St Andrew in York (**Fishergate (46-54) 85-6 (Priory)**) came from the fills of a well and from some pits, a variety of layers, and one late grave fill. As for previous phases, sampling was extensive and some quite a large number of samples (37) was examined, but very few plant remains other than charcoal and traces of charred cereal grains were recovered. For a few contexts, peat fragments were recorded, presumably largely reworked from earlier deposits. The well fills gave modest-sized assemblages of weed taxa (mostly ruderals, but also a few segetals).

Excavations in the Bedern/Aldwark area of York have produced some sampled deposits dated across the medieval/post-medieval boundary. From all three areas of 'The Bedern' (**Bedern AML 56/93**, **Bedern AML 57/93**, and **Bedern AML 58/93**) deposits dated to the period mid 15th-early 17th century were distinguished. From

'Area X', 24 samples from 13 contexts of various kinds yielded traces of plant foods (fig, coriander, strawberry, fennel, hazelnut, apple, 'plum', and grape, with a few charred cereal grains and a trace of bran), but otherwise mainly weed seeds and a few (mainly damp) grassland taxa. Faecal material was also present in some of the four contexts of this date from 'Area IV', with concretions being recorded, as well as seeds of fig and strawberry, and some wheat/rye bran. From 'Area II', few remains were recorded from the three contexts relevant here, though there was again evidently some food originating in faeces: fig, fennel, apple and grape were all present, together with a very limited range of weed seeds.

5.8.1.3 Castles

The report on biological remains from 15th-16th century kitchen drain fills at **Barnard Castle 76-8** *DUR*, though an early example of an integrated report, actually yielded a rather small assemblage of plant remains for the size of sample (94 kg) sieved. There were moderate numbers of charred oat grains and some bread wheat but otherwise only traces of pea and one or two weeds, and some charcoal of hazel, oak and ash. None of this material is *actually* likely to be directly from food eaten by the inhabitants of the castle, though it no doubt represents aspects of food preparation.

5.8.1.4 Moated sites

Samples from deposits dated across the medieval/post-medieval boundary have been examined from two moated sites in Merseyside. At **Higher Ln (Fazakerley) 94 EAU 96/05**, on the NE outskirts of Liverpool, a sample from a 15th-17th century context from a sequence of silts interpreted as the fills of a moat or similar was found to contain primarily aquatic and marsh flora with very few weeds, though still a trace of hempseed (as in earlier levels, see above). At **Speke Hall 81-2**, close to the N bank of the Mersey, to the S of Liverpool, late 15th/early 16th century moat fills were quite intensively studied (14 x 1 kg samples in a column were examined for plant remains and insects, and a sequence of subsamples from the same deposits was subjected to pollen analysis). There were fairly rich assemblages of aquatics and weeds with a few seeds of fig in the upper parts; remains in the basal, more richly organic, levels were more overtly aquatic in origin.

5.8.1.5 Rural sites

Several occupation sites in the region which cannot be assigned to any of the other rural categories have provided material of this cross-boundary date. The most southerly site on the eastern side of the region, at **Hellaby Hall 96 HA** near Maltby *SYR*, provided material from the fill of a single feature, probably a kiln, of medieval/post-medieval date. A total of 11 samples were 'floated' and they yielded charred cereal grain and charcoal interpreted as backfill. The composition varied through the deposit, but wheat, oats, and rye were all represented, along with a few weeds. At **Waterton EAU 96/40**, on the W bank of the Trent NW of Scunthorpe *NLI*, a sample from a 15th/16th century ditch fill gave a flora including weeds with hemp and teasel (though the latter was not identified beyond *Dipsacus sativus/fullonum*).

In the SE part of the Vale of York, at a site between Howden and Selby **(**Barmby on the-Marsh PRS 2001/02), a silt overlying natural sand, and a channel/hollow fill, both of pre-occupation (i.e. pre-14th-16th century) date and a 14th-16th century floor silt were investigated. The pre-occupation silt yielded some charred cereal grains and rush seed capsules (there was clearly some occupation prior to the site in question!) whilst the fill produced abundant stinging nettle achenes plus some hemp and flax (perhaps suggesting an episode of retting). There was also some material of *Sphagnum imbricatum*, presumably from imported peat, but otherwise the assemblage was typical of deposits interpreted as ponds or ditches, with a variety of debris from trees. The sample of floor deposit contained with no useful plant remains.

Somewhat to the north, at Bolton Hall EAU 2002/04 *EYR*, a sample from the fills of a presumed meander of the local watercourse, the Spittal Beck, gave a calibrated radiocarbon date of CE 1440-1640 (Beta-161363). The lower deposits of the sequence contained a natural wetland flora, whilst one upper fill seemingly contained something like bonfire ash to judge from the charred material present.

A site at the northern end of the Vale of York, at **Masham 96 DEAR 34/97** revealed 16th century/post-medieval deposits exposed in pipe trenches; three small samples yielded a few remains including a little charred grain—bread wheat, barley, and also peas.

At a site in Holy Island Village 77 *NHU*, material dated as late medieval/early post-medieval included small numbers of charred and uncharred seeds with traces of cereals, some of uncharred perhaps being intrusive.

One last site, Askham Bog, is of quite different character, yet offers evidence for human activity in a rural setting across the late-medieval/post-medieval period. This regionally, if not nationally, important nature reserve to the SW of York is a tiny surviving fragment of wetland (mainly alder-, birch- and oak-dominated fen woodland). Within the uppermost metre of peat in more than one location on the bog, hemp achenes have been recorded (Askham Bog 78 (hemp)**;** Askham Bog 78 (macros)). From one station, where they were present in abundance in a layer also rich in the moss *Scorpidium scorpioides*, with some *Sphagnum*, an AMS date on the seeds was obtained of 1445-1630 cal. CE (OxA-6974 and OxA-6975; Bronk Ramsey *et al*. 2000, 476). The hempseed is presumably a result of retting at the site—where the cutting of peat (something which perhaps began as early as the 2nd century CE, cf. Hall and Kenward, 1990) had removed the uppermost raised-bog peat, dominated by *Sphagnum*, and created areas of shallow open water which *S. scorpioides* could colonise and in which bundles of hemp might readily be retted. Corroborative evidence for the presence of open water and disturbance at this stage is offered by records of seeds of duckweed (*Lemna*), alternate-leaved water-milfoil (*Myriophyllum alternifolium*), fat-hen (*Chenopodium album*) and celery-leaved crowfort (*Ranunculus sceleratus*), all of which were only recorded at this level in the sequence.

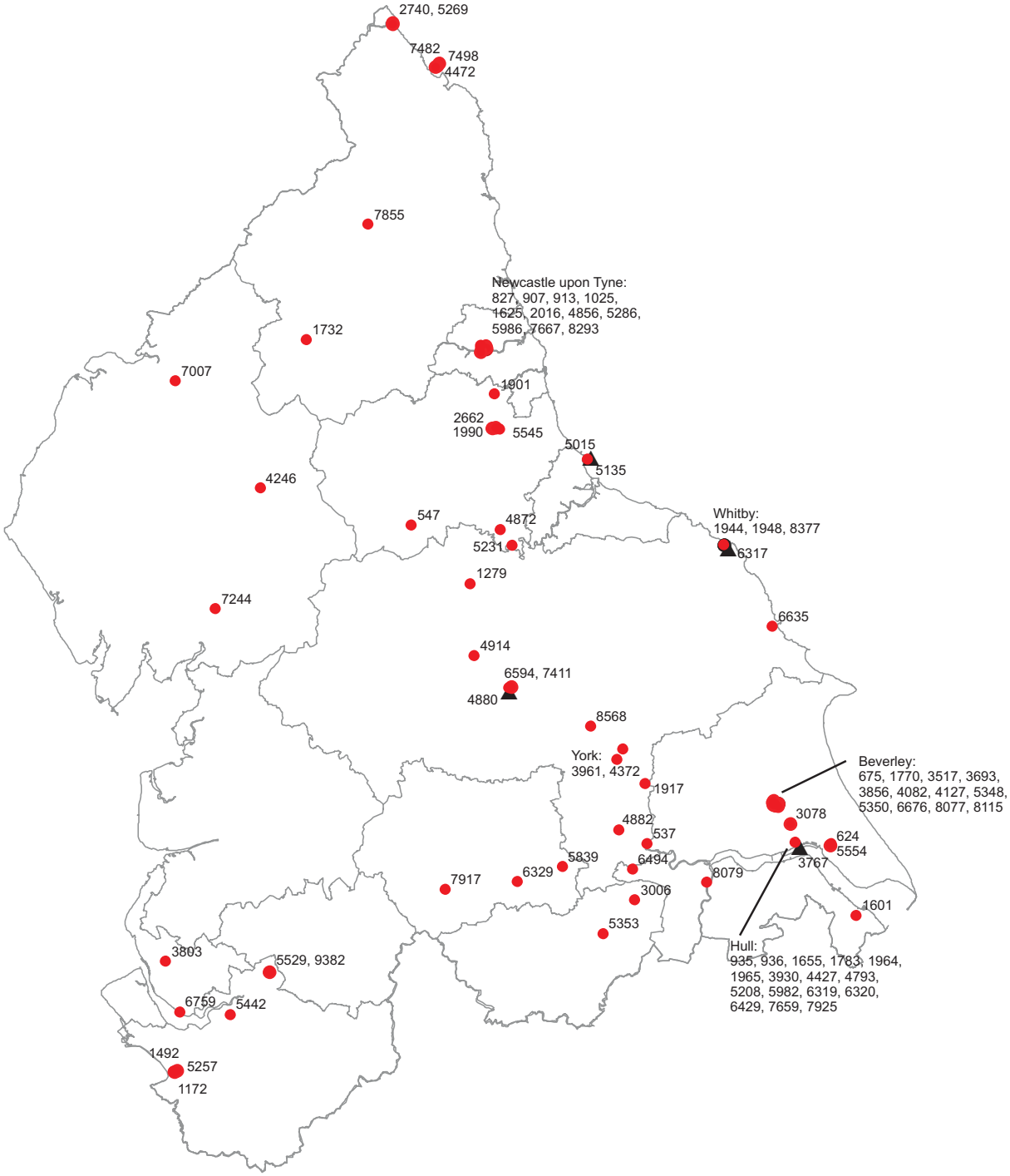

Fig 13: Sites with archaeobotanical studies of material of post-medieval date (tentatively dated cases marked with black triangle) referred to in the text and for which reliable grid references could be found

Key: 143—Adams Hydraulics I EAU 90/01; 144—Adams Hydraulics II EAU 91/12; 181—Aldwark (36) 83 AML 59/89; 191—Aldwark (adj 1-5) EAU 88/05; 239—Alnwick Castle Gardens ASUD 681 537—Barmby on the Marsh PRS 2001/02; 624—Baxtergate (16) (Hedon) EAU 2001/29; 675—Beckside North PRS; 2002/06; 681—Bedern 73-6 (Foundry); 692—Bedern AML 56/93; 693—Bedern AML 57/93; 694—Bedern AML 58/93; 827—Binns Store DEAR 12/98; 907—Blackgate AML 2392; 913—Blackgate DEAR 41/94; 935—Blanket Row EAU 2001/12; 936—Blanket Row EAU 97/18; 952—Blossom St (14-20) EAU 91/18;

1025—Bottle Bank LUAU; 1172—Bridge St (Chester) PRS 2002/16; 1279—Brough St Giles (hospital) 88-90; 1492—Canalside/Witter Pl PRS 2001/06; 1557—Carmelite St EAU 91/15; 1601—Cartergate 94 EAU 94/22; 1625—Castle Ditch (Newcastle) 74-6; 1655—Castle St (Blanket Row) EAU 99/12; 1732—Causeway House; 1770—Champney Rd 93 EAU 93/01; 1783—Chapel Lane Staithe 2000; 1901—Church Chare 90-1; 1917—Church Ln (Wheldrake) 2001 EAC 35/01; 1944—Church St (Whitby) ASUD 709; 1948—Church St Carpark (Whitby) ASUD 709; 1964—Citadel Way EAU 2001/37; 1965—Citadel Way PRS 2001/03; 1990—Claypath 99 ASUD 636; 2016—Close Gate 88-9; 2433—Davygate (British Gas) EAU 97/51; 2662—Durham Prison DEAR 22/97; 2740—Eastern Ln DEAR 52/97; 3006—Fishlake Village ASUD 748; 3078—Foredyke EAU 98/07; 3359—Grape Ln (8) (York) EAU 94/13; 3517—Hall Garth 80 EAU 94/60; 3693—Hengate EAU 96/57; 3767—High St (37) (Hull) EAU 94/49; 3803—Higher Ln (Fazakerley) 94 EAU 96/05; 3856—Holme Church Ln EAU 96/43; 3930—Citadel Moat (South Barracks) EAU 97/22; 3950—Hungate area EAU 2000/29; 3961—Huntington South Moor EAU 2000/48; 4082—Jack Taylor Ln EAU 98/10; 4127—Keldgate (by 52) EAU 2001/35; 4246—Kirkby Thore 83; 4372—Lawrence St (D C Cook) EAU 2001/40; 4427—Liberty Ln 99 EAU 99/57; 4472—Lindisfarne Midden 84; 4539—Little Stonegate (9) EAU 98/27; 4793—Magistrates Courts (Hull) 94 EAU 95/17; 4856—Mansion House 90; 4872—Market Pl (Darlington) DEAR 14/95; 4880—Market Pl (Ripon) ASUD 793; 4882—Market Pl (Selby) 97; 4914—Masham 96 DEAR 34/97; 4977—Merchant Adventurers Hall EAU 96/01; 4978—Merchant Adventurers Hall EAU 96/44; 5015—Middlegate 87 AML 86/88; 5135—Morrison Hall 87 AML 52/90; 5208—Mytongate 75; 5231—Neasham Abbey DEAR 14/97; 5257—New Crane St PRS 2002/08; 5269—New Quay 96; 5286—Newcastle Bastion 76-81; 5326—Norman Court 95 EAU 95/21; 5348—North Bar Within 95 EAU 95/54; 5350—North Beckside 93 EAU 93/05; 5353—North Bridge 93-4 EAU 97/16; 5442—Norton (Cheshire) 74-6; 5529—Old Abbey Farm EAU 96/13; 5545—Old Durham Gardens 89-92; 5554—Old Hall (Hedon) EAU 96/22; 5665—Palmer Ln 92 EAU 92/05; 5788—Piccadilly (38) EAU 92/09; 5792—Piccadilly (58-60) EAU 2000/23; 5839—Pontefract Castle 82-6; 5982—Queen St (Hull) 76; 5986—Queen St (Newcastle) 84-5; 6317—Saltwick EAU 92/25; 6319—Sammys Point EAU 97/21; 6320—Sammys Point EAU 98/25; 6329—Sandal Castle 64-73; 6429—Sewer Ln 74; 6494—Ship Inn (rear) EAU 99/18; 6594—Skellgarths EAU 2001/24; 6635—Snowdrift Laundry DEAR 39/94; 6676—South Beckside 2000 EAU 2000/15; 6759—Speke Hall 81-2; 6823—St Andrewgate 93 EAU 93/02; 6824—St Andrewgate PRS 2002/12; 7007—St Nicholas Yard 96-7; 7034—St Saviourgate (9) 95 EAU 98/14; 7244—Stricklandgate 87-8 AML 65/89; 7411—Market Pl (8/9 & 10) (The Arcade) EAU 2000/59; 7482—The Palace 2000 EAC 17/01; 7498—The Winery 2000 EAC; 7658—Tower St (1-2) (York) EAU 95/35; 7659—Tower St (Hull) 95 EAU 95/37; 7667—Town Ditch (Newcastle) 86-7; 7855—Upper Redesdale 80-1 (Loaning Burn); 7917—Venn St (land off) WYAS 801; 7925—Vicar Ln 75; 7998—Walmgate (118-26) AML 60/89; 8003—Walmgate (41-9) PRS 2002/26; 8077—Waterside Rd EAU 2001/21; 8079—Waterton EAU 96/40; 8115—Well Ln (9-17) 98 EAU 99/04; 8293—Westgate Rd 91; 8377—Whitehall Shipyard EAU 2001/46; 8568—Wood Hall SEF 9404; 9382—Old Abbey Farm 95

5.8.2 The post-medieval period proper (Fig 13)

5.8.2.1 Urban sites

Almost all post-medieval archaeobotanical studies have been conducted on material from excavations in towns. The sequence adopted here is, again, geographical, following an ‘anticlockwise’ route from the SE of the region.

5.8.2.1.1 Grimsby

The latest sampled deposits at **Cartergate 94 EAU 94/22** in the old town at Grimsby were single fills of a well and a pit of 16th/17th century date. The pit fill contained few plant remains but the well fill yielded fragments of hemp seeds, with fig, bran, and apple, as well as evidence for hay and straw; the presence of both sea arrowgrass and sea aster fruits points to the presence of saltmarsh material, perhaps in dung, though the site is not far from the muddy NE Lincolnshire coast.

Further material from another site in Grimsby was also rich in uncharred remains: a well fill from a site, archaeological details of which remain obscure, produced some unusual taxa, notably some achenes of chicory (*Cichorium intybus* L.), as well as a (now rare) cornfield weed lamb's succory (*Arnoseris minima* (L.) Schweigger & Koerte).

5.8.2.1.2 Doncaster

The latest deposits from which plant remains were examined, from excavations in Low Fisher Gate (**North Bridge 93-4 EAU 97/16**), were all fills of cuts (in one case, of a well). Most of the 15 samples investigated yielded no more than a few weed seeds, though a deposit forming a 'slump' layer above the huge pit assigned to the preceding phase (see above) gave a larger assemblage, including fig, strawberry, and hemp, but all in trace amounts. The well fill yielded some ?hay/straw material (perhaps from stable manure), along with grape, fig and wheat/rye 'bran', perhaps from human faeces.

5.8.2.1.3 Hull

The first post-medieval material to be examined archaeobotanically from Hull was from investigations at Queen Street and **Sewer Lane 74**. At the latter site, the earliest deposits examined (dated to the 16th century) were all fills of a pit. Prominent amongst the assemblages recorded was a component of grassland taxa, perhaps from hay or manure, with many seeds of carrot and buttercups, a small saltmarsh component (perhaps also grazing/cut vegetation), and a small peatland group, with both bog rosemary and cotton-grass, presumably from ancient peat. The weed taxa included quite a few annuals typical of soils with nutrient enrichment, which were perhaps from a dung-heap, if these deposits included manure.

The fills of another pit were dated to the late 16th-17th century; they contained many well-preserved remains but no very clear indication of the nature of the fills; weeds and grassland taxa were the most prevalent types. There was a little wheat/rye bran and records for fig from many samples which may indicate some food (?faeces), but the evidence was not strong; a trace of peatland material was recorded, as for the earlier material in this phase. It should be noted that the records for sweet cicely (*Myrrhis odorata* (L.) Scop.) published for the post-medieval phases at site are in error; they have been redetermined (by ARH) as the cornfield weed shepherd's needle (*Scandix pecten-veneris* L.). Another species incorrectly identified in this material (and from a few of the earlier deposits at this site) was sainfoin, *Onobrychis*—on re-inspection of the remains, the fossils attributed to this plant were found to be fruits of swine-cress, *Coronopus squamatus*.

For the **Queen St (Hull) 76** site, the mid-17th century fills of a garderobe pit in the city gaol were investigated. Six samples were examined, though most of the material was from the 'flots' from paraffin flotation for recovery of insects and cannot be seen as an unbiased subsample. Only moderate quantities of food remains were recorded from these samples—'plum' stones (measurements of a selection are presented in the report), walnut, fig, strawberry, wheat/rye 'bran', and grape—with *Sphagnum* leaves consistently present (from toilet wipes?).

The post-medieval deposits at the **Magistrates Court (Hull) 94 EAU 95/17** site (only examined during an assessment exercise) were 17th century fills of pits and wells, and a deposit associated with an oven. Preservation was mostly poor, though there was some possible evidence for hay, straw and peat. From the 18th-20th century levels, fills of pits and wells and some internal deposits were investigated. Very few plant remains were preserved, though again there was perhaps some peat in two of the well fills and perhaps hay also in one of them.

Several archaeological evaluations in Hull have provided some further samples of post-medieval date for archaeobotanical study. Close to the last site, between Market Place and High Street, at **Liberty Ln 99 EAU 99/57**, 16th-18th century fills of a culvert and a barrel well were investigated. A sample from the first was found to contain no plant remains, whilst the second gave some evidence interpreted tentatively as indicating stable manure (though this was not supported by the insect fauna). At **Blanket Row EAU 97/18**, close to the riverside at the southern end the area of the old town of Hull, a single sample of the fill from a barrel-lined pit of 18th century or later date was examined. Amongst the some woody debris with hazel nutshell there was a modest range of weeds and ?wet grassland taxa, and food in the form of fig and grape seeds. A later phase of excavation at the same site (**Blanket Row EAU 2001/12**) yielded a 17th century pit fill with straw/hay and woodworking debris, perhaps stable manure, amongst which ?dill and opium poppy seeds were recorded. At another excavation in this area, **Castle St (Blanket Row) EAU 99/12**, one open ground/buildup deposit of 17th/18th century date provided an assemblage which perhaps contained stable manure (with wood fragments, straw, and appropriate fruits and seeds and other remains representing mixed litter).

Not far away, on the E side of the R Hull, in the area of the fortifications of Henry VIII, at a site at **Sammys Point EAU 97/21**, material from six 17th-19th century contexts associated with the citadel works and a later ?earth closet was examined. There were some food remains in the 18th/19th century ?earth closet fills, including ?tomato (*Lycopersicon esculentum* Miiler), as well as grape, coriander, and ?bilberry, with some evidence for mineral replacement. A further intervention in the vicinity (**Citadel Moat (South Barracks) EAU 97/22**) provided material from four assorted deposits associated with the citadel. There were a few weeds and aquatics from a moat fill of early post-medieval date. For a further site at **Sammys Point EAU 98/25**, four pre-1681 (but still post-medieval) deposits were examined. Traces of charred wheat grains and a few fruitstones were recovered from one sample, another yielding remains of some ruderal weeds and *Sphagnum* leaves. From deposits dated *c* 1681, from the time of the construction of the citadel, a further six contexts were examined. The samples variously yielded small assemblages of plant remains, one containing

weeds and wetland and bog taxa (the last presumably from imported peat), another with some ?saltmarsh, but mainly ruderals. There were traces of food remains, but altogether these were rather unusual mixtures with some evidence for peat and dumping of hay-like material. A last investigation in this area, at **Citadel Way PRS 2001/03** explored 16th and 17th century buried turflines and a moat fill. There were some quite rich weed assemblages in one of the turfline deposits, suggesting neglected weedy land; another turfline deposit yielded some brackish- and freshwater taxa and a single fig seed, as well as some saltmarsh snails, perhaps not surprising in a deposit forming so close to the tidal Rivers Humber and Hull. In the same area, at **Tower St (Hull) 95 EAU 95/37**, some ditch fill, drain fill, and occupation deposits of 17th century to modern date were investigated. The samples were effectively barren of interpretatively useful plant remains, though traces of hemp achenes were noted from two ?18th century occupation/dump deposits.

5.8.2.1.4 Hedon

The single post-medieval sample examined from excavations at **Old Hall (Hedon) EAU 96/22**, from a supposed cess pit fill, proved barren of plant remains.

5.8.2.1.5 Beverley

The latest deposits at the the site of the **Dominican Priory (Beverley) 86-9** from which plant remains were examined were the fills of a latrine/conduit dated to the 16th century (though the fills may span a longer period). There was a modest-sized range of plants in the four bulk samples examined, including some fig and elder seeds, perhaps from food, with a range of plants from a variety of habitats giving little direct evidence for use the of the conduit; it was certainly not rich in food remains. Evidence for food remains may also have been recovered from the fills of a 16th/17th century garderobe pit at **North Beckside 93 EAU 93/05**, where one of the fills certainly contained some wheat/rye bran, although the presence of straw-like debris in another of the fills indicates other waste was being discarded. Further strawy debris were found in a sample from a slot fill of the same phase at this site.

Not far from Beckside North, a site in **Jack Taylor Ln EAU 98/10** provided a 16th-18th century deposit that was clearly waterlain on the basis of biological remains, but it included dumped material from occupation and, in particular, evidence for textile working (limited numbers of flax capsules and seeds, accompanied by a single fruit of the fuller's teasel, *Dipsacus sativus*), and indications of faecal material (from eggs of intestinal parasites and a restricted range of food remains, comprising moderate amounts of wheat/rye bran, apple endocarp and rare broken *Rubus* sp. seeds).

Across the Beverley Beck, in **South Beckside 2000 EAU 2000/15**, a single 19th century ditch fill yielded evidence for peat, cornfield weeds probably from straw, and bran, a kind of mixed litter that might well have started life as stable manure.

As in the case of the medieval period, deposits of post-medieval date which were effectively barren of useful plant remains have been examined at several sites in Beverley: we can cite **Holme Church Ln EAU 96/43**, **Hengate EAU 96/57**,

Landress Ln EAU 96/25, North Bar Within 95 EAU 95/54 and Waterside Rd EAU 2001/21.

5.8.2.1.6 York (Fig 14)

Within the city walls, excavations in the Aldwark/Bedern area have provided several opportunities to study post-medieval plant remains, though the range of taxa and remains preserved has usually been very limited.

At Aldwark (adj 1-5) EAU 88/05, early 16th-17th century deposits from three contexts—the fill of a square well construction cut, a presumed fill of the well itself, and a pit fill containing much ash, bone and charcoal—were investigated. The pit fill clearly contained faeces, though they formed only a small proportion of the surviving material; with the small range of foods present were fragments of *Sphagnum* moss, perhaps from 'toilet tissue'. A spot find of fen peat from the construction shaft of the well was identified, but the well fill was almost devoid of plant remains—the deposit, mainly of rubble, was presumably a deliberate backfill rather than use-phase build-up. Late 16th-17th century fills from one of a series of parallel trenches at this site were also studied. One fill yielded a small flora, including some weeds and traces of wetland plants, and including further *Sphagnum* leaves, but overall the results obtained were not interpretatively useful.

Nearby, at Aldwark (36) 83 AML 59/89, a drain fill and two deposits associated with a wooden floor were tentatively assigned to the post-medieval period. Small numbers of uncharred plant remains typical of urban occupation deposits were present, but were of little interpretative value; amongst them were some wetland taxa, including possible saw-sedge (*Cladium*) leaf fragments (represented by epidermis fragments with a distinctive papillose character) which may have originated in material used for roofs.

From excavations in The Bedern, samples of deposits dated mid 17th century or later were examined from all three areas. Two samples from a single pit fill from 'Area X' (Bedern AML 56/93) yielded a few remains including fig and linseed, but no interpretatively very useful assemblages, whilst from 'Area IV' (Bedern AML 57/93), there were small numbers of remains (from drain fills and a pit fill), including a few weeds likely to have grown locally in the vicinity of buildings, but again too few to be useful for interpretation. From 'Area II' (Bedern AML 58/93), the single pit fill of this date investigated produced traces of fig, faecal concretions, and charcoal. In nearby St Andrewgate 93 EAU 93/02, a 16th/17th-18th century ?build-up examined as part of an evaluation proved to be barren of plant remains.

A little to the south of the Aldwark-Bedern area, at a site in St Saviourgate (9) 95 EAU 98/14, four samples from early post-medieval pit fills were examined. One contained a rich food assemblage with leek leaf fragments, and remains of bilberry, apple, and strawberry, another yielded bran and linseed, the third mainly yielded bran with mineral-replaced *Erica tetralix* leaves (presumably from peat or imported heathland vegetation) and the fourth bran, but also wood chips and sloes, apple, fig and leek.

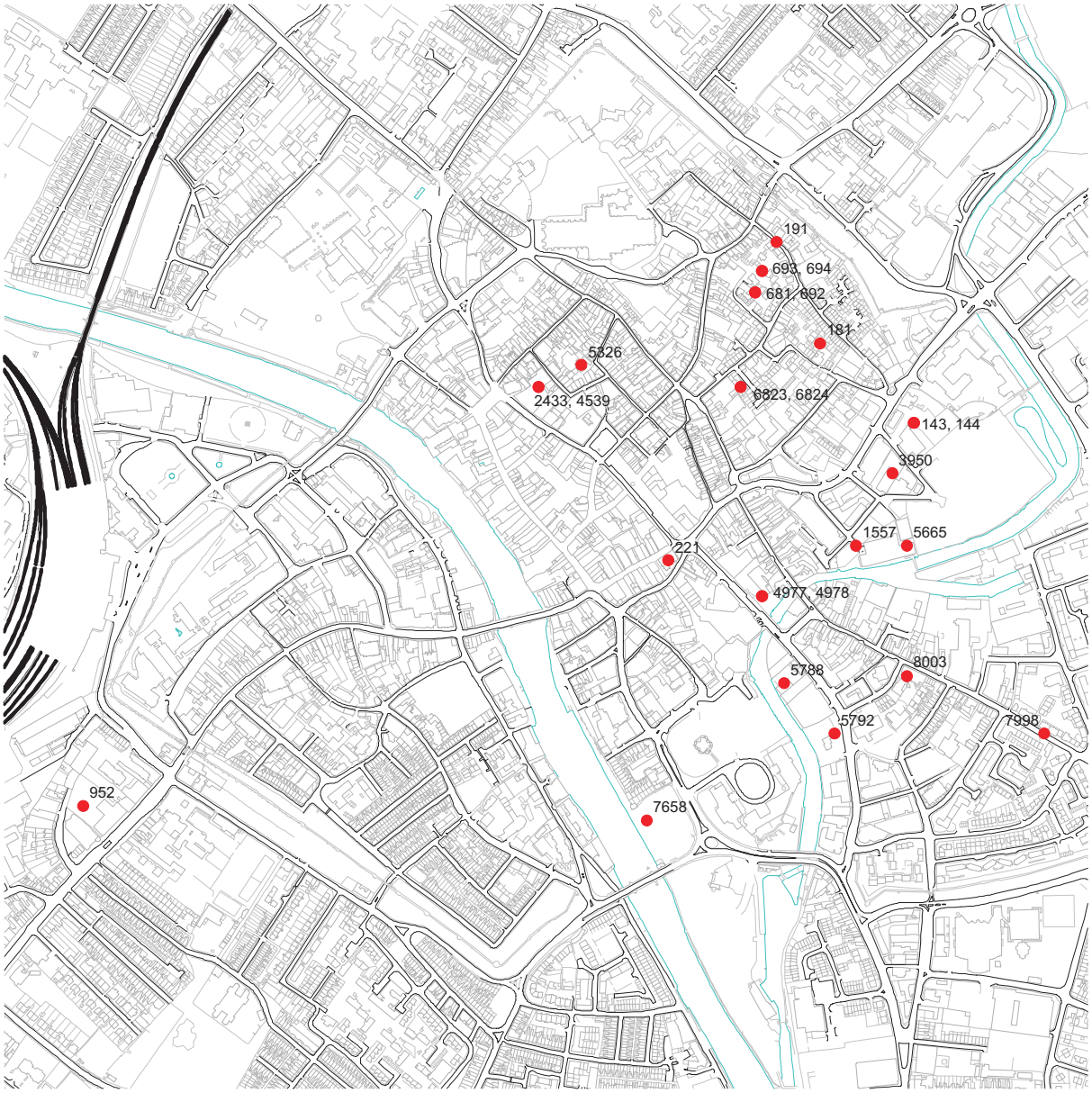

Fig 14: Sites with archaeobotanical studies of material of post-medieval date in York referred to in the text and for which reliable grid references could be found

Key: 143—Adams Hydraulics I EAU 90/01; 144—Adams Hydraulics II EAU 91/12; 181—Aldwark (36) 83 AML 59/89; 191—Aldwark (adj 1-5) EAU 88/05; 221—All Saints (York) EAU 96/47; 681—Bedern 73-6 (Foundry); 692—Bedern AML 56/93; 693—Bedern AML 57/93; 694—Bedern AML 58/93; 952—Blossom St (14-20) EAU 91/18; 1557—Carmelite St EAU 91/15; 2433—Davygate (British Gas) EAU 97/51; 3950—Hungate area EAU 2000/29; 4539—Little Stonegate (9) EAU 98/27; 4977—Merchant Adventurers Hall EAU 96/01; 4978—Merchant Adventurers Hall EAU 96/44; 5326—Norman Court 95 EAU 95/21; 5665—Palmer Ln 92 EAU 92/05; 5788—Piccadilly (38) EAU 92/09; 5792—Piccadilly (58-60) EAU 2000/23; 6823—St Andrewgate 93 EAU 93/02; 6824—St Andrewgate PRS 2002/12; 7998—Walmgate (118-26) AML 60/89; 8003—Walmgate (41-9) PRS 2002/26

In the SE corner of the city, in Walmgate, post-medieval deposits were observed at a two sites, the first being **Walmgate (118-26) AML 60/89**. From the 16th-18th century levels, samples from seven pit fills, some at least from clay-lined pits in which abundant sheep metapodials (thought to be associated with parchment making) were recovered, yielded very few plant remains—no more than a handful of taxa in total across the samples, and none offering much interpretative information. Only sedge nutlets and elderberry seeds (neither of much significance) were recorded from more than half the samples. Material from pit and trench fills, and a possible floor of 19th-20th century date also produced very few identifiable plant remains, and only elder seeds were present in more than one sample; the remains are likely to be either the last preserved remains of larger assemblages or, perhaps more likely, material casually and randomly preserved as the deposits formed. On the opposite side of Walmgate and a little closer to the city centre, post-medieval deposits investigated at **Walmgate (41-9) EAU 2001/26** comprised an ash rake-off layer in a building, perhaps associated with a hearth, but only wood charcoal was recorded.

The upper parts of the archaeological sequences at sites along the margins of the R Foss (or the, by now presumably largely infilled, King's Pool) have usually provided at least a small number of samples of post-medieval date for examination though, as elsewhere, they have usually contained few, if any, remains. Following the same order as before, in a sequence running downstream, the first site to be considered is at **Layerthorpe Bridge EAU 2000/64**, where material from six early modern (19th century) contexts, mainly interpreted as river silts, were examined during an assessment exercise. Those samples with good preservation yielded abundant aquatic and waterside taxa, such as yellow water-lily, *Nuphar lutea* (L.) Sibth. & Sm.—which still grows in the river at this point today—together with bur-reed, *Sparganium*, and fine-leaved water-dropwort, *Oenanthe aquatica* (L.) Poiret in Lam.), representing the flora of the river and its margins at this late date. One sample was dominated by nitrophile weeds and also yielded some vegetative fragments which may have been from flax stems, together with flax capsule fragments (perhaps from reworking of medieval material, or an indication that the provisional dating of some of these deposits was incorrect).

At the nearby **Adams Hydraulics II EAU 91/12** site, the 17th and 18th century deposits encountered were almost barren of plant remains (there were a few weed seeds in one 18th century ?agricultural soil), whilst at **Carmelite St EAU 91/15**, four 16th century dump deposits yielded some rich assemblages of well-preserved plant remains, a mixture of weed seeds and occupation debris; amongst these were fuller's teasel fruits, box leaves, bracken frond, seeds of grape, fig, and strawberry, uncharred cereal chaff and some tentatively identified madder root fragments. From excavations at the **Merchant Adventurers Hall EAU 96/01**, plant remains were limited to charcoal in the three samples examined (from a late 16th/17th century levelling dump, a 17th century dump and an early 17th century ?occupation deposit), whilst subsequent examination of further material from this site (**Merchant Adventurers Hall EAU 96/44**) failed to produce more than a single elderberry seed from two samples from a 17th/18th century levelling/dump deposit.

A little further 'downstream', at **Piccadilly (38) EAU 92/09**, plant remains from a dump on a layer of wicker (itself perhaps part of a revetment) and a ?hearth/fire

residue, both dated 16th-17th century, were examined during another evaluation. The sample from the dump was rich in weeds and grassland taxa with fig, hemp and some rare taxa of phytogeographical interest (dwarf spurge, *Euphorbia exigua* L. and small-flowered catchfly, *Silene gallica*). A sample of the wickerwork and its matrix was found to contain abundant uncharred gorse (*Ulex*) shoot fragments and other brushwood (oak, alder, and willow twigs and buds were all present). The strongly (purplish)-coloured ?hearth deposit was surprisingly rich in uncharred plant material: weeds and grassland taxa, as well as abundant gorse fragments (with a little of it charred in this case)—if it was a hearth, clearly the surviving fill did not consist entirely of burnt fuel, though gorse would seem to have been one material used for this purpose (discussed further below). In the absence of a larger-scale excavation and a clearer understanding of the stratigraphy it is difficult to place these results in a more interpretatively useful context, though it is evident that good preservation of plant material of this date is to be found in this part of the city.

Further along this street (**Piccadilly (58-60) EAU 2000/23**), and downstream again of the last site, two post-medieval levelling deposits were investigated. One yielded some remains of aquatics, the other charcoal and a single charred wheat grain. There was vertebrate evidence from this site for some tentatively identified tanners' waste in the form of abundant horncores, but—perhaps not surprisingly—this was not reflected in the plant remains.

Towards the far S end of Piccadilly, a fill from each of two 19th century drains (one wooden, one ceramic) and some other 19th century deposits (containing redeposited 13th century material) were examined (**Piccadilly (84) EAU 91/16**). A sample from the fill of the wooden drain contained few plant remains—traces of pine wood fragments and ?yew leaves were noted—though there were abundant valves of the small freshwater bivalve, *Pisidium* (cf. Kenward forthcoming). Material from the fill of the ceramic drain included a few weeds amongst which there were unexpected remains of achenes of hop. 'Mixed' material lying between a clay dump and the pond silts yielded a moderately large assemblage of weeds, with more hop and traces of some taxa indicative of nutrient-enriched wet mud, whilst the clay dump, the uppermost deposit examined, was found to be barren.

At the last site to be considered for this part of York, to the N of the eastern of the two medieval castles (**Tower St (1-2) (York) EAU 95/35**), deposits were investigated which had formed in the area of the putative castle ditch—but presumably long after it had become infilled. The contexts examined included three pit/soakaway fills and a drain fill; no plant remains other than charcoal were recorded from the samples examined, however.

Deposits of mid 16th century date were encountered on the site of the Gilbertine Priory of St Andrew at Fishergate (**Fishergate (46-54) 85-6 (Priory)**). Contexts associated with the demise of the priory, including demolition deposits, and dumps of domestic waste and waste soil, were examined on quite a large scale, but very few plant remains were recorded; one demolition deposit probably contained some (?reworked) faecal material (the evidence for which was mineralised plant food remains).

A single site SW of the R Ouse has provided post-medieval material; at **Skeldergate (64-74) EAU 2000/53** a single pit fill contained some mineral-replaced remains, but also including 'waterlogged' seeds of fig and some wheat/rye bran and evidently represents waste which included faeces.

In the environs of the city of York, a single deposit of post-medieval date has been examined—a depression backfill examined from **Huntington South Moor EAU 2000/48** yielded fine burnt and unburnt amorphous fragments (to 4 mm) which seemed to be peat or mor humus (the peat-like material accumulating on heathland), ?burnt soil, and traces of uncharred toad rush seeds.

5.8.2.1.7 Ripon

A modest-sized group of samples (15) from contexts at **Market Pl (Ripon) ASUD 793**, apparently mainly feature fills, are assumed to be post-medieval. Samples of 3-5 litres were 'floated', most yielding traces of charred grain, though some samples contained some assemblages of uncharred remains. One contained some seeds of weeds and wetland taxa, and another five had similar but somewhat smaller groups.

5.8.2.1.8 Scarborough

The only post-medieval material from Scarborough examined archaeobotanically was a single sample (and some wood) from a possible tanning pit at the **Snowdrift Laundry DEAR 39/94** site. The plank lining was of conifer wood, typical for this later period, whilst the fills only yielded bark and wood, including oak.

5.8.2.1.9 Whitby

Three evaluations have been undertaken in recent years in Whitby in which plant remains from post-medieval deposits have been examined. At two sites in Church Street (**Church St (Whitby) ASUD 709** and **Church St carpark (Whitby) ASUD 709**) on the eastern bank of the Esk, beneath the oldest part of the town, two series of reclamation dumps (and in the case of the former site also intercalated alluvium layers) were investigated. Altogether, nearly 40 samples were processed and they yielded some moderately rich uncharred assemblages with a variety of weeds, wetland and woody taxa consistent with dumping, with more 'dilute' groups in the alluvium layers. Charred remains were sparse—mainly grain (oat, bread wheat), but also a trace of bread wheat rachis; one sample from the 'car park' area was noted as being rich in oats.

Further along Church Street, in Spital Bridge, work at **Whitehall Shipyard EAU 2001/46** explored three 18th-19th century contexts: a pit fill, a feature fill and a backfill. There was good evidence for woodworking in form of chips, wood fragments and ?sawdust in two samples, one also containing some uncharred seaweed (hardly surprising in a shipyard by a tidal river!), but also traces of heather and gorse; the third sample was effectively barren.

5.8.2.1.10 Darlington

At the single site where an archaeobotanical study has been undertaken in Darlington (**Market Pl (Darlington) DEAR 14/95**), some 18th century pit fills were found to exhibit very little survival of plant material: only small amounts of charred bread wheat and oats (both grains and chaff) were recorded during an evaluation. It was felt that the pits were probably used for dumping domestic ash. Although recommended, full analysis was never undertaken.

From a hearth and associated burnt floor areas at **Neasham Abbey DEAR 14/97**, on the outskirts of Darlington, three samples were bulk-sieved: two were barren, but one sample yielded fragments of baked clay/daub with impressions of plant material, including monocot stems/leaves (including rushes) and chickweed seeds. The 'daub' may well have come from the fabric of the hearth.

5.8.2.1.11 Durham City

Post-medieval material from the city of Durham has been examined at four sites. At one of these, assemblages comprised remains of some possible ornamental plants from 18th/19th century deposits from some formal gardens (**Old Durham Gardens 89-92**). Seeds identified to the genera *Lychnis*, *Dianthus*, *Hypericum*, *Rubus*, *Stachys* and *Lamium* might all have originated in plants deliberately grown in the garden. With these were seeds of some ruderals and many elderberry seeds. There was also a single charred bread wheat grain of uncertain age. At a site at **Durham Prison DEAR 22/97**, a refuse layer under a cobbled surface, itself under 18th-19th century rubble, yielded a few charred seeds (bread wheat, 2-row barley, rye) and a few uncharred remains, especially seeds of blackberry. At **Claypath 99 ASUD 636**, two deposits of 16th-17th century date produced remains of grape and 'damson' (though the report does not give sufficient detail to judge how rich in uncharred material the 'best' samples were).

5.8.2.1.12 Chester-le-Street

Two samples of 60 litres of material from ?17th century fills of a pit at a site in **Church Chare 90-1** produced a few charred remains, including cereal grains, but one sample also yielded some waterlogged remains indicating faecal material, including occasional fragments of cereal bran and a single fig seed.

5.8.2.1.13 Newcastle

Excavations of post-medieval deposits in Newcastle have centred on the Civil War defences (usually generating only rather small amounts of useful archaeobotanical information), though some material of the earliest post-medieval period has also been investigated (e.g. at the **Castle Ditch (Newcastle) 74-6**, where some records of walnut shell, apparently from bulk samples from mid-16th century deposits, were made). Deposits of 17th century date from defensive ditches have been studied at **Blackgate AML 2392** (a moat deposit containing much ash yielded a small assemblage, of plant remains, mainly weeds), whilst elsewhere in the same area (**Blackgate DEAR 41/94**) infill from the bastion ditch dated to the second half of the 17th century included some quite richly organic sediments, though with low seed

concentrations (there were some weeds and charred cereals); however, the 'light' organic fraction from one sample nearly all consisted of unidentified moss and monocotyledonous fragments. At another site, Town Ditch (Newcastle) 86-7, 17th century ditch fills gave an assemblage mainly of weeds with no clear indications of human activity, whilst at Newcastle Bastion 76-81, a single 17th century ditch fill sample was examined from deposits thought to include night soil. The seeds present were predominantly from ruderals and wet grassland; there was a single blackberry pip! Fragments of conifer wood (pine, spruce) at this site are an early example of imported softwoods—these gradually become more frequent through the early post-medieval period and are almost always recorded amongst samples of wood of 17th century and later date. Thus at two sites in Black Gate (Blackgate AML 2393 and Black Gate DEAR 7/91), wood in the form of artefacts or unworked fragments included pine, quite likely to have been imported.

Perhaps the most extensive and closely dated investigation of Newcastle's post-medieval archaeology was the material from Westgate Rd 91, where 79 samples of ditch fills of 1640-1680 were examined. Preservation of plant remains was poor but some charred and uncharred material was recorded; oats were commonest amongst the charred cereals, with some 6-row barley and wheat, at least some of the latter being identified further as bread wheat. A single rye grain was recorded. The uncharred material included seeds of fig, grape, blackberry, elderberry and strawberry, probably from faecal material.

Away from the defences, in Close Gate 88-9, 17th-mid 18th century build-up near the riverside was found to be species-poor: there were only five taxa in the sample examined. These included elder and blackberry, with single seeds of fig and strawberry, whilst material from Queen St (Newcastle) 84-5 dated to the late 16th-mid 17th century from a series of three contexts of build-up or make-up on a street (Broad Garth), examined by means of three bulk samples totalling 45 litres, yielded only 10 taxa, again mostly rather decay-resistant forms and including hazel nutshell, weld/dyer's rocket, and charred bread wheat.

5.8.2.1.14 Kendal

The excavation at Stricklandgate 87-8 AML 65/89 afforded an opportunity to examine plant remains from an 18th century hearth fill. The single sample of uncharred material was dominated by hop (*Humulus lupulus*) achenes, with large numbers of seeds of arable weeds, remains of hazel nutshell, and some grassland taxa. The hops seemed likely to represent a residue from brewing. Some of the taxa were thought as likely to have originated as cultivated plants in gardens as from 'the wild'.

5.8.2.1.15 Chester

Three sites investigated in recent years have provided post-medieval material in Chester. At Bridge St (Chester) PRS 2002/16, in the heart of the city, nine contexts for which samples were examined, almost all of them fills of pits, were dated to the 17th century, with a further two 17th/early-mid 18th century. The BS samples of widely varying size (0.1-60 litres) yielded some plant food assemblages, though

preservation was mostly not very good. Fig seeds were abundant and there were some seeds of blackberry, raspberry, and grape, and traces of strawberry and apple. As for the material dated to the late 15th-mid 17th centuries discussed above, there were remains of gorse, here charred spines and twigs, especially in some garderobe/cess pit fills (but clearly not voided with faeces!). Charred cereals included bread/club wheat, oats and a trace of barley. One sample contained some fragments of box leaves. Overall, the deposits were rich in coal and cinders. Material dated to the early-mid 18th century came from 23 contexts, again almost all fills of various pits. The BS samples (of 5-80 litres) yielded a rather wide range of taxa, both charred and uncharred, in deposits otherwise rich in coal and cinders. As for the previous phase, there was some evidence for food, especially fig, blackberry, and grape, as well as charred cereals (mainly oats with some bread/club wheat, and barley, including specimens exhibiting sprouting). The list included some unusual taxa, such as the cornfield weed *Silene gallica* and a tentatively identified seed of purslane, *Portulaca oleracea* L., a non-native plant perhaps used as salad greens. One deposit yielded a large concentration of hop fruits, of which some had been 'mineralised'; these seem very likely to represent waste from brewing (as at Kendal). The latest material from this excavation was dated to the late 18th and 19th-20th centuries. Bulk-sieved samples of 5-100 litres from a total of 21 contexts (the fills of various features and some other deposits) yielded some more quite rich food assemblages with fig, blackberry, grape, and traces of strawberry, but also some tomato seeds in a feature fill; charred and uncharred gorse remains were also recovered, together with some heather; the single ?*Datura* from this phase is of interest as a plant perhaps originating, as in the case of tomato, in the Americas.

Another site, **Canalside/Witter Pl PRS 2001/06** at the eastern edge of the medieval town investigated the ?upcast from an 18th century canal and the fills of an 18th century feature tentatively interpreted as a tanning pit. The first of these yielded no useful remains, but the pit fills certainly contained some 'sclereids' from bark, consistent with an origin in material used in vegetable tanning, though they were not abundant.

At **New Crane St PRS 2002/08**, on the opposite side of the old city, a deposit from a sondage dated simply as 'post-medieval/early modern' was investigated. There was a mixture of grassland, peatland, saltmarsh, wetland, and cornfield taxa, with some flax seeds and capsule fragments, uncharred rachis of free-threshing wheat and ?rye, the whole perhaps representing stable manure.

5.8.2.2 Moated sites

Excavations at four moated sites provided some post-medieval deposits for archaeobotanical scrutiny. At **Sandal Castle 64-73**, in Wakefield, the samples of mainly 16th century sediments came from moat fills, a ?buried soil, and garderobe fills. Preservation was variable: plant macrofossils in the garderobe fills were too poorly preserved to be of much interpretative value, but richer assemblages were obtained from 'peat' in the moat fills, and included a range of woodland/woodland edge taxa (perhaps relating to disuse), as well as a few aquatics/aquatic-marginals.

Two samples of post-medieval (mid 17th and late 18th century) date were examined from the upper parts of the moat fills at **Wood Hall SEF 9404**, near the southernmost tip of N Yorkshire. Apart from a single charred pea seed and one ?fig seed, the plant remains were essentially weeds and aquatics. The record of a single fruit of the exotic umbellifer large-flowered orlaya, *Orlaya grandiflora* (L.) Hoffm., if correctly identified, is apparently new to the British fossil flora.

Much the largest assemblages for a site of this type and date were from the upper parts of the fills of a moat at **Old Abbey Farm 95**, Risley, near Warrington *CHE*. Material from three contexts of late 17th to early 18th century date continued to include the same kinds of evidence seen in the underlying deposits of mid 13th to mid 16th century date (see above), with abundant wood debris present, perhaps including some chips. There was a wide range of plant remains of various kinds as so often in these kinds of 'ditch' deposits: weeds (both those likely to be growing locally and others probably arriving with straw), wetland and grassland taxa, and also traces of heather (capsules and seeds), and some cotton-grass remains (especially rhizome fragments, but also some 'sclerenchyma spindles'), this last group surely represent imported peat. Some flax seeds and capsules may hint at retting although they may also be counted with the small amounts of probable plant foods present (there was certainly no evidence for large amounts of organic waste of any kind, however). A single sample from an early 18th century context in this sequence was not marked by any abundance of wood remains and had a generally less floristically diverse assemblage of plant taxa than in earlier layers, with weeds predominating and very few wetland taxa. This perhaps reflects the much shallower nature of the water in the ditch as it became infilled and an increasing proportion of terrestrial taxa. Flax seeds were again present and there were traces of possible foodplants, this time including fig. The merest hints of material from heathland or bog were present.

From the fourth site, **Higher Land 77-81**, Gargrave, near Skipton *NYR*, the only post-medieval plant material observed was a little ash (*Fraxinus*) charcoal of 17th-18th century date.

5.8.2.3 Other rural sites

Few rural sites in N England appear to have been investigated for post-medieval plant remains. The most south-easterly site is at **Fishlake Village ASUD 748**, near Thorne, NE of Doncaster. Here, three deposits were investigated; they all yielded some uncharred remains, but two were moderately rich, with a range of taxa including weeds, grassland and wetland taxa. There was a little charred material in one sample: six hulled barley grains and one fragment of bread wheat rachis.

Small amounts of charred plant remains have also been recorded from a site at Roecliffe, near Boroughbridge *NYR* (**A1 Walshford-Dishforth DEAR 4/93**), where pit fills with a thermo-remanent date of *c* 1600 CE yielded assemblages dominated by bread wheat with rare weed seeds and chaff.

Perhaps the largest investigation relevant to this period and site category was undertaken at **Brough St Giles (hospital) 88-90**, near Richmond *NYR*, where 26 contexts of various kinds were examined by means of bulk samples of 30 litres. Very

low concentrations of charred remains, including bread wheat and oat grains and some barley, one field bean, and three peas were noted; there were also a few weeds seeds, and charred heather flowers and twig fragments. A further 15 samples from deposits dated as 'modern' were also examined. Again, there were very low concentrations of charred remains: very rare grains and weed seeds.

At a site at **Nunthorpe-Newby 2000 EAC 65/01**, near Middlesbrough, a single kiln-base deposit from one of the subsites was explored: a single BS sample of 12 litres yielded 'one fragment of indet. cereal and a couple of charred weed seeds'. Further N, on Holy Island *NHU*, material of 'early post-medieval' date from **Holy Island Village 77** consisted of small numbers of charred and uncharred seeds, including traces of cereals (some of the uncharred seeds may have been intrusive). From this phase, traces of charred heather shoots from fuel/bedding/thatch were also recorded, along with a single charred pea seed.

On the other side of the Pennines, at **Kirkby Thore 83**, near Penrith *CUM*, three post-medieval deposits from a robbing trench, a hollow-way and a linear intrusion (investigated by means of three samples totalling 78 litres) mostly gave low concentrations of remains—small amounts of barley and unidentifiable cereal grains and a few weed seeds, though some heather and grasses were also recorded. Material of 16th-17th century date preserved exclusively by waterlogging was noted from a well fill at **Norton (Cheshire) 74-6**. Together with wood identified as hazel, rose, blackthorn, rowan (*Sorbus aucuparia* L.), elm (*Ulmus*)/oak, and cherry ('common or bird'), there was evidence for sycamore (a leaf) and reedmace (presumably *Typha*) leaf, seeds and pod (though none of the material is illustrated or described in any detail, so some, at least, of these identifications should, perhaps, be treated with caution).

An example of a very different kind of site is afforded by **Causeway House** by Stanegate, near Vindolanda, Northumberland, where a sample of turf from divots between the rafters in the roof of a standing granary building dated post-1770 was investigated. Taxa indicative of acidic *Calluna* heath on a sandy soil were reported. A further instance of sods used in this way as an underlay for other material was observed at Durdar, a few miles SW of Carlisle, Cumbria, where grass (*Nardus*)-dominated turf, perhaps most likely to have been brought from the Cumbrian fells, was observed by Kenward *et al*. (unpublished).

5.8.2.4 Industrial sites

It should come as no surprise that the number of sites which can be described as 'industrial' is proportionately higher for the post-medieval period than any preceding part of the archaeological record; small-scale industrial activity is often identified at earlier sites, but usually as only one of several aspects of activity or occupation.

Two small-scale excavations have yielded archaeobotanical information for kiln sites, both in Northumberland. At **Belling Mill 73** in N Tynedale *NHU*, mid 17th-late 18th century deposits associated with a kiln were found to contain very small amounts of birch wood and charcoal and a few seeds of little interpretative value, whilst in Upper Redesdale, from a kiln recorded as being in use for grain drying in the period 1604-

1866, a sample of more or less pure charred grain (80% oats and 20% barley with some spikelet bases from cultivated oats) was described (**Upper Redesdale 80-1 (Loaning Burn)**); there were no weeds or other chaff recorded but some wood charcoal was present.

At two sites in the North York Moors with evidence for 16th-century glass-making, small amounts of charcoal have been identified. At **Hutton Common 68-71**, the material was mostly birch, with a little oak and ?alder, whilst at **Rosedale 68-71**, charcoal from an area thought perhaps to be the site of ash preparation was mostly oak with at least one piece of willow. The only plant material recorded at the one pottery-making site in this group, **Wrenthorpe Potteries 83-6**, near Wakefield *WYR*, was wood, mostly uncharred (one of the five samples was part-carbonised); three samples were 'probably oak', the rest unidentifiable.

At Saltwick, on the N Yorkshire coast near Whitby (**Saltwick EAU 92/25**), lie the remains of an alum works on the foreshore; a single sample of material from the basal fill of a stone-lined cistern revealed traces of a range of plants which might have served as fuel or litter: bracken, cross-leaved heath, wheat chaff and some scraps of pale conifer wood fragments, but dating was tentative (the remains can hardly have been older than post-medieval, given the history of alum-working in the area, cf. Miller 2002) and the mode of formation of the assemblage unclear.

The last site in this category **Ship Inn (rear) EAU 99/18**, West Cowick *EYR*, N of Doncaster, provided mainly 16th/early 17th century deposits associated with two pottery kilns; 10 samples were examined and there proved to be some burnt peat in some samples, also ?heather root/twig, perhaps also from peat, though the presence of coal and cinders indicate that other fuels were being exploited for the kilns.

5.7.2.5 Summary and future prospects

For a variety of reasons, studies of plant remains from post-medieval deposits have been limited: archaeologists have tended to concentrate on earlier levels; sampling has often been desultory; and for good reasons connected with accumulation of organic material the quantities of remains surviving have generally been few. There has perhaps been some redress to this imbalance in recent years since constraints imposed by developer-funded archaeology, and in particular the presumption in favour of preservation of archaeological deposits *in situ*, have led to closer attention being paid to the uppermost parts of the stratigraphic record. Some of the results obtained so far suggest that there are interesting questions relating to introduction to Britain of new taxa from an ever-widening world through the early post-medieval period, as well as a changing use or emphasis on certain raw materials. As before, studies of material from the W side of the region are even more sorely lacking than from the E.

6 Thematic review

This section considers a number of archaeological topics for which studies of macrofossil plant remains are of fundamental importance—or at least have some bearing. It begins with a brief discussion of the evidence plant remains offer for past natural environments (traditionally of particular significance to studies of earlier prehistoric communities) and moves on to deal with aspects of resource exploitation (for which there is, overall, a greater body and variety of evidence for the 'historic' period). The final sections deal more specifically with manipulation of the environment to procure food (though agriculture) and with types of vegetation created, or at any rate, promoted, through human activity. Inevitably, since it considers the information presented in Section 5 from a different angle, a certain amount of repetition of material and ideas is unavoidable.

6.1 Plants and the past environment

Where plant remains are identified from deposits forming under entirely natural conditions, as for example in peats or alluvial sediments, or where remains recovered from archaeological deposits can be regarded as representing natural habitats in the vicinity rather having arrived through human activity (not always an easy distinction!), they will—of course—be of value in reconstructing past environments and, at least in broad terms, in inferring past climates. They do not, however, generally provide the basis for past macro-climatic reconstruction in the way that analyses of either pollen or insects (mainly Coleoptera and Hemiptera) can. Thus, in investigating a sequence of natural peats or lake sediments, for example, analysis of pollen—representing, as it often does, conditions in the region as a whole—provides a framework for recording climatic change, particularly through changes in the kinds and proportions of trees and herbaceous taxa. Conventionally, the advent of 'thermophilous' (warmth-demanding) trees in the pollen record for the post-glacial period is interpreted as marking the onset of climatic conditions similar to those obtaining in the same region today—though in fact there may be a considerable 'lag' or delay between the amelioration of climatic conditions and the appearance of the plants in question, as indicated by parallel studies of insects, especially beetles, from the same deposits, since many insects are highly mobile (and migrate much faster than plants), and have very limited thermal tolerances, so are considered to be very good climatic indicators. A rare example from our region of a study in which plant and insect macrofossils (and pollen) were investigated from the same sequence of natural deposits is the late Devensian/early Holocene record at **Church Moss 95** *CHE*. The macrofossil plant remains from such natural deposits tend to represent plants growing locally (typically wetland plants) for which climatic inferences—with regard to temperatures, at least—are usually not very precise (the aquatic environment 'buffers' the effects of climate change to some extent, so that many wetland plants have much broader latitudinal and altitudinal ranges than terrestrial plants). They can, however—as shown by Hughes *et al.* (2000) for peat sequences at Walton Moss *CUM* (a rare example of a mire that has suffered little peat cutting)—provide evidence for hydrological changes that are a proxy for a palaeoclimate record of changing precipitation.

Apart from these interpretational limitations of the preserved record, there are also some practical difficulties in using macrofossil plant remains from 'natural' deposits:

most analyses of pollen aimed at reconstructing regional environmental change are based on samples secured from deeply stratified deposits with coring equipment which cannot always provide samples large enough for detailed analyses of macrofossils. Indeed, many records of macrofossils are published within reports on pollen analyses where 'pollen washings' have been examined during the extraction of pollen, or where larger remains forming (or prominent within) the peat matrix have been noted during the preparation of a lithostratigraphic record. The routine analysis of plant macrofossils became an extension of studies of peat stratigraphy at a large number of sites in North West England—summarised in some of the reports by the North West Wetlands Survey (e.g. Hall, D. *et al.* 1995; Middleton *et al.* 1995; Leah *et al.* 1997), and integrated closely with the results of pollen analysis. Moreover, at a site at Fenton Cottage in the Fylde (Wells *et al.* 1997) the biological evidence was linked to a datable tephrochronological event. Such work provides a detailed record of changes in the vegetation from which the peat formed and thence an indication of how land-use and availability may have been influenced as mires expanded—although as Wells *et al.* (1997, 153) note, 'opportunities for studying environmental history in this part of lowland England are extremely rare' because most mires have been 'severely damaged by agricultural activity during the last 250 years'.

Studies of plant macrofossils in natural peats also provide a context for the other fossil remains, and for any artefactual material which may have become stratified along with them (e.g. for the bog body at **Lindow Moss (body)**). A few other examples may be given of studies of plant remains from sites which would not conventionally be termed 'archaeological' and yet which, if datable, provide evidence for the environment in which humans may have lived (or indicate why human populations may have been absent). The earliest sites of this kind in the Northern region are in the Chelford area of Cheshire, near Alderley Edge. Plant macrofossils have been described from two locations where organic deposits interpreted as representing Early Devensian interstadial environments have been investigated (**Farm Wood Quarry 57**; **Oakwood Quarry 78-80**). At the first, remains included cones, leaves and even a stump of spruce (*Picea*), a tree which at that stage was shortly to become extinct in the British Isles, whilst at the latter site, thought to date from a later interstadial of the Early Devensian, small assemblages dominated by aquatic plants of base-rich standing or very slow-flowing water were recorded—but there was no evidence for terrestrial woody taxa. The deposits at Oakwood Quarry therefore perhaps represent a cooler climatic phase with treeless vegetation—something readily interpreted from the invertebrate remains also studied at this site.

One important use of macrofossil plant remains is in the study of early human impact on the environment. This is exemplified by the work of Simmons and Innes (1988 and many other publications detailing work at North Gill, on Glaisdale Moor, on the North York Moors *NYR*), who investigated wood charcoal as an indicator of burning of woodland. More recent analyses of macroscopic charcoal of herbaceous plants—in this case largely reed, *Phragmites*—from the classic Mesolithic deposits of the E Vale of Pickering (**Star Carr 85 & 89**) have been used to infer that the reedswamp vegetation fringing the remnants of Lake Pickering in the 9th millennium BCE was set on fire on at least two occasions—presumably by humans (as discussed above).

On later occupation sites, assemblages of plant macrofossils from deposits *pre-dating* the first clear evidence of human activity may indicate a largely natural flora or vegetation in the vicinity—for example, those from the buried organic deposit of compressed woody detritus of Bronze Age date at **Milburngate 83**, Durham City, the pre-Roman buried soil in Skeldergate, York (**Skeldergate (58-9) 73-5 (buried soil)**), the earliest deposits overlying the natural drift subsoil at **Tanner Row (24-30) 83-4**, York, or the earliest early medieval phases at **Lurk Ln 79-82** and **Eastgate (Beverley) 83-6**, both in Beverley.

Another context in which such remains prevail is where there are deposits interpreted archaeologically (or on the basis of bioarchaeological studies) as a phase of abandonment, as at Romano-British **North Cave EAU 97/37** and **Leven-Brandesburton EAU 94/15**, at some of the sites along the Teesside-Sandsend Ethylene Pipeline (TSEP) through SE Yorkshire, or in the later (late medieval/early post-medieval) stages of infilling of the ?moats at **Higher Ln (Fazakerley) 94 EAU 96/05** and **Kirklington DEAR 13/92**.

Of course it is essential in this context, as in any bioarchaeological study, to take account of a range of biological remains, the nature of the sediments in which they are preserved, and any evidence for artefactual material. Thus, from a series of sites in the vicinity of a large body of water, the 'King's Pool', created in York through the damming of the River Foss after the Norman Conquest (above), deposits with the appearance of waterlain silts are invariably found to contain a component of aquatic and waterside flora, together with remains of aquatic invertebrates, but with remains also clearly of terrestrial origin (ranging from foodplants, weeds, and peatland material, to bone, shell, and brick and other rubble from buildings) which must largely represent occupation material deposited in the pool. Here, a natural (or perhaps better a semi-natural) environment appears to have prevailed but with a strong influence from human activity. Another example of these kinds of interpretative problems can be seen in the study on richly organic Roman deposits from a 'midden' associated with the fort at **Castleford 74-85**, where the archaeobotanical results are presented largely in terms of a locally-derived flora. Putting the study in the context of the excavation and artefact evidence, it seems much more likely that the 'midden' deposit was, in fact, mostly a dump of waste on which few if any plants grew; indeed—although (most shamefully) no analysis of insect remains was undertaken on these deposits to help explore the point—they seem very likely to have included stable manure.

6.2 Plants as a resource in the past

More often, archaeological occupation deposits, especially those with good waterlogged preservation from urban sites of Roman and later date, contain a range of taxa representing a variety of natural or human-influenced or -created habitats. Indeed, it is unusual *not* to find amongst these the abundant remains of plants classified as weeds of various kinds (including those of cultivated land, especially arable fields, and those of waste places) and remains of plants of the following broad categories: grassland (meadow and pasture habitats), peatland (fen, bog, heath or moorland), wetland (aquatic, waterside and marsh), and woodland (including scrub and hedgerows). Clearly these habitats (and all the continuous gradations between

them) are not *necessarily* all likely to have existed at or near the site of deposition, even over the timescale of decades or centuries represented by some slow-forming deposits, and other explanations for their occurrence must be sought. The next section considers ways in which we can explain the presence of these 'natural vegetation' plants in deposits which do not, by and large, appear to have formed in the vicinity of such vegetation. In some cases, the interpretations of the author of the original report are reconsidered, or interpretations offered *de novo* where none was made.

6.2.1 Wetland vegetation

The presence of wetland plant taxa in archaeological deposits which clearly did not form in aquatic environments has posed an interpretative problem for many years. Moreover, wetland taxa occur in a very high proportion of such contexts, as can be seen by perusal of almost any archaeobotanical report, especially for urban sites, from the region. One frequent explanation for their presence has been that they arrived with cut wetland vegetation brought to the site for some purpose, such as for roofing or flooring. The macrofossil evidence concerned is almost always in the form of fruits or seeds rather than vegetative remains, so it is at best secondary evidence for the use of the material—typically cited as rushes, reeds, sedges, and the like—that is inferred to have been imported. An example of the identification of some *vegetative* material from wetland comes from a site at Doncaster (**North Bridge 93-4 EAU 97/16** and Hall *et al.* 2003), where a late 11th-late 12th century 'burnt deposit' yielded large amounts of charred hazel nutshell, together with charred herbaceous debris and 'silicified' (Table 1, note ^{c}) rush (*Juncus*) stem fragments. Charred and uncharred remains of the saw-sedge (*Cladium mariscus*) were also recorded from this site, in 13th-14th century and late medieval/early post-medieval deposits, respectively; they seem unlikely to have reached the site of deposition—admittedly an occupation site abutting a river—unless deliberately brought for some purpose (fuel, roofing?). More recently, charred *Cladium* leaf material was noted at three sites in York: from Anglo-Scandinavian deposits likely to have formed close to the River Foss at **Layerthorpe Bridge EAU 2000/64** (see also below); from a late 13th-early 14th century layer of 'burnt straw' at **Walmgate (41-9) EAU 2000/04**; and from an early 13th century dump deposit (with quantities of straw/reed) at **St Andrewgate PRS 2002/12**. It has also been recorded from a 14th century deposit at Hull (**Magistrates Courts (Hull) 99 EAU 2000/19**) and from a number of medieval sites in Beverley (**Lord Roberts Rd EAU 99/07**; **Well Ln (9-17) 98 EAU 99/04**; **County Hall (Beverley) EAU 2001/25**; **Magistrates Court (Beverley) EAU 2001/06**; **Keldgate (by 52) EAU 2001/35**, **Beckside North PRS 2002/06** and **South Beckside PRS 2002/10**). The Beverley sites are, with the exception of the last two, all in the same area, just to the NW of the Minster, and the material may represent debris from, for example, a conflagration which affected a group of houses in which saw-sedge had been used for roofing—the high concentration of material in a deposit described by the excavator as 'loose black ash on floor' at **Magistrates Court (Beverley) EAU 2001/06**, for example, unless it originated in a supply of sedge for fuel, tends to suggest burning of a mass of the plant, as in roofing. Support for this hypothesis may be the evidence for characteristic 'sooting' of the sedge fragments, a phenomenon seen at in material from other sites where it is suspected that roofing has survived (e.g. at **Walmgate (41-9) EAU 2000/04** and **St Andrewgate PRS 2002/12**).

Vegetative remains of *Cladium* have probably been overlooked in the past—material which might well be uncharred saw-sedge leaf fragments has been recorded in the form of 'papillose Cyperaceae epidermis' from several sites in York and Beverley, for example: ?post-medieval deposits at **Aldwark (36) 83 AML 59/89**, mid 12th-late 14th century occupation layers at **Eastgate (Beverley) 83-6**, and 13th century deposits at the adjacent site of the **Dominican Priory (Beverley) 86-9**.

For sites close to a river, natural dispersal or carriage on muddy footwear or on clothing may explain the presence of small numbers of uncharred remains of aquatic and waterside plants, but their prevalence in such persistent frequencies in deposits which seem likely to have formed well away from water—or where evidence from other proxies for flooding is lacking—surely demands another explanation. At several sites, concentrations of rush seeds have been recorded from deposits interpreted as floors: at **Baxtergate (Whitby) 92 EAU 92/04**, Whitby (medieval), and from several sites in Hull—e.g. at **Queen St (Hull) 76** (two late 15th-16th century deposits, though the data here are for remains recovered only from paraffin 'flots') and **Scale Ln/Lowgate 74** (14th century floor samples rich in rush seeds, of which a large proportion were probably the saltmarsh species, mud rush, *Juncus gerardi*). At a nearby site at **High St (37) (Hull) EAU 94/49**, a ?14th century cess pit fill contained abundant rush seeds (not identified at the stage the investigation was made), whilst from a ?medieval deposit in York, high above the Ouse in the Bishophill district (**Ideal Laundry EAU 91/03**), concentrations of *J. gerardi* seeds were noted from two samples, though the context here is not known. Concentrations of seeds of this rush in floors in which few other remains (other than—typically—small fish bones) survive have been noted at **Blanket Row EAU 2001/12** (see details discussed above); these seem most likely to represent material accumulating through the use of rushes for strewing. Clearly the identification of the rush seeds to species or species group is a matter of some importance here. Thus the seeds of toad rush (*Juncus bufonius*) are frequent—often abundant—in archaeological deposits, but originate in a short-growing plant of wet tracks and pond margins and presumably do *not* indicate imported cut vegetation (though they might represent mud brought on feet, mud used for building, or even imported turves, cf. Hall 2003b).

Another distinct source for remains of plants from wetland habitats is water brought to the site from ponds or rivers. Here the coincidental occurrence of certain invertebrates, typically the ephippia (resting eggs) of cladocerans (water fleas) such as *Daphnia*, but also aquatic beetles and bugs, may support such an interpretation.

6.2.2 Grassland habitats (and their representation in stable manure and turves)

The definition of habitat types under the general heading 'grassland' is very difficult. Except in terrestrial habitats where tree cover has never been achieved (e.g. above the tree-line on hills and mountains), grassland in NW Europe may be seen as a largely 'secondary' type of vegetation brought into existence by the removal of shade (through deforestation) and/or through the grazing of herbivores in sufficient numbers to favour the growth of grasses at the expense of other herbaceous plants. It is perhaps not surprising, therefore, that 'grassland' is a rather vague term and grass-dominated vegetation may occur in a variety of situations such as neglected cultivated and waste ground, trampled areas, and deliberately managed hay

meadows or pastures, which themselves—in this part of England, at least—may vary from the close-cropped turf of thin soils on the Chalk and limestones, or the rough grazing of peaty soils on the sandstone areas of the Pennines, to saltmarsh meadows in river estuaries. Grass-dominated communities are also characteristic, of course, of wood pasture, a kind of habitat which it is argued by some (e.g. Vera 2000) was more prevalent during prehistory than formerly acknowledged.

Components of grassland vegetation (merging at one end of the spectrum, of course, with wetland) are frequently encountered in occupation deposits, and even assemblages of charred remains from well-drained sites dominated by cereals and their associated weeds may well contain a variety of plants whose most likely origin is in grassland. It may be useful here to consider this further, before examining the evidence for grassland plants in 'waterlogged' deposits. Conventionally, and perhaps rather unfortunately, most of the plant remains recovered together with suites of charred cereal grains, chaff and the more obvious weeds of cultivation, are loosely classified as weeds. Indeed, in her detailed survey of a very large corpus of material of mainly late prehistoric date from NE England, van der Veen (1992) appears not to consider the possibility that plants such as heath grass, *Danthonia decumbens*, and blinks, *Montia fontana* (usually ssp. *chondrosperma*) might have originated in any other way than as crop weeds brought to the site in harvested grain, or perhaps with straw or animal dung, yet these remains form a large proportion of many of the assemblages (and are actually the most abundant remains at some sites, see below).

6.2.2.1 Turves

Another possible explanation for the presence of such taxa is that they are from turves brought for fuel, for construction, or perhaps for use in animal byres. Naturally turves may be cut from a variety of kinds of grassland, merging at the 'acidic' end into heathland and bog, where the dominant vegetation may comprise sedges and dwarf shrubs like heather, with rather few grasses. It may sometimes be difficult, for example, to distinguish material originating in subsurface peat (more likely to have been used primarily as fuel) from that in surface-cut sods (perhaps more likely to have served in construction). As well as bringing a wide range of potential macrofossils in the form of remains carried at its surface, a sod will also be the source of remains through the seed bank buried within it. (For comments on the nature of invertebrate remains which would also be brought with turves, but which are likely only to survive in uncharred assemblages, see Kenward forthcoming). The problems of identifying material originating in turves from archaeological deposits is discussed at length by Hall (2003b). Here it is perhaps sufficient to point to examples from the region; the size of the list (to which new sites are being added regularly through studies of material from many of the small developer-funded excavations which form the bulk of interventions at the time of writing) suggests this is a widespread phenomenon that has hitherto been overlooked. (We cannot, however, easily discern whether a given record of, for example, the charred basal parts of heather stems (which seem to be extraordinarily widely distributed in occupation deposits in the region, especially in the SE), stand as evidence for imported cut vegetation, turves from heathland, or even peat containing ancient heather remains. One example where the last possibility, at least, was excluded was at **Billingley**

Drive 99 *SYR*, where Ericaceae stem fragments from a Romano-British beam slot were dated to CE 130-420 (2-sigma range) and so were clearly not from ancient peat.)

Starting with evidence for turves from uncharred plant remains, we should consider first some morphologically very distinctive 'waterlogged' turves at **Wellington Row 88-9 EAU 95/14**, York, in deposits of 1st-early 2nd century CE date. As reported by the excavator, 'a turf bank was [revealed] at the south-eastern end of [one of the trenches], and survived as a mass of peaty material interpreted as decayed turves. This [context] group include[d] at least one context which may represent turves which fell off the main bank ... as well as several which may belong to a later re-turfing ... It is possible that this turf construction was part of the general preparation of the area for the later road, and equally it may also have been a way of levelling up waterlogged land close to the river's edge.' Tables 6 and 7 of Hall (2003b), show the results of archaeobotanical study of selected samples from deposits at this site thought to contain turves (and some others, from this, and from another trench, in which a 'turf component' was noted). Although quite a wide range of plant taxa was seen in the 'turf' samples, and even more in those samples which were not interpreted as containing turves during excavation, the assemblages were actually rather restricted (certainly when compared with occupation deposits with anoxic waterlogging in general), and many were dominated by a few taxa which occurred repeatedly (Hall's table 9). Of these, *Carex* sp(p). *Montia fontana* ssp. *chondrosperma*, *Potentilla* cf. *erecta*, *Ranunculus* Section *Ranunculus* and *Scirpus setaceus* all seem quite likely to have arrived in turves, the second and the last in this list strongly suggesting turf formed in a damp place—they seem to be characteristic in lowland areas of short vegetation developing on wet tracks and pond margins, i.e. the phytosociological alliance Nanocyperion within the class Isoëto-Nanojuncetea, though it should be remarked that *S. setaceus* is generally overlooked in the field. Given the location of the site, not far from the river, flooding (or at any rate a seasonally high water table) might be suspected to have brought in wetland plant remains, but if so the stratigraphic evidence for silt deposition was not observed during excavation, or it had become obscured by reworking into the turf layers. For further discussion of the interpretation of these remains, see Hall 2003b).

A rather similar suite of remains to those at Wellington Row was seen in Roman ditchfills including the lower and upper turf lines at **Tullie House Extension & Basement DEAR 1/91**, Carlisle. At many other sites, the presence of grass turves in occupation deposits is suggested by, if not these possible 'marker' plants, then other plants typical of short grassland swards (although, of course, many of these plants have wider ecological affinities). *In situ* turves were also described (from rampart of legionary fortress) in a very early, but almost trivial report for a site in **Davygate 55-8**, York; here there were spot identifications of three mosses, and three tentative identifications of seeds, but of most interest a note of the presence of grasses distinguished by silica bodies in epidermis. This early report on phytoliths has not been emulated for other sites, though the *presence* of phytoliths has been routinely recorded during assessments of microfossils by means of the 'squash' technique of Dainton (1992) during work at the former Environmental Archaeology Unit, York.

A further example of a deposit containing turves which might have been expected to yield diagnostic assemblages of plant remains is provided by excavations at **Appletree EAU 2000/46**. Here, samples from the 'turf wall' (predecessor to the stone-built wall, and following a different course from it along this stretch of Hadrian's Wall), and a deposit interpreted as tumbled turves in a ditch to the N of the turf wall, were examined. Remains suggestive of an origin in turves were effectively absent in the turf wall samples and only very sparse in the ditch deposit (Hall 2003b). This reminds us that the prospects for recovering remains from this kind of material are not guaranteed!

Some other examples where turves may have been present include **Housesteads Fort AML 186/88** (where a rich flora of uncharred small grass seeds, sedge nutlets, heather fruits and shoots was recorded from an early 2nd century layer formed above a road leading to the N gate of the fort), and two sites in York: from the probably early 4th century fills of a well in the legionary fortress in **Bedern 76-81 (well fills)** (rich in short grassland taxa) and from Anglo-Scandinavian deposits probably forming close to the R Foss at **Layerthorpe Bridge EAU 2000/64**. At the latter site, one of the earliest deposits from the Anglo-Scandinavian levels, interpreted as the organic fill of a timber-lined ?sluice/overflow, was described in the laboratory as a humic, sandy silt, with fine herbaceous detritus locally. Subsamples from it yielded a characteristic group of mosses with moderate abundance scores ('2' on a four-point scale): *Aulacomnium palustre* (Hedw.) Schwaegr., *Dicranum scoparium* Hedw., *Hypnum* cf. *cupressiforme*, *Leucobryum glaucum*, and *Pleurozium schreberi*, which, taken together, suggest an origin in peatland, perhaps via imported turves (in the sense of surface material rather than peat from a deeper level, though the latter possibility is not out of the question). There was also a variety of remains of heather, traces of unidentified charred root/rhizome fragments, traces of charred moss (in the subsample examined during the assessment stage) and also some fragments of what may have been mor humus, all consistent with an origin in turves. Other mosses, such as *Antitrichia curtipendula* (Hedw.) Brid., were more typical of tree bark and may well have arrived attached to the bark which was so abundant in the deposit. A possible roof or litter component may be represented by charred and uncharred saw-sedge (*Cladium mariscus*) leaf fragments, and some very well preserved cereal chaff and spikelets, and charred and uncharred grass/cereal culm (stem) fragments; it may be no coincidence that these occurred with the putative turf component—perhaps they together represent partly burnt roofing material?

A further deposit, interpreted archaeologically as a silt laid down within a small channel, was dated to the latest stages of the Anglo-Scandinavian period. As observed in the laboratory, it consisted of "grey-brown silty sand with patches of 'crisp', fine-grained, black (charred?) plant material, rather like turves". Sieving produced a residue consisting of sand and some lumps of what appear to be charred (plus a little uncharred) sandy *Callunetum* mor humus, with many loose charred fragments of root/basal twig of ?heather, and also some uncharred roots which might be supposed to have come from unburnt parts of turves, although they might also represent growth of roots from above into the layer after it formed. There seemed little doubt that this deposit contained a considerable quantity of material from partly-burnt turves, presumably dumped into the channel.

To return to the question of recognising remains of *burnt* turves in archaeological deposits through the presence of certain plant remains, a number of reports can be cited as examples where such evidence may have been collected though not necessarily discussed by the original author. For the prehistoric period:

Ingram DEAR 22/96, between Wooler and Alnwick *NHU*, where (from a variety of ?Bronze Age-Iron Age-Romano-British features) charred herbaceous material, ?rush stems and also burnt peat and ?sedge culm bases were recorded (*inter alia*); **Eston Nab 84-7**, near Middlesbrough *CLV*, where Early Iron Age contexts associated with a fortified enclosure yielded remains of plants of rather acidic, poor grassland with wet patches, perhaps the natural (turf) vegetation burnt prior to building the bank and ditch rampart (there many *Montia* and *Danthonia* seeds); **Brough St Giles (IA) 88-90**, near Richmond *NYR*, where the presence of moderate numbers of *Danthonia* caryopses and sedge nutlets in Iron Age occupation deposits perhaps resulted from the use of turves; **Dragonby 64-73**, near Scunthorpe *NLI*, where the charred assemblages dated *c.* 10-45 CE contained a possible burnt turf component (heather, *Danthonia*, heath rush, *Montia*); **Rock Castle 87**, near Richmond *NYR*, where *Danthonia* caryopses were especially prominent (17% of all recorded items) amongst the 'weeds' in assemblages dated 100 BCE-150 CE (with smaller numbers of seeds of heath rush, *Montia*, and *Potentilla* cf. *erecta*); **Scotch Corner 95** *NYR*, where sedges and *Danthonia* were the most common 'weeds' in 1st century CE deposits;

For the Roman period:

Blackfriars St (Carlisle) 77-9, Carlisle, where there was a consistent presence of taxa which might indicate turves and/or flooring (though the author only mentions the possibility of rush/sedge remains representing material used as litter for floors and the recovery of remains for this group of samples was very biased); **Carr Naze 93-4**, Filey *NYR*, where plant remains from late Roman occupation deposits associated with a coastal signal station were sparse but consistently included charred root/rhizome and ?heather twig/root material, perhaps representing burnt turves; **Bonny Grove Farm 92**, near Middlesbrough *CLV*, where the remains of grasses and sedges in Romano-British occupation deposits may have originated in turves; **Wellington Row 88-9 EAU 95/14**, York, where one sample of charcoal ash from a fire amongst deposits of early 3rd-late 4th century date may have contained burnt peat or turves (and ?burnt peat was noted from several of the dumps, floors and fills examined); **Bursea House 83-4, 87, 91-2** near Holme-on-Spalding-Moor *EYR*, where there was consistent evidence for grass culm-base and rhizome fragments as well as charred Cyperaceae and *Danthonia* caryopses in deposits associated with pottery kilns; and **West Lilling EAU 2002/01** *NYR*, where Romano-British (mainly late 3rd century) ditch fills yielded material which may have originated in burnt (and unburnt) turves or peat (including charred and uncharred heather, charred root/rhizome and herbaceous detritus, and some uncharred seeds including *Danthonia* caryopses, seeds of *Montia* and *Potentilla* cf. *erecta* and *Scirpus setaceus*).

From medieval (*sensu lato*) deposits:

> **North Bridge 93-4 EAU 97/16**, Doncaster, where, from a large number (100) of 13th-14th century deposits including external surfaces, dumps in yards, hearth deposits, and a few cut fills associated with buildings, the sparse charred plant remains quite often included burnt ?peat and charred herbaceous detritus and remains of heather and other peat taxa.

Small amounts of 'heathland' plant materials have also been recorded from late Anglian levels at a rural site at **Wharram Percy (S Manor area)** suggesting either importation of material over quite long distances (the site is firmly within the Chalk Wolds), although the presence of patches of heathland on leached soils within the chalkland area cannot be ruled out.

In some other cases, charred 'tubers' of the onion couch, a form of the false oat grass (*Arrhenatherum elatius* ssp. *bulbosum*) have been recorded and these subterranean structures are considered by some authors to be most likely to have become charred through burning of turves. Godwin (1975, 404) describes material of this latter plant from a Bronze Age ditch fill at Rockley Down, Wiltshire, remarking (p. 404) that it was associated with barley grain but that it was probably not collected for food. Elsewhere (*ibid.*, p. 480) he contradicts himself in proposing that they might have served as food. Robinson (1988) discusses Bronze Age material of this plant from a site at the Rollright Stones, Oxfordshire, in terms of possible fuel, uprooted for use in cremation pyres. Since the grass is tall growing and eschews grazed land (though might survive in fallow land once arable cultivation had ceased), this species is perhaps not so likely to be a candidate for an origin in pared turves.

Sites yielding evidence of onion couch tubers include:

> **Cottage Farm CfA 95/2001**, Sewerby, near Bridlington *EYR*: tubers amongst the sparse remains from a variety of Neolithic pit and post-hole fills and spreads (though with some doubt as to the dating of all the plant material from these contexts as Neolithic, given that radiocarbon analyses on *Pisum sativum* (pea) seed fragments returned firmly medieval dates); **A1 Walshford-Dishforth DEAR 4/93**, Roecliffe, near Boroughbridge *NYR*: approximately 200 charred tubers of onion couch were recorded from the fill of a shallow Neolithic pit; **Park View DEAR 20/94**, Chester-le-Street *DUR*: a sample from a layer beneath a road, pre-dating the 2nd-3rd century fort, contained *Arrhenatherum* tubers and yellow-rattle (*Rhinanthus*) seeds); **RAF Catterick 94 EAU 94/41**, Catterick *NYR*: some onion couch tubers were present amongst sparse charred remains of broadly Roman date; **Morrison Hall 87 AML 52/90**, Hartlepool: Saxon material from post-holes and other negative features included some false oat grass tubers (and heather wood);

and at three sites on the A1-M1 Link:

> **Manor Farm (A1-M1) 92-8**, between Leeds and Garforth *WYR*: tubers in several samples with grain, chaff and some weed seeds in later Iron Age feature fills; **Parlington Hollins (A1-M1) 92-8**, near Garforth: tubers and cereal remains in

early Roman deposits; and **Roman Ridge Rd 98 HA**, small numbers of tubers and in some Roman deposits.

6.2.2.2 Hay and stable manure

Whether or not the assemblages discussed in the previous section formed, in part at least, as a result of the incorporation into the deposits concerned either of turves *per se* or of plant remains from turves, there is no doubt that in many (most?) other cases the remains of grassland plants in archaeological occupation deposits have arrived through another route, perhaps in hay or some other kind of vegetation cut from a living sward (and so not including the basal parts), or secondarily in herbivore dung. For discussions of the taphonomic pathways involving these materials, and in particular the parallel investigation of plant and insect remains in this connexion, see Kenward and Hall (1997) and Hall and Kenward (1998); Kenward (forthcoming) reviews the evidence for this material from the point of view of studies of invertebrates, especially insects, from the region. It may be remarked here that it should come as no surprise that litter-rich material interpreted as consisting of or containing stable manure should be frequently recorded in archaeological deposits with waterlogged preservation; it is material which accumulates in quantity where horses (or other equids) are stabled and which presumably assists in its own preservation in the ground by being absorbent and retentive of water (for a brief consideration of the ways in which urban organic occupation deposits may be 'self-preserving' in this way see Kenward and Hall (2006a)).

There are numerous examples which could be used to illustrate the kind of evidence which may indicate the presence of hay and/or manure, but the obvious starting point here (as with the evidence for turves from deposits recognisable *as such* at Wellington Row, York, discussed above), is to consider a case which is not open to more than one interpretation. Thus Gay Wilson reported rounded lumps of compressed herbaceous plant material with the size and shape of horse 'apples' or 'turds' in a matrix rich in evidence for grassland plants from the fills of a timber-lined well inserted into the Roman defences in Lancaster and dated 175-250 CE (**East Gate (Mitre Yd) 73**). The horse apples contained many uncharred remains such as small legume (clover family) flowers, as well as whole and fragmentary cereal and grass grains. More usually, deposits containing assemblages rich in such remains (usually uncharred, but by no means always so), together with a diversity of grassland plants, any or all of which might well have been gathered with hay or eaten by animals grazing in pastures and meadows, and often also with uncharred remains of cereals, straw-like debris and cornfield weeds, offer no 'morphological' clue as to their origins. Many of these 'hay-rich' deposits, in which a greater or lesser proportion of stable manure is probably present, have been recorded from Roman sites, and especially from military establishments—which should perhaps come as no surprise given the importance of equines to the army (e.g. Hyland 1990).

The following examples illustrate the temporal and spatial spread of evidence of this kind within the region. For the latest prehistoric period, at **North Cave EAU 97/37** *EYR,* a small but consistent component of heathland plants (vegetative material of heather, cross-leaved heath, and several mosses) and bracken, perhaps representing stable-manure like litter, was noted in 1st century CE pit and well fills.

For the Roman period the evidence is sufficient to warrant a series of separate headings by location or site type:

Carlisle: Annetwell St AML 107/89: a few samples from the fort were rich in charred seeds of grassland plants (from burnt hay or dung?); BBC site (Carlisle) DEAR 1/92: 1st-2nd century CE 'latrine channel' samples contained faecal material (apparently from both humans and herbivores), but also grain caryopses, legume flowers, and some 'hay' taxa; remains of 'exotic' foods were lacking so the material might all have been byre waste; Castle St (Carlisle) 81-2: a sample from a late accumulation in a room of one of the buildings from the period from the late 70s/mid 80s to 92-3 CE was rich in wet ground taxa and cereal fragments (fodder/bedding from animal byre?), whilst plant material from an oval wicker 'pen' close to a building from the period 92-3 - *c*105 CE was rich in grass fruits, wheat glume-bases and bracken frond fragments, together suggesting remains of animal bedding and hay, and material from a floor layer in a building from the early-mid 2nd century included bracken frond fragments with grass seeds, dock fruits and yellow-rattle seeds, as well as self-heal and purging flax, together suggesting the presence of litter and animal dung (a smaller but similar group came from an external deposit from between the buildings at the site at this period).

'Rural' forts: Catterick 58-97 (Thornbrough Farm Site 482), NYR: a deposit of late 2nd-early 3rd century date from the fort ditch was rich in cereal bran (a mixture of wheat/rye, barley and oats), with corncockle seed fragments and some remains of grassland plants which, taken together, might suggest waste from stabling of animals; Dowbridge Close 94 EAU 95/02, Kirkham *LAN*: one of the several ditch fills examined was rich in weeds (especially taxa of mineral-enriched habitats), with wheat/rye 'bran', corncockle seed fragments and two saltmarsh taxa (*Triglochin maritima* and *Juncus gerardi*), perhaps most likely to represent stable manure or herbivore dung, the weeds perhaps arriving from plants growing on a dung-heap; in other cases there was perhaps some acid grassland/peatland turf; but no layers of stable manure or turf *as such*; Papcastle AML 76/88 *CUM*: there was good evidence for the dumping of waste byre material or the storage of hay in deposits of 1st-3rd century date from the *vicus* attached to the fort; Ribchester 80, 89-90 *LAN*: a distinctive hay (calcareous grassland) component (as well as some heathland plants) in deposits of 1st-4th century date from this fort may have been from stable manure; South Shields Fort: from a pit of Hadrianic date near the later *principia*, a small sample of the basal fill, a layer of organic material, was found to be rich in grassland taxa (with which analysis of pollen concurred) suggesting the presence of stable manure/litter.

Hadrian's Wall: Birdoswald AML 104/91/Birdoswald 87-92: some samples (from deposits principally of late 4th century date between the sleeper walls of a granary and from early 5th century occupation within the area of the granary) contained charred grassland taxa (small grass caryopses, and seeds of *Plantago lanceolata* and *Rumex acetosa* L.), perhaps indicating that hay was also stored in the granary; Stanwix 94 EAU 94/57: an organic layer (?OGS) sealed beneath a clay dump interpreted as the parade ground for the fort was found to have good preservation of plant remains with evidence for grassland; a layer of

'brushwood/vegetation' overlying the ?OGS seemed to consist largely of remains of hay with brushwood, the most likely origin of which was as stable clearings; **Tarraby Ln 76**: material from a ditchfill from the 2nd century defences between the Wall and the *vallum*, and perhaps associated with the *vicus*, was sampled as 'Roman grass cuttings'; it contained abundant uncharred grass florets (?chaff) and remains of sedges with some other grassland plants (perhaps from wet meadow hay), though no record of the size of the vegetative fragments (which might have assisted further in interpretation) was made (the description as 'cuttings' is perhaps more suggestive of dung than cut vegetation, however).

In addition, the richly organic deposits (with abundant bracken, moss and straw) reported at various times from Vindolanda seem very likely to consist of or include stable manure (see **Vindolanda (bracken)**, **Vindolanda 71-6** and **Vindolanda 72**); it is very much to be regretted that no detailed study of this plant material has been published and, in particular, that no integrated study of plant and invertebrate remains has been made.

York: military: **Bedern 76-81 (well fills)**: these ?early 4th century fills from a well within the legionary fortress yielded diverse assemblages, with the many grassland taxa present perhaps representing stable manure (and/or turf, as mentioned above), though there was also a strong 'trampled ground' component; the most abundant taxa included annual and perennial weeds but there were also sedges, spike-rush, purging flax, sheep's sorrel, and some saltmarsh taxa, all of which might have arrived in hay, dung (or turf?).

York: civilian: **Tanner Row (24-30) 83-4**: from 114 contexts associated with three successive phases of timber building and associated highly organic dumps (some of them site-wide), of mid 2nd-early 3rd century date, large amounts of well-preserved (mainly uncharred) plant material were recovered, especially from the organic accumulations, which appear to have included stable manure; the grassland taxa included a notable calcicole component—fruits of *Scabiosa columbaria*, and *Sanguisorba minor* (and with tentatively identified stem fragments of greater burnet, S*. officinalis* L., a very typical plant of wet meadows—the so-called 'lngs'—still to be found to the N and S of York along the river). Remains of bracken and some peat also found in these deposits may be further components of stable manure, which—as discussed by Kenward and Hall (1997)—is likely to contain a wide variety of components by the point at which it is discarded; **Wellington Row 88-9 EAU 95/14**: amongst the assemblages of 1st-early 2nd century date were some grassland plants which may in part have arrived with turf (above), but in other cases perhaps from hay or stable manure: for example, mid-late 2nd century deposits from a context interpreted as a 'backfill' at this excavation contained quite a rich grassland flora; **Adams Hydraulics III EAU 91/05**: an early 3rd century ?ditch fill yielded a large number of taxa, including several likely to represent litter—hay, straw, bracken (e.g. from stable manure).

Rural non-military sites: **Rudston Villa** *EYR*: the fills of the well at this site yielded quite a rich assemblage, dominated by weeds of waste places, but with a distinctive grassland group including *Sanguisorba minor* and *Scabiosa columbaria*, which might be local (from chalk grassland), maybe via hay; **Welton Rd 94 EAU**

94/50, Brough *EYR*: there were almost no ancient plant remains in the 66 samples examined from 2nd-3rd century ditchfills and other contexts, though one 3rd century deposit described as a backfill gave some herbaceous detritus and seeds which may have originated in grassland; whether this was local vegetation, or reached the fill in turf, hay or stable manure, for example, could not be established.

Evidence from the medieval and post-medieval periods is again substantive and best considered by place (in alphabetical order):

Beverley: Flemingate 95 EAU 95/48, one ?11th-12th century context, the basal fill of a ?soakaway, gave some evidence for possible stable manure (compressed herbaceous detritus, though not predominantly grassland taxa); Keldgate 94 EAU 95/03: one of the samples from deposits of late 12th/13th century at this site was interpreted as stable manure on the basis of the plant remains it contained, and a sample from a floor at this site may also have contained some stable manure; Champney Rd 93 EAU 93/01: 12th-15th century material from contexts including fills of pits gave some possible evidence for stable manure or similar; Lord Roberts Rd EAU 99/07: a 13th century ditch fills perhaps contained dumped foul matter like stable manure. At South Beckside 2000 EAU 2000/15 a single ditch fill of 19th century date contained peat, straw weeds, and bran—mixed litter that might well be stable manure. At a nearby site (South Beckside PRS 2002/10), moderate amounts of peat in an undated deposit might reflect use in stable manure, as may the moderate amounts of uncharred peat and traces of charred ?peat in a pit fill of late 12th century date at Magistrates Court (Beverley) EAU 2001/06, though the other uses of peat are considered below.

Chester: New Crane St PRS 2002/08: a deposit from a sondage dated simply as 'post-medieval/early modern' yielded a mixture of grassland, peatland, saltmarsh, wetland, and cornfield taxa, with some flax seeds and capsule fragments, uncharred rachis of free-threshing wheat and ?rye, the whole perhaps representing stable manure.

Doncaster: North Bridge 93-4 EAU 97/16: material from a post-medieval well fill yielded some ?hay/straw material (?stable manure) along with grape, fig and wheat/rye 'bran', perhaps from faeces.

Durham City: Claypath AML 4899: two occupation deposits at this site may have contained remains originating in hay—an 11th-12th century clay with organic matter, and an early-mid 13th century organic layer forming a primary pit fill: both yielded a notable component of grassland and wetland taxa; Leazes Bowl DEAR 11/95: medieval occupation deposits, very variable in organic content, but one sample with a grass/straw content (?stable manure).

Hull: High St (36A-40) (Hull) EAU 94/01: 14th-15th century dumps with plant assemblages broadly indicating litter from the keeping of livestock—peat/peatland material and other plant debris (perhaps hay and/or straw), but also some evidence for food (fig, coriander) and faecal material amongst dumped detritus; High St/Blackfriargate (Hull) 73-6: four of the late 13th-mid 14th century pit fill samples examined contained 'grassy' detritus, perhaps from ?stable manure;

Monkgate (Hull) 76-7: one of four late 13th-mid 14th century pit fills contained grassy material (?stable manure); Mytongate 75: material from a large 14th century pit contained a substantial grassland component (especially carrot and purging flax) which might represent hay and /or stable manure; Blanket Row EAU 2001/12: early 14th century material from pit fills gave evidence of organic waste which may well have originated in stable manure—'grassy' and 'strawy' debris, wood chips and some peat; Castle St (Blanket Row) EAU 99/12: deposits from late 15th/16th century pit or gully fills included least two pit fills (perhaps from the same pit) containing material thought to be stable manure; Magistrates Courts (Hull) 94 & 99 EAU 2000/25: pre-early 14th century deposits with some good preservation by anoxic waterlogging included evidence for peat and also ?hay and straw; in the fills of cuts, graves, coffins, and pits, and floor deposits all associated with a friary of *c*1316/17-1600, preservation was rather localised but there was some unusually good preservation of uncharred material from some grave fills, including probable straw, hay and peat; hay and/or straw were also probably present in 17th century fills and hay perhaps in one of two well fills of 18th-20th century date; Sewer Ln 74: pit fills of 15th-mid 16th century date contained plant remains which were mostly weeds and grassland plants, the latter rather more prominent (representing hay or manure—fruits of common daisy and carrot were unusually frequent, although at low levels); there was perhaps also a small saltmarsh component (though the site is admittedly very close to the Humber estuary!); somewhat later (early-mid 16th century) pit fills at this site contained a prominent component of grassland taxa, again perhaps from hay or manure, with carrot, buttercups, a small saltmarsh component (perhaps also grazing/cut vegetation), and a small peatland group, presumably from ancient raised-bog peat; the weeds included quite a large number of nitrophile annuals, perhaps from the dung heap if this material included or, indeed, largely comprised manure.

Scarborough: The Bolts (24-6) EAU 90/11: a large residue of organic detritus from the single sample examined included considerable amounts of bracken frond and stalk, with heather shoots and grass/cereal culm and nodes; also present were wood chips including ash, alder and oak, traces of fig, walnut, hazel nut and flax seeds and capsule fragments; also likely to have arrived with the heather were traces of *Sphagnum* and cross-leaved heath (*Erica tetralix*), indicating peat or peatland materials; almost all of these remains could be explained as components of stable manure with a small admixture of other occupation detritus.

Selby: Selby (town centre) 93 EAU 93/08: plant remains were well preserved in some samples of medieval ditch deposits, especially where there was woody detritus; in one case there was some evidence consistent with the presence of stable manure.

Whitby: Baxtergate (63-4) (Whitby) EAU 93/26**:** several samples of 13th-15th century deposits contained some possible plant litter including grassy debris, heather remains and bracken stalk and frond, though preservation was 'patchy'.

York: Coppergate (16-22) EAU 96/09: amongst the samples of late 11th-15th century date from this site, a few cases were noted during the assessment of the plant remains in which stable manure was probably present; Hungate 50-1: the

single ‘medieval’ sample examined yielded a limited range of taxa, but primarily grassland plants, and consistent with the field description as ‘grassy’; it is perhaps more likely to be hay/manure than remains originating in *in situ* (or even nearby) grassland; **Skeldergate (14) EAU 91/06**: plant remains were present in rather large numbers in a few of the medieval contexts, in some cases consisting of strawy material perhaps from stable manure; **Swinegate (12-18) EAU 94/13**: there was some probable evidence for stable manure (hay/straw) in the 11th/12th century deposits examined at this site; **Bedern 73-6 (Foundry)**: a late 14th-early 15th century pit fill was found to contain bran and concretions, but is perhaps more likely to have been stable manure than human waste—there was a large component of grassland taxa and traces of peatland plants and very few food remains other than bran (which, it should be remembered, is not necessarily always from *human* food); **Walmgate (118-26) AML 60/89**: pit fills of 11th-12th century date variously contained distinctive peatland components, perhaps from turves and/or heather brushwood, and perhaps other litter; **Davygate Centre EAU 98/09**: three deposits from 11th-13th century levels were quite rich in plant remains including some taxa likely to have arrived in hay (?some of it from saltmarsh) and/or stable manure; **Feasegate (BHS store) EAU 98/16**: 11th-13th century fills, dumps and layers contained much medieval occupation material including concretions, and grassy material ?from stable manure; **Skeldergate (64-74) EAU 2000/53**: a 10th-11th/12th century pit fill contained ‘strawy’ debris, with bracken, and bog myrtle, perhaps largely representing litter from stable manure; **St Saviourgate (9) 95 EAU 98/14**: pit fills of 15th century date appeared to contain some stable manure, with wood chips.

Other sites in York with at least a single context containing ‘litter’-rich deposits include **St Andrewgate PRS 2002/12**: a mid-late 13th century ‘cess pit backfill’ which seems to have contained material such as stable manure, but not human faeces; **Piccadilly (50) EAU 92/08**: one ‘peaty build-up’ of 11th-15th century date was rich in evidence for straw, with many achenes and involucres (flower heads) of *Centaurea*, probably mostly cornflower, *C. cyanus*; **Walmgate (41-9) PRS 2002/26**): the plant and insect remains from a mid-late 14th century deposit from within a bath-shaped pit in the backyard area at this site seemed to point to a deposit rich in (if not largely formed from) stable manure and perhaps some other waste; **Bootham Engineering Works EAU 2000/45**: a single sample from the fills of a ?late 15th century ditch yielded an assemblage largely comprised of plant litter including remains from willow, bracken, gorse, and holly, and some food remains; more work would be needed to test whether this was stable manure or cut vegetation from the side of ditch.

6.2.3 Peatland habitats

Although, as will be clear from the discussion of evidence for turves, remains of plants such as heather or ling (*Calluna vulgaris*) are widely reported from archaeobotanical assemblages from occupation deposits in the region (and along with them often remains of other plants which are likely to have been brought incidentally with the heather, and sometimes peat itself) it is very probable that the quantity of peatland resources employed at many occupation sites has been underestimated, since small fragments of peat (or the strongly humified ‘mor humus’

more typical of the surface layer of the drier heathlands and moorlands) are easily overlooked. They may require close inspection of the residues from which the more readily recognised plant macrofossil remains are recorded and there can be no substitute, in this regard, for the examination of material by experienced workers; the sorting of samples for plant remains by the inexperienced *in the absence of adequate supervision* is to be strongly discouraged. Parallel analyses of insect and other invertebrate remains from deposits with 'waterlogged' preservation will often reveal the presence of peatland indicators to match those amongst the plant remains (cf. Kenward forthcoming).

With regard to the possible uses of peatland resources, we may begin by considering examples where clasts of peat of various kinds have been positively identified from archaeological deposits in the region (excluding, of course, those sites where peat was forming *in situ*). With one exception, they are all of Roman or later date; the earlier material will be considered first:

York: From Roman levels in the ancient occupied area of the city, remains of raised-bog peat have been noted from three sites in the *Colonia*—in 1st-4th century well fills at **Skeldergate (58-9) 73-5 (well fills)**, from mid 2nd-early 3rd century organic accumulations at **Tanner Row (24-30) 83-4** (uncharred material in 14 and charred in eight contexts) and from mid-late 2nd century deposits at **Rougier St (5) 81** (from 12 contexts, mostly deposits described as 'layer' or fills of a timber-lined channel). Also on this side of the Ouse, uncharred peat was noted in four deposits of mid-late 2nd century date and charred ?peat from a further four deposits of mid 2nd to late 4th century date at **Wellington Row 88-9 EAU 95/14**, whilst at a nearby site in **North St (York) 93 EAU 93/14** a late 2nd century dump included a single *Andromeda polifolia* seed—a plant recorded from two contexts at the Skeldergate and nine at the 24-30 Tanner Row and 5 Rougier Street sites mentioned above, for example, in association with raised bog peat with which it evidently arrived in the city. Not far away, charred ?peat was noted from one 2nd-3rd century deposit at **Presto Supermarket EAU 2001/13** during an evaluation.

Within the fortress, a trace of *Sphagnum* peat was recorded in one of the fills (and peatland taxa, including *Andromeda*, noted more generally) in the mid 2nd-mid 3rd century well deposits at **Bedern 76-81 (well fills)**. Elsewhere on the NE side of the Ouse, traces of *Sphagnum* peat and charred ?peat were recorded from an early-mid 3rd century ?ditch fill at **Adams Hydraulics III EAU 91/05**.

Rural sites: Evidence for peat use in the countryside at this period is limited but gorwing. At **Foredyke EAU 98/07**, near Hull, traces of peat and perhaps also charred peat were recorded in ditch fills of Romano-British date. Material thought to be charred or uncharred peat was also noted from several rural occupation sites along the Teesside-Saltend Ethylene Pipeline (TSEP). Tentatively identified charred peat was found in small amounts from various feature fills of late Roman date at **West Lilling EAU 2002/01** and from the fill of an oven/kiln base of 4th century date at **High Catton (NE of) EAU 2002/15**. Uncharred material came from two primary ditch fills of Roman-British date at nearby **High Catton (E of) EAU 2002/12**, and at **Carberry Hall Farm EAU 2002/05**, not far from High Catton, tentatively identified peat, both charred and uncharred, was recorded from the fill

of an Iron Age roundhouse gully. And at East Halton Skitter EAU 2000/32 one Roman-British deposit contained some (?reworked) *Sphagnum* peat. There are records of charred peat at, for example, Ingram DEAR 22/96, between Wooler and Alnwick, along with charred herbaceous material (?rush stems and ?sedge culm bases) in deposits of late prehistoric or Romano-British date. Material from Roman Catterick (Catterick sites 506 & 511 DEAR 3/9) was thought possibly to represent peat burning (though an origin in heathland turves is perhaps more likely).

Material of medieval date has been recorded from the following:

Beverley: There are records for uncharred peat from a number of sites—perhaps no surprise, given Beverley's position at the edge of an extensive area of low-lying land in the upper Hull valley. Thus material was recorded from 16 of the mid 12th-mid 14th century richly organic occupation layers and cut fills at Eastgate (Beverley) 83-6 and abundant in several; from seven contexts at the adjacent site (Dominican Priory (Beverley) 86-9), mostly in the (?12th)-14th century fills of a cistern/water tank; peat regularly occurred (and was sometimes abundant, e.g. in a cess pit fill and a ditch fill) in late 12th-early 13th and 14th-early 17th century deposits of various kinds at Beckside North PRS 2002/06; at nearby South Beckside 2000 EAU 2000/15, uncharred peat was sometimes abundant; it was recorded from a 12th-13th century layer and gully fill with peat-derived taxa and in a layer with peat and remains derived from it, and peat was also present in deposits dated 14th-17th and 19th century, the last in a litter-rich mixture that might have been stable manure; there were also traces of tentatively identified charred peat from two contexts at this site; peat was recorded in a 13th/14th century pit fill at Lord Roberts Rd EAU 99/07 and in three late 11th-mid 13th century contexts at an adjacent site in Well Ln (9-17) 98 EAU 99/04; at Waterside Rd EAU 2001/39 there was a single medieval 'ash dump' containing charred ?peat; at Keldgate (by 52) EAU 2001/35, traces of peat were recorded from three watercourse fills of pre-occupation (presumably pre-13th century) date; and late 14th-early 15th century deposits at Morton Ln EAU 2002/02 yielded traces of peat in the primary and secondary fills of a pit rich in organic matter.

Chester: At Bridge St (Chester) PRS 2002/16, some modest-sized assemblages of plant remains from deposits dated 4th century to *c* 900 CE, and interpreted tentatively in the field as fills of an ash pit, contained what may have been burnt peat (with charred *Carex* and *Eleocharis*, presumably from the peat) mixed with food remains (charred pulses and cereals).

Doncaster: Uncharred peat was recorded in modest amounts in two, perhaps three, contexts of 13th-15th century date, and charred ?peat fragments were present in trace amounts in 12 contexts at North Bridge 93-4 EAU 97/16.

Hedon: At Baxtergate (16) (Hedon) EAU 2001/29 modest amounts of uncharred fen peat were noted from a channel fill of late 12th-13th century date.

Hull: Some 14th century dumps by the River Hull at Chapel Lane Staith 78 contained blocks of fen/bog peat (plant remains from one are discussed in the

report in a little detail); peat (sometimes quite abundant) was recorded in pre-Friary deposits (mostly fills of a large cut) and in very many deposits dated *c*. 1316/17-1600 (perhaps largely reworked from earlier levels) at **Magistrates Courts (Hull) 94 & 99 EAU 2000/25** (and also recorded in deposits of 17th and perhaps also 18th-20th century date from this site). Peat was noted from six contexts (perhaps also in a further three) and charred ?peat in three contexts amongst 14th-16th century deposits (here mixed with a variety of other kinds of organic material, perhaps largely stable manure) at **Blanket Row EAU 2001/12**; traces of uncharred peat were found in a 14th-16th century fill deposit at **Liberty Ln 99 EAU 99/57** and traces of uncharred ?peat (and peatland material) in ?14th century occupation deposits (dumping) at **High St (36A-40) (Hull) EAU 94/01**. At **Sewer Ln 74**, early-mid 16th century deposits produced a small peatland group of plant remains, with *Andromeda* and *Eriophorum vaginatum*, presumably from imported raised bog peat, but peat as such was not recorded—it may well have been overlooked, given the very early date of the analysis and the reliance of the worker on examination of plant remains from paraffin flots alone. Across the River Hull, uncharred peat was recorded in traces from three contexts from late 17th century deposits at **Sammys Point EAU 98/25**.

Ripon: Charred ?peat was recorded in modest amounts from a deposit thought to be the upper fill of a pit of early 11th-12th century date (**Wakemans House EAU 2001/09**).

Scarborough: Peat was present in two medieval deposits (and abundant in one of them) at **St Sepulchre St EAU 97/26**, amongst debris deposited in what was probably a watercourse.

York: 'Spot finds' at **Aldwark (adj 1-5) EAU 88/05** included fen peat from a 12th-mid 13th century pit fill and *Sphagnum* peat from a 14th century dump and a pit fill. There was fen/bog peat in six contexts from early-mid 14th century deposits interpreted as a dump formed from robbing the lining of a pit or drain, and from a single ?drain/pit fill of 15th-16th century date at **Fishergate (46-54) 85-6 (Priory)**, and peat in a 14th century deposit, and charred ?peat/mor humus from an undated (but presumably medieval or later) borehole sample from **Piccadilly (17-21) EAU 91/01**. An ash deposit of ?medieval date, rich in burnt and unburnt peat fragments was investigated at **Swinegate (20-4) EAU 91/23**, whilst traces of *Sphagnum* peat and ?peat were recorded from 13th-14th century occupation deposits at a nearby site, **Swinegate (12-18) EAU 94/13**. Traces of *Sphagnum* peat and ?peat and charred ?peat were observed in 14th century occupation deposits at **Merchant Adventurers Hall EAU 96/01** and traces of peat in four contexts of Anglo-Scandinavian and 14th-16th century date at **St Saviourgate (9) 95 EAU 98/14**, with uncharred peat in one Anglo-Scandinavian deposit, and charred ?peat (in some cases peat/mor humus) in six deposits of Anglo-Scandinavian to medieval date at **Layerthorpe Bridge EAU 2000/64**. There was a prominent component of peat fragments in some 'organic layers' of late 14th-early 15th century date at **Bedern 73-6 (Foundry)**, and abundant peat was recorded in one sample, a trace in another, and charred peat in a third from Area 20 and uncharred ?peat from Area 24, at **Hungate area EAU 2000/29**, probably all from medieval contexts. At **Blake**

St EAU 86/07, a spot sample of *Sphagnum* peat was recorded from a 13th-14th century well fill, and at Feasegate (BHS store) EAU 98/16 fen peat was identified in one context amongst deposits of 11th-13th century date. Charred and uncharred material that may have been peat was noted from two contexts of medieval date at St Andrewgate PRS 2002/12**.**

Rural sites: Peat, both charred and uncharred has been recorded in recent years from occupation deposits from a variety of rural sites. In the SE of the region, we note: Foredyke EAU 98/07, near Hull, where fen peat was noted in a 11th-13th century ditch fill, and charred ?peat in a 14th-16th century garderobe fill. At a site in Holme-on-Spalding-Moor (Runner End DEAR 54/98), quantities of burnt peat-like material were noted (along with other plant remains likely to have arrived in burnt peat) in one sample of ?14th- 15th century date, whilst at (a presumably nearby) site (Chapel Farm (rear) PRS 2002/14), also in Runner End, traces of uncharred peat were recorded in a ditch fill and tentatively also in the fill of a barrel/timber-lined pit fill, both features being medieval in date. From an excavation at West Cowick (Ship Inn (rear) EAU 99/18), uncharred and charred peat was noted in some quantity in a sample of kiln fuel of ?late 15th-early 16th century date and at trace levels in several other deposits. At Cooper Farm EAU 99/13**,** Long Riston, E of Beverley, late 11th-early 13th century deposits yielded traces of charred and uncharred peat (as well as remains of some fenland taxa which might have arrived with the latter). On Lindisfarne, a site at The Palace 2000 EAC 17/01 yielded some charred material perhaps originating from peat in one medieval pit/posthole fill, whilst at The Winery 2000 EAC, in the same area, one aceramic early medieval deposit contained some charred ?peat.

6.2.3.1 Evidence for *Sphagnum*

As well as peat *per se*, there are also many records of fragments of *Sphagnum* moss—usually detached leaves of small shoot fragments—from urban occupation deposits of Roman and medieval date, principally in York, Beverley and Hull, but also Brough, Carlisle, Hedon, Selby, Scarborough, and occasionally also rural occupation sites (it has been noted by ARH in 102 archaeological contexts from 31 sites, mostly in C and E Yorkshire). A high proportion of the records (where identification beyond genus was undertaken) are for *S. imbricatum*, a species characteristic as a fossil in post-glacial raised-bog peats, though rare as a living plant today (Daniels and Eddy 1990).

Clearly whilst some of these records may represent importation of fresh live *Sphagnum* for various purposes (sanitary uses, packing in shoes, and so on), the prevalence of *S. imbricatum*, the very decayed nature of some material, and the presence of small clasts of compressed *Sphagnum* (as well as its occurrence sometimes together with recognisable lumps of *Sphagnum* peat) suggests that much of this material arrived with peat.

Two examples of *Sphagnum* thought to have been brought as the plant rather than in peat are from early 16th-17th century Aldwark (adj 1-5) EAU 88/05, York, where a pit fill clearly contained faeces (though they formed only a small proportion of the surviving material) and fragments of *Sphagnum* were present amongst the small

range of foods recorded; and from **Queen St (Hull) 76**, where a mid 17th century garderobe pit fill in the city gaol was found to contain moderate quantities of food remains, including *Prunus*, walnut, fig, strawberry, wheat/rye 'bran', and grape, with *Sphagnum* leaves consistently present.

6.2.4 Woodland, hedges and other woody vegetation

Plant remains representing woodland plants can be said to be little short of ubiquitous in archaeological occupation deposits in the region if one accepts that wood charcoal—which is recovered from almost every sample—mainly had its origin in trees and shrubs from woodland (or at any rate from plants most likely to have grown in woodland, or in what might be called its modified linear and juvenile forms: hedgerows and scrub). Indeed, many early reports on archaeological plant remains were concerned only with small quantities of charcoal recovered as 'spot finds', usually because this material was visible and easily collected during excavation. The evidence for wood and timber in the region is the subject of a separate review (Huntley forthcoming); this review concentrates on other woodland plants as evidence for the presence or exploitation of this major vegetation type.

6.2.4.1 Woodland mosses

There are a number of examples from our region where woodland resources other than wood and timber appear to have been tapped. The same early medieval urban sites where all kinds of wood (and often wooden artefacts) are preserved are frequently also the source of a variety of large, branching ('hypnoid') mosses typically found in woodland habitats, on the trunks and boles of trees and fallen logs, on the ground, and on shaded rocks. In some cases these (and hypnoid mosses from other habitats) are intimately mixed with food remains rich in wheat/rye 'bran', seeds of fruits such as apple, elder and blackberry, and the eggs of parasitic nematode worms (cf. Kenward forthcoming), and there can be little doubt that theese deposits contain human faeces and that the mosses served a sanitary purpose—there were many examples from all phases (except the latest) at Anglo-Scandinavian **Coppergate (16-22) (Anglo-Scand)**, with similar material being recorded from 12th-13th century pit fills at **Tanner Row (24-30) 83-4**, York (although preservation of food remains at this latter site was generally quite poor and much of the faecal material examined had been 'mineralised'). Many deposits rich in moss at 16-22 Coppergate did not come from cess pit fills, however. Some concentrations were found in floors and other layers. In the case of those mosses which grow on bark, of course, material may have simply arrived with timber and have fallen from bark—or have been deposited with bark stripped during woodworking—without being used for any purpose.

As well as the mosses brought to Anglo-Scandinavian Coppergate there was a variety of other woodland plants in the deposits and these seem most likely to have arrived together with moss collected from the woodland floor. Amongst these were frequently recorded vegetative remains and seeds of wood sorrel (*Oxalis acetosella*) and the buds, bud-scales, or sometimes leaf fragments of many trees (oak, alder, birch, hazel, poplar/aspen, willow). The leaves of holly may also have been brought deliberately, though it is difficult to see why—they can hardly have been wanted amongst moss brought for sanitary purposes! (An origin in winter fodder for animals

is also difficult to envisage given the lack of evidence from any other source for the keeping of livestock on this site at this period.)

6.2.4.2 Other woody materials

Woody material which may have served as brushwood for some purpose—typically, but by no means exclusively, as fuel—includes heather and gorse (remains of the first of which, as we have seen, may have originated also in turves cut from heathland or moorland, or in peat). Some examples of sites from the region where cut twiggy material of this kind has been recovered include **North Bridge 93-4 EAU 97/16**, Doncaster, where, in 15th-16th century fills of a very large pit, gorse and heather were especially abundant in one layer, and in another there was a large concentration of willow twigs (though the presence with the last of these of a component which might have originated in a hedge or riverbank perhaps points to an origin in flood debris; the material is discussed further by Kenward *et al.* 2004). A 16th-17th century deposit at **Piccadilly (38) EAU 92/09**, York, consisted of a layer of wicker, perhaps part of a revetment, a sample of whose matrix contained abundant (mainly uncharred) gorse shoot fragments and other brushwood (oak, alder, willow). More post-medieval gorse material was found in deposits at **Bridge St (Chester) PRS 2002/16**: charred and mineral-replaced as well as uncharred remains of leaves, twigs, and even flower buds were found in various late 15th-mid 17th century deposits (especially in a cellar backfill deposit), with further charred leaves (spines) and twig fragments (especially in some gardrobe/cess pit fills) from 17th century levels, and some charred and uncharred gorse (and heather) in late 18th, and 19th-20th century deposits. Use of gorse as fuel, perhaps in a bakery, is very likely here. One last post-medieval example of a concentration of gorse remains is from Whitby: at **Whitehall Shipyard EAU 2001/46** gorse was present (with heather) in an 18th-19th century deposit with good evidence for woodworking in form of chips, wood fragments and ?sawdust.

Most other records of gorse (usually in small amounts) are also post-medieval, perhaps indicating how changing land-use had led to an increase in this plant in the landscape by this period—or a shortage of other resources (perhaps through reduced access to common land) which led to its more frequent collection and use.

There are a few cases where gorse has been recorded from much earlier deposits, however. Thus for the prehistoric period, it is known from Bronze Age-Iron Age **Barnaby Side DEAR 24/96**, near Guisborough (charred remains, with heather, here perhaps representing clearance for a cairn) and from ?Iron Age deposits at **Bolton Common EAU 2000/67**, to the E of York (in a ditch fill, where preservation of the leaves, shoot fragments and perhaps also pods of gorse was by waterlogging). At **Highcliff Nab DEAR 39/97**, near the Barnaby Side site, undated (but presumably prehistoric) charred material mostly consisted of gorse stems, leaves, pod fragments and, probably, seeds, The earliest record—though here a somewhat tentative identification—is from Neolithic deposits at **Nosterfield 97 HA (I)**, N of Ripon, where a pit fill contained abundant roundwood charcoal and spines thought to be gorse.

Other sites where at least small amounts of gorse remains have been recovered include, for the Roman period: **Manchester 1899**, where gorse stems were amongst

the woody component recorded; and two sites on Hadrian's Wall: **Black Carts DEAR 18/98** (parts recorded not specified in report); and **Vindolanda 71-6** (organic material of pre-Hadrianic date, *c* CE 85-125, mainly bracken but also large hypnoid mosses and amongst this material gorse pods and heather stems). For the medieval period there are gorse records from: **Chevington Chapel DEAR 1/98**, in SE Northumberland (gorse debris from a kiln); **Bootham Engineering Works EAU 2000/45** in suburban York (in a ditch fill of ?late 15th century date amongst litter including willow, bracken, and holly); **Eastern Lane 98**, Berwick-upon-Tweed (charred remains with other charred or uncharred litter including heather, moss and bracken); and **St Augustines Gate (9-11, rear) 99 EAU 2000/02**, Hedon (charred gorse leaves and ?twigs from a 12th-13th century pit fill).

Heather brushwood (or at least fragments of leafy shoot and the characteristic twisted basal stem/root fragments) is frequently recorded from Anglo-Scandinavian and early medieval deposits in York, e.g. in quantity in a 20-30 mm thick layer at **Aldwark (21-33) (Ebor Brewery) 73-4**, sandwiched between a layer of similar thickness of heathland mosses (above it) and a 100 mm thick alder brushwood raft, in a large ditch. Remains of heather were quite frequent at **Coppergate (16-22) (Anglo-Scand)** (with one or more separately identified parts of the plant recorded in more than trace amounts in at least 26 contexts from the middle and later phases of Anglo-Scandinavian occupation there), as well as being recorded in modest amounts from one 10th century deposit at **Micklegate (1-9) 88-9 EAU 2000/14** and from an 11th-12th century deposit at **Walmgate (118-26) EAU 2000/20**. Heather was frequently noted in many early medieval and medieval layers at **Layerthorpe Bridge EAU 2000/64**, in one case in a concentration with mor humus-like material which suggested the presence of heathland turves rather than brushwood. Heather is not uncommon in Roman York, too, with modest or abundant amounts in at least six late 2nd century contexts at **Tanner Row (24-30) 83-4**.

Elsewhere in the region we can note the occurrence of vegetative remains of heather in more than trace amounts from both urban and rural occupation deposits. Thus there was uncharred material from 1st century CE pit and well fills at **North Cave EAU 97/37** in the SE of the region, uncharred twig fragments from the fill of a linear cut at the Roman form at **Dowbridge Close 94 EAU 95/02**, Kirkham *LAN*, and charred root/twig remains from at least one context at **Carr Naze 93-4**, near Filey *NYR*, from deposits associated with the late Roman signal station there. Heather remains were recorded from many of the sites on the TSEP, too, with modest concentrations at the following (all from Romano-British contexts): charred material from **West Lilling EAU 2002/01** and **Goodmanham (NE of) EAU 2000/73** and uncharred from **High Catton (E of) EAU 2002/12**.

From medieval towns other than York, there are records of heather material from occupation deposits at **Magistrates Courts (Hull) 94 & 99 EAU 2000/25** and **Blanket Row EAU 2001/12** in Hull, and from a 14th century ?refuse layer at **The Bolts (24-6) EAU 90/11**, Scarborough. Post-medieval records include those for **North Bridge 93-4 EAU 97/16** (see under discussion of gorse, above) and, although always small amounts, those from **Bridge St (Chester) PRS 2002/16**.

Returning to York for a moment, the regularity with which heather—or material identified casually as such in the field—had been observed in early medieval deposits during interventions carried out prior to the application of modern archaeological excavation and post-excavation techniques in the city, led Ramm (1971) to assert that heather was, in fact, growing in the town on areas of alluvium formed during a period of flooding between the Roman and Viking periods. Neither the episode of flooding, nor the colonisation of alluvium by heather (which is in any case ecologically extremely unlikely) can now be inferred from the available evidence, and the quantities of heather recorded in archaeological deposits in the city can all be seen as importation—with implications for the nature of the hinterland of York or the exploitation of more distant areas, depending where the material originated (for further discussion of this, see Hall and Kenward 2004).

For some of the many other examples where remains from heather brushwood may be represented in the archaeological record, see the discussion of peatland resources above. Some other resources from woodland and hedges—wild-collected foods—are discussed further in respect of food, below. A last category which should be considered under the heading of fuel is material which may have been used as tinder. Obviously many kinds of combustible plant material may have served this purpose, but two kinds which are specifically mentioned in the archaeobotanical literature for N England in this respect are various fungi and mosses. Thus Watling and Seaward (1976) discuss this with regard to small puffballs like those found at Vindolanda, close to Hadrian's Wall (and at some other sites—see also below in connection with medicinal uses), and Corner refers to the use for tinder (amadou) of bracket fungi of the kind found at Mesolithic Star Carr (**Star Carr (preliminary report)**). The possible use of mosses as tinder is mentioned by Smith (1911, 606) in the context of material recorded during excavation of a prehistoric crannog at **Round Hill 1880-1,** between Ulrome and Skipsea, in N Holderness, though given the context, in which large amounts of brushwood were present, it may be wondered whether the moss was not all lignicolous material arriving on bark with the wood, as discussed above.

6.2.5 Craft and industry: use of raw materials

This section considers evidence from plant remains likely to have been used for some practical purpose as a raw material in the production of an artefact, or as an agent necessary to the mechanism of production (but excluding materials used in the construction of buildings, roads and the like, and excluding material used as fuels, which have just been considered).

6.2.5.1 Woodworking

6.2.5.1.1 Artefacts

Remains of wood in the form of finished or part-finished objects are known from a wide variety of sites in the region. The largest movable objects are timbers interpreted as boats. The importance of this region as a source of evidence for early boats is emphasised by McGrail (1990), who observed (p. 109) that 'of the five prehistoric boats known [at the time] in northwest Europe, four are from the Humber

Basin. In fact the oldest plank boats in the world, outside Egypt, are from a site at North Ferriby on the foreshore of the Humber north bank.'

Following McGrail's list, the tally includes the following:

> the plank-built boats of Bronze Age date at N Ferriby, on the Humber foreshore (see reports under **North Ferriby Boats Nos 1 and 2 47**; **North Ferriby Boat No 2 78-80**; **North Ferriby Boat No 3 63**; **North Ferriby Boat No 5**; **North Ferriby Boats (artefacts)**; and also Wright *et al.* 2001);
>
> a single oak plank from a Bronze Age boat at Kilnsea, Holderness (**Kilnsea Boat 96**);
>
> a logboat at Appleby *NLI*, NE of Scunthorpe, in the Ancholme valley (with a radiocarbon date of *c*. 1100 BCE, perhaps the oldest dated logboat from England (McGrail 1990, 115);
>
> an enormous oak logboat and the sewn, wooden, so-called 'raft', of Bronze Age date at Brigg *NLI*, in the Lower Ancholme valley (**Brigg Raft 1888 & 1974**;
>
> an Iron Age logboat at Hasholme, near Holme-on-Spalding-Moor *EYR* (Hasholme Logboat: Millett and McGrail 1988);
>
> and a number of undated but presumably prehistoric logboats (recovered in the 18th and 19th centuries at Withernsea and Hornsea in Holderness *EYR*, and at Marton, near Boroughbridge, and South Holme, near Malton, both *NYR*) and a logboat of pine (found early in the 20th century during the construction of the Guildhall in Hull).

There is even an early 11th century logboat from the R Calder in W Yorkshire and a medieval (14th century) example from Giggleswick Tarn, near Skipton *NYR* (McGrail and O'Connor 1979). The chronologically most recent find is a 19th/20th century boat in a lake deposit on an estate at Gosforth, Tyne and Wear (Allason-Jones and Osler 1986). (The putative log boat at Meols in the Wirral *MER* (**Meols boat EAU 89/31**), has not been confirmed as a boat.)

The only cases where fossil plant remains—*other than the timber forming the boats and associated wooden artefacts themselves*—have been investigated are at North Ferriby and Brigg. At the first, the stitching used to hold the oak planks together on boats 1, 2 and 3 was identified as yew, whilst the caulking consisted of a packing of the moss *Neckera complanata* (with a small admixture of *Eurhynchium striatum* (Hedw.) Schimp.), and in the case of boat 3 also twisted ropes of another moss, *Polytrichum commune* (**North Ferriby Boat No 3 63**; see also **North Ferriby Boats Nos 1 and 2 47** and Dickson 1973, 192-3). A few samples from deposits associated with some of these boats have been investigated for plant macrofossils; they have, not surprisingly, yielded evidence for halophytes consistent with deposition in estuarine alluvium.

For the so-called Brigg ‘raft’, the seams between the bottom planks were caulked with moss (though the material appears never to have been identified further), whilst for the ‘dugout’, recovered a few years earlier than the ‘raft’, a large bryoflora was recovered (variously reported in **Brigg Logboat 1886 (mosses 1)**, **Brigg Logboat 1886 (mosses 2)**; **Brigg Logboat 1886 (mosses 3)**). It came from caulking of the stern board and patch and (remarkably) included several thallose and leafy liverworts (Dickson 1973, 187 and 192, reviews the evidence briefly).

Although a relatively recent find, and benefiting from studies of various other biological remains, the Hasholme boat appears not to have any associated investigations of plant macrofossils.

Turning to the smaller objects of wood from the region, perhaps the best known and most widely illustrated and discussed, and certainly the oldest, are the so-called ‘Roos Carr figurines’, a group of Early Iron Age human figures and a boat (the wood determined by ARH as yew, *Taxus baccata*), from a wetland site in S Holderness (and discussed in the context of other British and Irish prehistoric figures most recently by Coles 1998). It is not the place here to review the diversity of other worked wooden objects, consideration of which is more usually the remit of the artefact specialist than the archaeobotanist. However, there are some comments for which the identification (often made by a botanist) of such objects calls with regard to the origins of the material of which the object is made; these are considered in the following section.

6.2.5.1.2 Importation of timbers

Evidence for the use of wood and timber grown outside the region—that is, essentially outside the British Isles—comes from artefacts which have been identified as a taxon that has no known history as a native plant during the period in question (though all have been planted and grown successfully in the N of England in the later post-medieval or modern periods).

As might be expected, the earliest recognised imports of wood are from Roman sites, where there are a number of records for objects (or sometimes just fragments of wood) of silver fir (*Abies alba*), sycamore (*Acer pseudoplatanus*), box (*Buxus sempervirens*), and cedar (*Cedrus*), and perhaps also sweet chestnut (*Castanea sativa*), larch (*Larix*), and spruce (*Picea*). Typically, stylus writing tablets are made of silver fir (there are examples from **Abbey St 90**, Carlisle, and the wood is also recorded from a dagger hilt from **Sewingshields AML 4545** and a half-bung from **Housesteads Fort 84 AML 188/88**, both on Hadrian’s Wall), although the so-called ‘leaf tablets’ at Vindolanda were made from what is, applying Occam’s razor, presumed to be both native and locally-obtained material: birch, alder and oak (Bowman 1994). Some buckets have also been found to be made of silver fir, e.g. part or all of three of those from the wells at **Dalton Parlours 76**, near Wetherby, and one from York (**Skeldergate (58-9) 73-5 (bucket)**). Other buckets in the extraordinary assemblage of wooden artefacts from the Dalton Parlours well included three identified as *Acer*, one of which was probably sycamore, whilst this material also included charred comb fragments of box wood. Some other reports cite further identifications of wooden objects of Roman date which may well have been imported:

Carlisle AML 3174 (presumably Roman)—includes one determination of *Larix/Picea* and one of *Cedrus*; Catterick AML 109/87—the identifications of wood attached to metal artefacts include an example of iron binding with a conifer identified as 'probably *Abies/Cedrus*'; Langton Villa, near Malton *NYR*—a well-fill yielded wood including walnut (*Juglans*, a single 'thick twig'), sweet chestnut ('two big pieces') and sycamore (one twig; there was also some walnut shell lending credence to the notion that the walnut tree from which the nuts were obtained was growing by the villa); whilst from sites along Hadrian's Wall there are records for 'exotica' from excavations at Housesteads fort: Housesteads 84—a variety of species represented, including three pieces of *Picea/Larix* and two of *Castanea* (though the majority of the specimens were oak, with some alder, hazel and willow/poplar/aspen); Housesteads Fort 84 AML 188/88—sweet chestnut bung (in addition to the silver fir object noted above); and Housesteads AML 4546—some metal artefacts with wood attached, including a chisel with sweet chestnut.

Other objects, made of wood from trees which are native but also widespread across Europe, cannot of course be definitively identified as imported and it should be remembered that trees introduced and cultivated in the early years of Roman occupation would have grown large enough to furnish material for woodworking by the early 3rd and 4th centuries. Evidence from, for example, needles or cones of *Abies* might indicate the plant *was* growing here—none has yet been recorded in our area. Artefacts presumed to have been imported are also known from Anglo-Scandinavian deposits in the region. Excavations at 16-22 Coppergate, York, yielded large numbers of well-preserved wooden finds of great variety, but including an especially important corpus of turned bowls and turning cores (Morris 2000). Several objects were made of boxwood, notably a set of pan-pipes (*syrinx*, pp. 2353-5) carved from a single slab of the wood, and there was a bucket stave of silver fir (p. 2235). Wood of this exotic tree was also identified in the form of bucket staves of medieval date from the watching brief site close to the 16-22 Coppergate excavation (Morris 2000, 2251 and 2425).

From the later medieval period, an increasing number of artefacts (though they are still rare as a proportion of all finds) are of wood such as beech (*Fagus*) and pine (*Pinus*), both perhaps most likely to have been brought from elsewhere in Britain, although the recurrent records for conifers from late- and post-medieval deposits in towns such as Hull and Newcastle are consistent with the documentary evidence for the importation of large amounts of timber from the Baltic through those centuries (as discussed by, for example, Davis 1964).

6.2.6 Textile working and rope making

A number of plants may be used at the various stages of textile working or the manufacture of string, cord or rope, including, of course, plants which provide fibre from the 'bast' layers within their phloem: principally hemp and flax, but also potentially trees such as oak and lime. As the chronological review in Section 5 shows, there are plentiful records for remains of hempseed and flax seed (linseed) from sites of Roman and later date throughout the region, though the use of both as food for human or animal consumption and as sources of oil means that the presence of the propagules cannot always be taken as an unequivocal indication of

textile working. That must certainly be the case for linseed found in many pit deposits also containing abundant evidence for faeces (e.g. at **Coppergate (16-22) (Anglo-Scand)**).

6.2.6.1 Retting

However, remains of the seeds of fibre plants (or better still of remains of the stems in which the fibre resides) in deposits clearly formed in a natural or semi-natural aquatic environment may sometimes provide more convincing evidence for 'retting', the process whereby mature stems of hemp or flax are steeped in bundles in a body of water for six or more weeks to facilitate the extraction of fibres by partly rotting the tissues around them. One of the best examples of this is from Askham Bog, near York, where abundant hemp achenes have been recorded from a horizon within the uppermost metre of the peat at one location (**Askham Bog 78 (hemp)**/**Askham Bog 78 (macros)**) and occasionally from elsewhere at the site, probably in pools formed through peat cutting; AMS dating of a sample of the achenes puts the episode of presumed retting in the late medieval/early post-medieval period (Bronk Ramsey *et al.* 2000), as noted above.

Several other examples in the region where retting may have occurred are from sites where the presence of a moat has been known or inferred—from **Hall Garth 80 EAU 94/60**, Beverley, **Higher Ln (Fazakerley) 94 EAU 96/05**, near Liverpool, and **Old Abbey Farm 95** at Risley, near Warrington *CHE*. From one further moat, at **Rest Park 63**, between Sherburn-in-Elmet and Selby *NYR*, plant material identified as capsules of flax with seeds was reported; the brief botanical report discusses the possibility that this was 'mash' being steeped to reduce toxicity, but it seems just as likely, if not more so—especially in the absence of any illustration or detailed description of the find—that it was from a flax crop that had been retted (retting *is* mentioned *en passant*). At **North Beckside 93 EAU 93/05**, Beverley, there was evidence in the form of hemp achenes from one of the 'natural', apparently waterlain deposits, for what was probably retting, making use—in this case—of a marshy area at the edge of the medieval town. Another site in Beverley where retting may be evidenced is **Morton Ln EAU 2002/02** (discussed in the context of some other records from the region by Gearey *et al.* 2005). At a site on the **Easingwold By-pass 93 EAU 94/36**, 20 km N of York, an assemblage of wetland/aquatic taxa (unfortunately from a sample of unknown context type and date, collected during a watching brief) was found to contain hemp achenes and flax seeds and capsule fragments, suggesting the deposit may have formed in a retting pit. Hemp and flax seed remains from a channel/hollow fill of pre-14th-16th century date at **Barmby on the Marsh PRS 2001/02**, near Howden *EYR*, may represent another example. (We may add that there are also sites where evidence for hemp retting has been secured through pollen analysis, but in the absence of any macrofossil remains; examples include **Glasson Moss 96-7 (hemp)**, on the Solway plain in Cumbria, Thorpe Bulmer, near Darlington *DUR* (Bartley *et al.* 1976) and some sites discussed by Gearey *et al.* 2005. At the first of these, certainly, the lack of sufficiently large samples may be the reason hemp achenes were not recovered, despite the attention paid to macrofossil plant remains.)

At two sites in York, concentrations of stem fragments attributable to flax have been recovered, and here (as suggested above) we may be more certain that we are dealing with evidence for the processing of a fibre crop. At **Layerthorpe Bridge EAU 2000/64**, on the R Foss to the E of the city centre, several samples examined during an assessment exercise contained flax seed and capsule remains and in some cases there were bundles of stems with further capsule fragments and seeds, in deposits probably forming in the river in the medieval period (and perhaps also as late as the 19th century). In the heart of York, at **Coppergate (16-22) (Anglo-Scand)**, three examples of plant material that has been interpreted as scutching waste or 'shives'—the highly fragmented stem material left after retted stems have been broken or scutched to extract the fibre—have been identified (Hall in Walton Rogers 1997). Elsewhere in the region, a concentration of flax seed and capsule fragments at **Northumberland St DEAR 14/96**, Newcastle, located within a burgage plot at the edge of the medieval town may represent processing waste, e.g. the stage of removal of capsules from stems destined for retting.

6.2.6.2 Dyeing

Although often mentioned in early reports on plant remains from urban archaeological sites as an aspect of archaeobotanical studies which would bear fruit, fossil evidence for plants involved in the dyeing of textiles or their raw fibres was almost non-existent till the early 1980s and then (initially, at least) strongly biased by the large number of records from Anglo-Scandinavian York (see below). The more recent record of some pods of woad from a pit fill from a phase of activity dated *c*. 10-45 CE at Dragonby, near Scunthorpe (**Dragonby (woad)**, **Dragonby 64-73**), and has extended the range of the evidence considerably in space and time.

To some extent, this paucity of evidence for convincing remains of dyeplants is a function of the element of chance in preservation and of the difficulty of identifying the fossils concerned when they *are* preserved. Thus, of the four plants considered to be important amongst the evidence for dyeing at Anglo-Scandinavian Coppergate, York, for example, only one (woad, *Isatis tinctoria*) was represented by reproductive parts (in this case the last vestiges of the winged pods, which were themselves not immediately recognizable). The other three plants were present in the form of root fragments (madder, *Rubia tinctorum*), stem fragments (but also occasionally leaves, and flowers: dyer's greenweed, *Genista tinctoria*) or shoot fragments (a clubmoss, *Diphasiastrum complanatum*). In a few cases, what is thought to have been residues from the vegetative parts of woad—tangled masses of xylem vessel thickenings presumed to come from fermented leaves—have also been identified; like the pod remains, these are very likely to be overlooked, especially if diluted amongst other material. In theory, the pod remains of woad should not even have been present if what we are recording archaeobotanically is the waste from dyeing, since the parts used in dyeing are the first-year leaves, conventionally picked in the season prior to flowering. (Interestingly, a sample rich in the presumed woad leaf material was discovered to contain the bacterium responsible for natural reduction of indigotin to a form in which it can be transferred onto textile fibres: see Padden *et al.* 2000.)

It is also worth noting here that some secondary evidence for the presence of dyer's greenweed may have been found in the form of remains of the weevil *Apion difficile*

Herbst (cf. Kenward forthcoming) whose life-cycle is closely linked to this plant. A fifth plant most likely to have served as a dyeplant is weld or dyer's rocket (*Reseda luteola*), discussed further below.

The importance of this evidence to the interpretation of the Coppergate site will be obvious (see **Coppergate (16-22) (Anglo-Scand)** for a detailed discussion and diagrams showing the spatial and temporal distribution of fossil material). As well as the actual evidence for dyeing, complementing that from analyses of dyestuffs on the textiles themselves (cf. Walton 1989; Walton Rogers 1997), and indicating that dyeing took place *at the site*, the presence of the clubmoss, apparently not a native British species, points to the importation of a raw material from Scandinavia or North Central Europe, presumably for use specifically as a mordant (the plant has been used in this way in Scandinavia till recent times).

Evidence for dyeplants from York has not only emerged from Anglo-Scandinavian deposits at Coppergate. There are records from contexts of similar date from several sites from both the Coppergate-Pavement area of the city north-east of the Ouse and the area south-west of the river (summarised by Hall 1996 and Hall 1998, and considered most recently by Hall and Kenward 2004). Additional records have continued to be made from material seen in developer-funded interventions. In one case, quantities of dyer's greenweed were a feature of certain 10th- 11th/12th century contexts at **Skeldergate (64-74) EAU 2000/53** and here there were specimens of the basal part of the stems whose character seemed to indicate repeated cutting. The deposits also yielded weld seeds and some teasel remains.

A number of records for woad and many for weld/dyer's rocket have been made from post-Conquest deposits the city . Woad is now known, for example, from 14th century deposits at neighbouring sites at **Piccadilly (22) 87 EAU 95/53** and **Piccadilly (17-21) EAU 91/01**, and from a medieval deposit well away from the city walls at a site in Lawrence Street (report not yet included in the review).

Beyond York, there is some good evidence for early medieval (mid 12th-mid 14th century) use of dyeplants—madder, greenweed, weld and woad—from various deposits at **Eastgate (Beverley) 83-6** and (from deposits dated ?12th century) from an adjacent site, probably part of the same series of tenements, on land later occupied by the **Dominican Priory (Beverley) 86-9**. There is also an unpublished record by ARH of very large numbers of weld/dyer's rocket seeds from a 12th century drain at Dyer Lane/Walkergate, also in Beverley (it might be added here that 'walking' or 'waulking' was the former term for fulling, the process by which fullers trampled woven textiles in a stream or a vat of water, often with fuller's earth, to clean and improve the quality of the fabric). More recently, traces of greenweed have been noted from deposits at **Magistrates Court (Beverley) EAU 2001/06** and **Well Ln (9-17) 98 EAU 99/04**, and of madder at **Keldgate (by 52) EAU 2001/35** and **Morton Ln EAU 2002/02**.

Weld/dyer's rocket seeds are frequently recorded from archaeological sites of Roman and later date (it may well be a Roman introduction), but the plant is a very competent ruderal on disturbed soils and is likely to have been a common urban weed in the past, especially on calcareous substrates. On the other hand, by tradition

weld provides its best colour for dyeing if collected as the seeds are ripening—and it can be used long after harvesting if dried—so it is very likely that the seeds would be present, perhaps abundant, in the waste from a dyebath in which this plant had been used. The presence of moderate or large concentrations of weld seeds in deposits from medieval waterfront sites in Newcastle (**Queen St (Newcastle) 84-5**, **Crown Court 85-6**, and **Close Gate 88-9**), is thus only equivocal evidence for the plant's use in dyeing there. The same may be true for 13th-15th century deposits in **Cartergate 94 EAU 94/22**, Grimsby and for medieval deposits in York at **Skeldergate (14) EAU 91/06**, as well as at several sites where the weld seeds were preserved in deposits fringing the King's Pool (but see below concerning evidence for teasels from some of these).

Very many other plants *may* have been used in dyeing and almost any plant will furnish at least a pale colour to raw fibre, yarn, or woven textiles, especially in the presence of a mordant (usually a metal salt such as alum, potassium aluminium sulphate; the clubmoss at Coppergate appears to have furnished this secondarily, since this plant can accumulate aluminium from the soil). It is only where there are concentrations of one or more plants whose uses other than for dyeing are few or none that it seems appropriate to conclude that dyeing took place. Interestingly, despite all the abundant evidence for dyeing at Anglo-Scandinavian Coppergate, and the unavoidable conclusion that this activity took place at the site, there is no clue as to the nature of the containers in which the dyeing (which usually requires heat, and in the case of woad, the maintenance of a steady heat well below boiling point) was carried out.

It may also be useful to note here that one group of organisms used in dyeing are extremely rare as fossils: the lichens (or lichenised fungi). Indirect evidence for these has been found via chemical analyses of textile fibres (Walton 1989; Taylor 1983) from York and from Vindolanda within our region, however.

6.2.6.3 Other textile-related activities

Another aspect of textile working to which studies of plant macrofossils can contribute is the 'teasing ' of cloth during the finishing process. Prior to the advent of metal combs in the 19th century, teasing was always carried out using the mature, dried flowering-heads of fuller's teasel (*Dipsacus sativus* (L.) Honckeny)—indeed, for the finest cloths teasels have never been superseded, though it appears that the last factory in the UK processing teasels for the textile finishing industry, based in Huddersfield *WYR* and discussed by Hall 1992, ceased to trade in the mid-1990s; all teasel gigs required by the makers of green baize for snooker tables in Dewsbury or the knitwear manufacturers of Leicester, for example, now have to be imported. (Note that wild teasels, *D. fullonum* L., despite their misleading specific epithet, *cannot* in any way be used for teasing—nor, probably, for 'carding' wool as is sometimes stated.)

Several sites in N England have furnished evidence for the receptacular bracts of fuller's teasel (the stiff bristly structures of which the flower head or capitulum is largely composed) and, as in the case of the vegetative remains of dyeplants, they may easily have been overlooked in the past (cf. the illustrations of modern and fossil

material given by Hall 1992). Thus there are bracts or fragments of teasel capitulum from three excavations in Beverley: **Eastgate (Beverley) 83-6** (from mid 12th-late 14th century occupation deposits with much other evidence, both artefactual and archaeobotanical, for textile-working); **Dominican Priory (Beverley) 86-9** (from a ?12th century pit fill); and **Lord Roberts Rd EAU 99/07** (in 13th century occupation deposits, with fruits). From York there are records from: **Coppergate (16-22) (Anglo-Scand)** (where, ironically, the teasels were from deposits dated to the earliest Anglo-Scandinavian occupation of the site, i.e. mid 9th-early 10th century, at which point evidence for dyeplants was, at best, sparse); **Merchant Adventurers Hall EAU 96/44** (from a 14th century levelling/dump deposit, which also contained flax capsule fragments and hempseed); and from **Skeldergate (14) EAU 91/06** (from two organic build-ups against a 13th century wall, which contained moderate concentrations of bracts, with fruits also of fuller's teasel, weld/dyer's rocket seeds, and remains of sheep keds (cf. Kenward forthcoming), surely indicating waste from textile working). Teasel bracts (together with fruits and capitulum fragments), of presumed medieval date, have also been identified from borehole samples at **Victoria House EAU 2001/51** on the SW side of the Ouse, and (tentatively) from 14th-16th century King's Pool silts at **Piccadilly (38) EAU 92/09** (together with flax capsule fragments and perhaps also some flax stem material).

Fruits of teasel, though not always identified (or indeed *identifiable*) further, are recorded from medieval deposits at many sites and may stand as further evidence for the use of the plant, though the wild teasel (whose 'seeds' are very similar, cf. Hall 1992) is a successful coloniser of the kinds of waste ground and neglected land which may have been common in towns, at least, in the past—as is the case with numerous other plants, such as weld and hemp. Sites with records of seeds identified as fuller's teasel (but in the absence of bracts) in York are: **Carmelite St EAU 91/15** (16th century dumps with some fuller's teasel fruits, but a diversity of other remains including food plants, box leaves and some tentatively identified madder root fragments); and **St Saviourgate (9) 95 EAU 98/14** (in a 14th/15th century dump). In Beverley there are records for fruits in the absence of bracts from: **Champney Rd 93 EAU 93/01** (12th-15th/16th century deposits, also yielding sheep keds amongst the invertebrate remains, which may well relate to textile working in the vicinity); **Jack Taylor Ln EAU 98/10** (again with some other evidence for textile working); and at **Keldgate (by 52) EAU 2001/35**. For Hull there are records of the fruits from: **Sewer Ln 74** (with hempseed and flax seed and capsules from the late 13th-early 14th century fills of a watercourse cut into the natural drift) and **Magistrates Courts (Hull) 94 & 99 EAU 2000/25** (in the fills of a pre-early 14th century feature).

6.2.7 Leather-making and -working

The plant material most frequently implicated in the tanning of leather is tree bark. Unfortunately, this material is often abundant on urban occupation sites where it is quite likely simply to have fallen or have been stripped from timbers used in construction of buildings or intended as fuel. Even where concentrations of bark seem likely to represent material used for some purpose, it is important to remember that bark has also been used in dyeing (cf. Cardon and du Chatenet 1990).

Some examples from the N of England where bark may have been used in tanning include **Keldgate 94 EAU 95/03**, Beverley—late 12th/13th century floors and pit fills from which one or two samples may have contained tan bark; and from the post-medieval period, a site at the **Snowdrift Laundry DEAR 39/94**, Scarborough, may have yielded evidence for tanning (a pit was found to have a plank lining of conifer wood and the fills yielded only bark and wood, including oak). A site in Chester, **Canalside/Witter Pl PRS 2001/06** at the eastern edge of the medieval town investigated the fills of an 18th century feature tentatively interpreted as a tanning pit—which certainly contained some 'sclereids' from bark, consistent with an origin in material used in vegetable tanning, though they were not abundant.

Perhaps the strongest bioarchaeological evidence for material thought to have originated in a tan pit, however, is from **Layerthorpe Bridge EAU 2000/64**, York, where several of the samples assigned to the Anglo-Scandinavian and medieval periods were dominated by decayed bark, an abundance of sclereids (lignified tissue forming clusters up to about 1-2mm across in some kinds of bark and very resistant to decay). Also present in two Anglo-Scandinavian samples and some of the medieval ones were remains of the beetle *Trox scaber*, typically (though by no means solely) associated with dry skins/hides. (The interpretation of tanning through assemblages containing certain plant and invertebrate remains is discussed further—and with respect to a range of craft and industrial processes—by Hall and Kenward (2003)).

6.3 Plant foods

Viewed across the full range of site types, modes of preservation, and the whole of archaeological time, it is the remains of plants considered in one way or another to have served as food that, more than any others, claim the attention of archaeobotanists in reports on material from excavations in N England—as elsewhere. Not only are plant-based food remains abundant in many urban deposits, where some of the most richly organic sediments encountered are the fills of pits in which food waste (typically in faeces) can be shown to have been discarded; on many rural sites of Neolithic and later date, remains of foodplants are (in the form, primarily, of charred cereal grains and associated chaff) almost the *only* plant macrofossils—apart from wood charcoal and weed seeds—recovered from occupation deposits. Indeed, for some authors, assemblages of charred plant remains from rural prehistoric occupation sites are seen almost exclusively as a source of information about past crop husbandry, to the extent that any other activities that might be inferred from the fossil evidence are given only slight consideration. This is clear from van der Veen's statement (1992, 4), following M. Jones's unpublished (1984) thesis, that 'carbonized seed assemblages represent, in virtually all cases, the harvested cereal crops and their associated impurities.'

Inevitably, of course, all fossil assemblages of plant remains representing food provide a biased picture of past plant food procurement and consumption because of the effects of differential preservation. Even in well-preserved waterlogged deposits, the range of plant foods preserved is likely to be no more than an approximation to the plant-based component of the diet of former populations, either in quantitative or qualitative terms. Thus, as archaeobotanists well know, pulses such as peas and

beans are generally poorly represented in the archaeological record, especially in uncharred material—though waterlogged deposits may, in fact, contain a number of parts: fragments of seed coat (testa), attachment scar (hilum) and even a small elongate structure from beneath the hilum (the 'tracheid bar'), and the first two of these are sometimes encountered in mineral-replaced material. (Remains of bean weevils, *Bruchus*, in insect assemblages may be a secondary form of evidence for the presence of pulses.) Except for 'bran' (more correctly, pericarp) in waterlogged contexts, cereals are much better represented where charring has occurred, though here the problems of residuality and the nature of the mode of preservation mean that the grains may with, greater probability, represent part of the debris from crop processing or storage than actual consumption. Thus 'bran' is often recovered from contexts where it is clear that it has actually been eaten and survived passage through the gut, whilst the charred cereal grains recovered were presumably rather rarely consumed after they became burnt. A frequent source of bran is in 'faecal concretions' where a large part of the bulk of the concretion, once dispersed in dilute acid, comprises bran and milled weed seeds, often with small, distorted (chewed) fish bones and, seen using a transmission microscope at magnifications appropriate to identification of bran and some other plant food fragments, the eggs of intestinal parasitic worms.

A very serious gap in the fossil record is represented by root and leaf vegetables, for which scarcely any good evidence exists. Apart from fragments of *Allium* epidermis (which are probably mostly remains of leek, and which are certainly under-represented in the corpus of records of archaeological plant remains through non-recognition as well as being very delicate and surviving only under the most 'favourable' burial conditions), evidence for vegetables in our region, as elsewhere, is limited to remains of plant parts not actually consumed—seeds or fruits of carrot, brassicas, and beet (*Beta vulgaris* L.). These seem most unlikely to have originated other than from wild plants never intended as human food. (Note that one report, in which remains of several plants are discussed in terms of the vegetables they might represent—**Hungate 50-1**—has a number of tentative identifications, some of which seem very dubious in the light of subsequent studies of further material.)

Fruits—in the culinary rather than botanical sense—on the other hand, are probably greatly over-represented in the fossil record, at least on sites with waterlogged preservation. Many, such as the woody 'stones' of *Prunus* species (sloes, cherries, plums) are very resistant to decay in waterlogged deposits and may sometimes be charred, or the seeds within the stones (kernels) may survive in a mineralised state. Similarly the nutshells of both hazel (*Corylus avellana* L.) and walnut (*Juglans regia*) are resilient and easily preserved charred or uncharred. A brief inspection of the chronological review, Section 5, will indicate how frequently such remains are recorded archaeologically.

6.3.1 Wild-gathered plant foods

Some early prehistoric sites in our region have yielded evidence for use of what must have been wild-collected fruits—the best example being charred crab apples from Neolithic pit fills at **A1 Walshford-Dishforth DEAR 4/93**, near Boroughbridge *NYR* (with remains also of blackberry, rose and hawthorn), and from **Caythorpe Pipeline**

EYR at the E end of the Yorkshire Wolds. These and many other sites have also yielded abundant hazel nuts, shell fragments of which are recorded from a very high proportion of all excavations, regardless of date and type. Whilst for some fruits (such as blackberry and raspberry) it may be difficult to distinguish the use of wild-collected and cultivated food, the records of rose, bilberry, rowan, and hawthorn *from deposits rich in other food remains* from sites of various dates in the region surely point to exploitation of a wild resource. Small woody seeds of elderberry and blackberry are often recorded in deposits where few other uncharred remains are preserved; there is sometimes a strong suspicion that these remains are intrusive (having been brought down at some time later by, for example, earthworm activity); perhaps they represent a stage of scrub development in which the seeds of these plants are (a) produced in large numbers and (b) the most likely to survive decay in an active soil, so that they are available for downward transport.

6.3.2 Staples: cereals and pulses

Bearing in mind the comments above about biases in preservation of these two essential sources of bulk carbohydrate, it will not be surprising to find that most of the data to hand concerning 'starch staples' are for charred remains. In the N of England, as elsewhere, few occupation sites of Neolithic and later date do not produce at least traces of charred grains, with chaff from certain kinds of cereals (mainly glume wheats, barley or oats, but also sometimes free-threshing wheats or rye), whilst rural deposits of medieval date seem to be characterised by the fairly predictable presence of both grains and pulses. On the surface these records seem to stand as evidence for the past cultivation and use of these important crops and we should (up to a point we *can*) by now be able to discern something of patterns of usage in space and time. We can, for example, trace changes in the kinds of cereals grown through the prehistoric and early historic periods, with the glume wheats of the Neolithic to Iron Age periods giving way to free-threshing wheats during the 'Saxon' period, and with oats and rye in the Middle Ages assuming a more important role than they had formerly.

Certainly the largest synthesis of data within our region for cereal husbandry (van der Veen 1992) provides some clear (and in this case very well dated) evidence for change over time (here, the later Bronze Age to Roman periods) and it seems appropriate here to quote parts of her summary (p. 77) *in extenso*:

> '(1) *Triticum spelta*, spelt wheat was introduced into the north east of England at the very beginning of the first millennium BC, which is as early as in southern Britain...
>
> (2) *Triticum spelta* had replaced *Triticum dicoccum*, emmer wheat, as the principal wheat by 2190±70 BP, at least in part of the region (i.e. the Tees lowlands). In north Northumberland, however, emmer maintained its role as an important wheat crop.
>
> (3) The free-threshing wheat, *Triticum aestivo-compactum*, bread/club wheat, was probably introduced towards the very end of the Iron Age...
>
> (4) *Secale cereale*, rye, was introduced in the region sometime during the Roman period, which is not much later than in southern Britain...

The role of barley continues unchanged through this period, perhaps because it is related to feeding animals rather than humans. Although free-threshing (bread/club) wheat appeared at two of van der Veen's later (later Iron Age and Roman) sites, it is important to remember that AMS dating of individual grains of this kind of wheat from two other sites revealed the presence of medieval and modern material, providing us with a much-needed reminder of the importance of dating the remains of crop plants themselves, rather than relying on dates from charcoal (which in this study were revealed often to be at least a century older than the grain).

Important though van der Veen's synthesis is, there is plenty of room for further study, as she indicates herself—geographically, both within and adjacent to her region of study; and chronologically (especially with respect to the 'Middle' Iron Age, barely represented in the timespans of the assemblages she studied). Moreover, we have only to look at the actual size of the assemblages of grain and chaff in her samples (see her table 6.3, p. 201) to realise that the mean concentrations of any one kind of charred crop remains across the samples studied were usually extremely low (typically rarely >1 per litre of sediment processed, often much lower), although this conceals a considerable amount of variation (see van der Veen's tables on pp. 166-97). If we take, for example, the data from Thorpe Thewles, the range of concentrations for total plant remains across the 127 samples, each of 28 kg, is 0.12 to 65.6 items per litre, with a mean of 6.9, and huge variance of 105.5 and standard deviation of ±10.3. One can get some impression of how dense the remains are in these sediments via a culinary analogy: the *uppermost* value for any one sample (66 items/litre) would be the equivalent of adding only a teaspoonful (5 ml) of small seeds such as a mixture of cumin and poppyseed to a volume of flour weighing 600 grammes (approximately the amount used for an old-fashioned 2lb or 'large' loaf). (To be fair to van der Veen, her statistical analyses were all made on assemblages subjected to a filter, such that the less productive samples were ignored.)

Archaeobotanists do not seem to have arrived at a consensus about what constitutes an interpretatively useful assemblage (in terms of *concentration* rather than absolute *number* of remains examined and recorded), mainly because of the difficulty (impossibility?) of relating the concentration of remains recovered to actual quantities of grain grown, harvested, processed, stored or used. We have very little—if any—idea how an assemblage of 150 grains from a sample of, say, 30 litres relates to the activities which led to its survival (principally the effects on assemblage formation of charring and then deposit formation). Although van der Veen is adamant (p. 59) that 'carbonized seeds and grains do not survive much mechanical damage and if they are not buried immediately, they are reduced to fine dust or at least become unidentifiable and are consequently not present or recognized during archaeobotanical analysis', this may not always hold true (and is, indeed, somewhat belied by the same author's records of identifiable grains which, from their earlier AMS date had clearly been reworked); the route by which such remains arrived in the deposit concerned obviously needs to be considered. Localised high concentrations of grain (and chaff) in deposits interpreted as the fills of storage pits or from within structures that were clearly granaries may offer a better opportunity to examine the way in which crops were used, but these are rare in comparison with evidence from other kinds of deposits and are even dismissed by some workers as 'extreme' cases which somehow 'bias' the data overall.

Undaunted by this ‘patchiness’ in the data, van der Veen set about exploring what was, overall a very large dataset (nearly 90,000 ‘seeds’ from 7,630 litres of sediments representing 325 samples taken from a total of nine sites) to try to establish what kind of sites they were in terms of cereal production and/or consumption, though in this polarisation some workers seem to overlook the fact that a producer site is also, *de facto*, a consumer site, unless for some reason the deposits represent processing taking place at a location where people are not actually living—a consideration now firmly brought to the archaeobotanical community’s attention by van der Veen and Jones (2006). Before making inter-site comparisons, however, it is necessary to establish that one is working with assemblages which represent the same crop processing stage.

Van der Veen approached this using two methods: Hillman’s (1981) analysis of the ratios of the major sample constituents (chaff, grains and weed seeds), and G. Jones’s (1984; 1987) use of weed seed categories. (As indicated elsewhere, only a few of the non-crop remains were not considered to be crop weeds, an assumption against which one might argue with some justification.) The first method seemed to indicate (p. 83) that most ‘of the prehistoric samples consisted of fine-sieving residues of the glume wheats and residues of the later processing stages of barley (probably also fine-sieving by-products), although a number of samples... contained early processing residues of barley, and, in the case of [a] sample ... from Rock Castle, early processing residues of bread/club wheat’. The Roman samples were quite different, those from the granary at South Shields (not surprisingly, as van der Veen remarks) representing a fully processed crop, while those from Thornbrough also consist of a cleaned crop, though with the spelt present as spikelets rather than dehusked grain.

The second method examined three characteristics of the ‘weed’ seeds: size, tendency to remain in heads or other compound structures, and the aerodynamic qualities of the seeds. The analysis revealed that all the prehistoric samples consisted of fine-sieving residues, those from South Shields were of fully processed crops, and those from Thornbrough consisted of both fine-sieving products and by-products (and one sample of winnowing by-product).

Given the general agreement between these two methods, van der Veen uses all the data from samples from the *prehistoric* sites for the weed species analysis which she employs to explore the economic nature of the sites—to attempt to establish whether crops were grown locally to the sites or were imported. For this, she follows the ethnographic models of Hillman (1981; 1984) and G. Jones (1984) on the one hand, and the ‘complementarity’ approach of M. Jones (1985) on the other. The first method suggests that all the prehistoric sites were producer sites, but the second gave no very clear results (and those that were obtained contradicted the results from the first method).

A large part of van der Veen’s study involved the analysis (using multivariate statistics) of the ‘weed’ assemblages from the prehistoric sites to look for pattern in the data (although in fact the whole range of crops and ‘weeds’ were included in most of the analyses). The methods used were Principal Components Analysis, Cluster

Analysis, and Discriminant Analysis, all of which divided the data into two subsets: 'Group A' samples, characterised by the presence of emmer wheat and weeds such as *Chenopodium album*, *Polygonum lapathifolium/persicaria*, *Stellaria media*, *Atriplex* sp. and small grasses (including *Poa annua*); and Group B, characterised by the presence of spelt associated with 'weeds' such as *Danthonia [Sieglingia] decumbens*, *Montia fontana*, *Bromus mollis/secalinus* and *Galium aparine*. These groups, she concludes, represent different tillage regimes—with annual nitrophile weeds in Group A perhaps representing small-scale subsistence production (seen at Hallshill, Murton, Dod Law and Chester House, all N of the River Tyne), and Group B representing larger-scale production or arable expansion (as seen at Thorpe Thewles, Stanwick and Rock Castle, all S of the Tyne). No clear evidence for a dichotomy on the basis of geography (other, perhaps, than latitude!) or other environmental differences could be determined, but (p. 158) 'it did, however, appear to be related to differences in settlement type and location, and these two factors appear to be connected to cultural and socio-economic differences in the two parts of the region. [Thus the northern group of sites were essentially small hillforts, the southern group sub-rectangular enclosures.] Differences in both the tribal affinity and the socio-economic structure of society [were] tentatively identified', the area N of the Tyne being occupied at this period by the Votadini (for whom there is some evidence of 'social stress and an absence of a strong social élite') and the area between the Tyne and Tees being settled by the Brigantes (who may have enjoyed a comparatively greater degree of political authority, centralization, and stability).

6.3.3 Vegetables

As noted above, *Allium* leaf epidermis thought to come from leek has now been recorded from many cess pit deposits in York, e.g. from 18 mid 9th-mid 11th century contexts at **Coppergate (16-22) (Anglo-Scand)**, from six 10th-11th century deposits at **Micklegate (1-9) 88-9 EAU 2000/14**, in moderate amounts in three of four deposits examined from **Parliament St (4-7) EAU 2000/22**, from three contexts from the period of the mid 13th-early 17th centuries at **Bedern AML 58/93**, and from at least at least five other sites in the city. Elsewhere, it has been recorded at **Sewer Ln 74**, Hull, in a late 13th-early 14th century deposit, though not identified during the original analyses (a charred seed of *Allium* was also noted from this site and an uncharred seed from nearby **Magistrates Courts (Hull) 94 & 99 EAU 2000/25**). Epidermis identified simply to *Allium* sp. has been recorded from at least one site in Beverley (**South Beckside 2000 EAU 2000/15**). In Cheshire, two records are known: **St Annes Ln (Nantwich) 85**, Cheshire, in a 2nd-4th century deposit; and **Watergate St (12) 85**, Chester, in a mid 13th century pit fill.

Convincing evidence for the consumption of other vegetables is lacking, though studies like those of, for example, Evershed *et al.* (1991) or Charters *et al.* (1993), on lipids and waxes preserved within the fabric of pottery sherds from the region might well reveal more information. We can only speculate about the 'cabbage stalk' from Vindolanda referred to by Blackburn (**Vindolanda 67-9 [inc 33-5]**).

6.3.4 Flavourings: herbs and spices

Although there are now many records from Roman and later deposits in the region for a variety of plants likely to have been used as flavourings—such as coriander (*Coriandrum sativum*), dill (*Anethum graveolens*), celery seed (*Apium graveolens*), fennel (*Foeniculum vulgare*), poppy seed (*Papaver somniferum*) and summer savory (*Satureja hortensis*)—records inevitably cluster where there is good preservation by waterlogging, so our picture of their occurrence through time and across the region is a distorted one. The intensive investigation of richly organic deposits may be the only way of securing evidence for the very sparse remains of exotics such as black cumin (*Nigella sativa*), so far found only as a single seed from Roman deposits at **Annetwell St AML 37/89**, Carlisle. Clearly context (including the nature of the rest of the plant assemblage and any relevant animal remains) is vital to the interpretation of such records; thus the record of hyssop from **Close Gate 88-9**, Newcastle, probably represents plant grown for ornament, medicine or flavouring, whilst that from **Magistrates Courts (Hull) 94 & 99 EAU 2000/25**, in a burial, surely points to ritual use.

We should also encourage excavators to continue to collect 'spot finds' of unusual plant material encountered during excavation, as well as samples of whole sediment for subsequent processing to extract *assemblages* of plant (and other biological) remains. Some partly-charred cloves of garlic (*Allium sativum*) from a late 13th century deposit at **Eastgate (Beverley) 83-6** were collected as a spot find—at the time, perhaps the only fossil evidence for the plant in Britain. Subsequently, a medieval deposit at **Layerthorpe Bridge EAU 2000/64**, York, has yielded charred *Allium* cloves which are though to be garlic, and some uncharred fragments of material which may be the 'tunic' (papery outer layer) of garlic cloves have appeared in more than one urban medieval assemblage.

6.3.5 Brewing

At the point of completion of the first draft of this review early in 1998, there was (perhaps surprisingly) little good archaeological evidence in the region (or nationally, for that matter) for the use of plants in brewing. Since then, we have been able to add somewhat to the corpus of information through additional records of concentrations of remains of hop (*Humulus lupulus*) and of charred cereals showing evidence of sprouting.

Considering first the hops, at **Stricklandgate 87-8 AML 65/89**, Kendal, an 18th century hearth fill yielded an assemblage dominated by hop achenes (with large numbers of arable weeds and nuts and some grassland taxa). More recently, moderate numbers of hops have been recorded from an early 18th century deposit at **Bridge St (Chester) PRS 2002/16**. Perhaps significantly, hop fruits (sometimes with their bracts intact) were frequent in small numbers in Anglo-Scandinavian deposits at both **Pavement (6-8) 72** and **Coppergate (16-22) (Anglo-Scand)** in York, and seem to be regularly present in deposits of this date from other parts of the city (they were present in many layers but in moderate numbers in, for example, four contexts at **Micklegate (1-9) 88-9 EAU 2000/14**, two at **Parliament St (4-7) EAU 2000/22**, and from one at **Clifford St (2) EAU 2000/17**). These may well represent brewing residues, but in other cases much smaller concentrations of hop achenes have been

recorded. It used to be considered that hops were not used in flavouring beer until the 14th century. Monckton (1996), for example, wrote (p. 11): 'Until about 1400, first by tradition and then by law, the ingredients of ale consisted only of malt (usually made from barley, but sometimes of other cereals [occasionally of oats or wheat]), water and yeast. In the [early] 15th century a new version of the same beverage, which became known as beer, was introduced to England by merchants from Flanders, Zeeland and Holland. With that introduction of the 'son of ale', the brewer became concerned with an additional raw material, hitherto unknown to him, called hops.' Given the evidence from Anglo-Scandinavian York—and from the tenth century Graveney Boat from Kent (Wilson 1975)—we may perhaps be dealing with an early medieval tradition, introduced from continental Europe, which was subsequently lost, to be re-established only 350-400 years later.

Plants other than hops may also have been used in flavouring beer. Some of the material (variously leaves, fruits and twigs) of sweet gale or bog myrtle (*Myrica gale*) frequently encountered in small amounts in Anglo-Scandinavian and medieval deposits in York, or from medieval Beverley (and, rarely, Doncaster and Hull), may be connected with brewing, though the plant has a number of possible uses (as, for that matter do hops—both are recorded as yielding a yellow dye, for example!).

Charred cereals grains for which some degree of germination has been noted are rather frequently encountered in occupation deposits and have, in some cases, been discussed as evidence of use in brewing. Here it is supposed that the grain was germinated under controlled conditions, then dried and roasted to produce malt—the roasting stage being the one at which it is supposed that charring took place accidentally. Thus at **Brucegate DEAR 6/99**, Berwick-upon-Tweed, a medieval pit fill yielded numerous barley grains in a matrix of ash, the grains mostly sprouted, and the sprouts being 70-80% length of grain, so suggestive of malting. Deposits associated with a 10th century ?oven at a site in Lawrence St., York (Hall, unpublished data) likewise produced moderate concentrations of sprouted grains, mainly barley and oats. An example from a rural Roman context is that at **Staniwells Farm EAU 90/05**, near Hibaldstow *NLI* where sprouting spelt and barley grains were found in two assemblages from an ash deposit associated with a 3rd century oven.

Whilst these examples may be plausibly interpreted as evidence of malting, the archaeological contexts do not, in many cases, convincingly support this. For the two large stores of grain, apparently *in situ*, at **Coney St (39-41) 74-5 (W H Smith)** and **Rougier St (5) 81** in York, it seems just as likely that we are dealing with crops that were harvested in a wet summer in which germination had commenced 'on the ear', or where germination occurred in the granary because of inadequate circulation of air, the charring perhaps happening as a result of failed attempts, in each case, to dry the grain and halt further sprouting. Other examples, such as the sprouting grain from a well in the *vicus* outside **South Shields Fort**, may be debris discarded from similar large stores. Medieval material from **Addingham 71-5 & 89-90** *WYR* was explicitly regarded as representing a harvest which took place under wet conditions because the sprouting had evidently occurred prior to winnowing (though the evidence for that processing stage was very slight).

6.3.6 Oil seeds

A number of plants may have provided seeds from which oil was expressed, though we have no examples in the region of a residue of the kind which might result from such activity—ie a high concentration of fragmented remains (the charred 'cake' of flaxseed from an 10th century deposit at **Old Penrith 77 & 79** *CUM* perhaps comes the nearest). Rather, we have abundant records for Roman and later periods for moderate or (more usually) small concentrations of whole or fragmentary 'seeds' of flax, hemp and opium poppy, and more recently some records are beginning to emerge for gold-of-pleasure (*Camelina sativa*), though this last may merely be arriving at the sites in question—Anglo-Scandinavian **Walmgate (41-9) PRS 2002/26** and medieval **Layerthorpe Bridge EAU 2000/64**, both in York, and late 12th-early 13th century **Beckside North PRS 2002/06** and late 14th-early 15th century **Morton Ln EAU 2002/02**, both in Beverley—as a weed of flax fields.

6.3.7 Imported foods

Deposits of Roman and medieval date in the region have provided a good deal of evidence for what may be supposed to have been imported plant foods (although the question of how far some, such as fig and grape, may have been cultivated within England, if not actually in the area of the northern counties, at certain periods remains difficult to answer). We may be reasonably certain, however, that the olives recorded from mid 2nd-4th century deposits at **Tanner Row (24-30) 83-4**, York, from Roman **Annetwell St AML 37/89**, Carlisle, and 13th-15th century deposits at **Mansion House 90**, Newcastle were *not* grown nearer to N England than the Mediterranean. The same is probably true of the lentils recorded from the first two of these sites, and of the spice black cumin (*Nigella sativa*) from **Annetwell St AML 37/89**. (In passing, it may be mentioned that some of these remains are very sparse in the archaeological record and have been recovered largely as a result of sampling strategies in which large numbers of deposits have been sampled and large—'bulk'—samples processed. It is no coincidence that no records for these rare exotics have been made during archaeobotanical studies in which only a few samples of small size have been examined, though a good example of another source of information in this regard, the 'spot find', is the record of date (*Phoenix dactylifera*) stones from a late 13th-mid 14th century ?garderobe deposit at **High St/Blackfriargate (Hull) 73-6** and, as noted above in connexion with garlic, such material should not be disparaged.)

6.4 Health and medicine

The use of plant remains in studying past health and medicine has always been dogged by the problem of how to interpret material which represented parts of plants with a known medicinal use which were not usually the actual ones employed. Rather few herbal remedies utilise fruits and seeds, for example—so what do we make of the records of seeds in archaeological deposits? Even when the remains recovered *are* those recorded as having been used directly in medicine, a straightforward interpretation cannot necessarily follow—thus the large seeds of caper spurge (*Euphorbia lathyris* L.), recorded from, for example **Coppergate (16-22) (Anglo-Scand)**, may merely be from plants growing as weeds on or near the site (the plant is very successful as a persistent weed of gardens, and is rarely recorded away from

settlements). By contrast, the record of three seeds of this plant from a Saxon thread box from **Barton upon Humber** *NLI*, identified by Mark Robinson, looks suspiciously like a genuine example of a plant with an actual medicinal purpose *in context*.

There are many records—all from Roman and later deposits with waterlogged preservation—for a great variety of plants which *may* have been used medicinally, but in no case does it seem that they can be unequivocally interpreted as such. Plants in this category include henbane (*Hyoscyamus niger*), deadly nightshade (*Atropa bella-donna* L.), vervain (*Verbena officinalis*), greater celandine (*Chelidonium majus*), columbine (*Aquilegia vulgaris*), and milk thistle (*Silybum marianum*). All have been recorded archaeologically exclusively as seeds which, with the possible exception of henbane, are *not* the part likely to have been used medicinally.

Mention might be made here, though, of some other organisms (not, strictly, plants) which could have been used medicinally and which have certainly been discussed in such terms (e.g. as plasters or styptics): small puff-ball fruiting bodies, recorded from late Iron Age **Stanwick** *NYR*, and from late 1st-early 2nd century Roman deposits at Vindolanda (**Vindolanda (puff-balls)**). At both sites, *Bovista nigrescens* was recorded with, in addition, material of *Handkea (Calvatia) utriformis* at Vindolanda. Remains of the spore-mass (gleba) of the large puff-ball, *Calvatia (Langermannia) gigantea* have been noted in a 12th-mid 13th century deposit at **Aldwark (adj 1-5) EAU 88/05** and from three Anglo-Scandinavian feature-fill contexts at **Coppergate (16-22) (Anglo-Scand)**. Here, too, other uses are possible; the large puff-balls are edible before the spore-mass darkens and separates into spores, and they have also been burnt to 'smoke' bees from hives and as an anaesthetic for humans during surgical operations (see, for example, Ramsbottom 1953), whilst, as noted above, all of these fungi might serve as tinder when dried.

Another aspect of health is the danger of some plants as poisons. As in the case of medicinal uses, no example of the deliberate use of plant as a poison can be adduced for our region, but one plant, at least, may have been a constant danger to health throughout the Roman and later periods: corncockle, *Agrostemma githago*. Though now virtually extinct in Britain, this plant of cornfields, especially in autumn-sown crops, was recorded as a pernicious weed throughout the later historical period (16th century onwards) and only declined in the early decades of the 20th century with the development of herbicides and the use of clean seed grain. To judge from the fossil record, it was a serious contaminant of grain from the point in the Roman period when it appears to have arrived in the region (there are no published prehistoric records for the plant in N England, and the earliest Roman records appear to be from the 2nd century CE), and it is almost universally recorded in later deposits, being especially noticeable in the form of seed fragments in assemblages rich in wheat/rye bran (with worm eggs and often also concretions interpreted as having formed from faeces). It is in this fragmentary form, that corncockle is most likely to have been hazardous to health—the seeds contain a saponin—githagin. This is a poisonous glucoside, which (though authors vary in their opinion as to its effects after cooking) seems likely to have rendered bread made with flour in which it was an unavoidable contaminant at least somewhat less palatable than otherwise (and certainly darker in colour since the seed coat is black), perhaps even causing symptoms such as nausea and headaches, if not worse. (For discussions of this

fascinating subject, see Wilson's report on what is clearly faecal material containing seed fragments of corncockle from a late 13th/early 14th century pit fill at Goss St 72, Chester.)

6.5 Gardens: plants for ornament and utility

At very few sites in the region have studies been made of plant remains from deposits in the context of former gardens and, as might be anticipated, useful evidence from plant remains from such places is sparse. At Old Durham Gardens 89-92 seeds of several plants (all identified only to genus) which may have been grown in the 18th/19th century formal gardens at this location were recorded, whilst at Alnwick Castle Gardens ASUD 681, garden deposits of Georgian and Victorian date yielded no interpretatively useful remains.

From earlier deposits at a number of sites there is a small body of records for plants which seem likely to have been grown as ornamentals, of which the most prominent is box (*Buxus sempervirens*). Leaves and/or twigs of this plant have been identified from Roman deposits at several sites: Skeldergate (58-9) 73-5 (well fills), Tanner Row (24-30) 83-4, Rougier St (5) 81, Bedern 76-81 (well fills) and Piccadilly (50) EAU 92/08, all in York, and from the Roman villa at Winterton *NLI* (apparently unpublished except for a figure given by Dimbleby (1978, unnumbered second plate). For later periods, box remains are known from a mid 13th to early 14th century deposit at Tower St (1-2) (York) EAU 95/35 and from an early 16th century deposit formed close to or in the King's Pool at Carmelite St EAU 91/15, and from a post-medieval (17th century) pit fill at Bridge St (Chester) PRS 2002/16. (The material from burials at a site in Hull is considered separately in the next section.) It may perhaps be noted in passing that the distinctive pollen of box has been recorded from a medieval moat fill at Cowick 76.

Some other plants found as macrofossils may have been grown for their aesthetic value, though it is usually difficult, if not impossible, to determine whether they were not also or alternatively primarily a source of food or medicine, or even simply escapes from a garden growing as weeds. Examples in this category include pot marigold (*Calendula officinalis*) and columbine (*Aquilegia vulgaris*). The former is recorded from various sites in York: Anglo-Scandinavian Coppergate (Coppergate (16-22) (Anglo-Scand)) and Micklegate (1-9) 88-9 EAU 2000/14; an early medieval pit fill at Skeldergate (64-74) EAU 2000/53; 12th-14th century deposits at Merchant Adventurers Hall EAU 96/44). It is also known from 15th-17th century deposits at Sewer Ln 74, Hull and from a late 14th-early 15th century context at Morton Ln EAU 2002/02, Beverley. *Aquilegia* seeds have been noted from two contexts (early-mid 14th century and mid 15th-early 17th century) at Bedern 73-6 (Foundry) and from three (Anglo-Scandinavian and 14th and 15th century pit fills) at St Saviourgate (9) 95 EAU 98/14, York, and from a 20th century deposit at Bridge St (Chester) PRS 2002/16.

6.6 Plants used in ritual

There are perhaps two examples in the region of the unequivocal use of plants in ritual practices. At the 3rd century *mithraeum* at Carrawburgh 50, close to Hadrian's Wall, charred stone pine (*Pinus pinea*) cones and seeds with some pine cone

charcoal and hazel charcoal were recorded, together with carbonaceous material (adhering to an iron altar shovel) that was identified as further pine-cone charcoal. (The only other record for stone pine from the region is for a single half-nut from a mid-late 2nd century richly organic dump at **Tanner Row (24-30) 83-4**, York, where the context offered no clue as to the original use of the plant.)

From three separately sampled parts of the fills of a grave of the period *c*. 1316/17-1600 from the nave of the church at the Augustinian friary at the **Magistrates Courts (Hull) 94 & 99 EAU 2000/25** site, leaves and twigs of box, undoubtedly representing ritual use, were recorded. One of the samples also yielded nutlets and calyx remains of the herb hyssop (*Hyssopus officinalis*), in this context presumably also of ritual significance.

6.7 Other plant uses

The uses of mosses have already been alluded to, but one moss has, on several occasions, been found in the region in the form of artefacts: the large hair-moss, *Polytrichum commune*. The most spectacular example is the cap, possibly a helmet lining, found almost complete at Vindolanda (van Driel-Murray *et al*. 1993/ **Vindolanda 73-6 & 85-9**), but there are also several examples of plaited and twisted moss stems. Although their precise use is still uncertain, three-strand plaits of the (largely leafless) stems were identified from post-Conquest deposits at 16-22 Coppergate, York (**Coppergate (16-22) (hair moss)**). The plaits as excavated were in lengths of 125-280 mm and their widths were recorded as 25-40 mm and came from eight contexts of 12th-13th century date (although they were described by Hall in Walton, 1989, pp. 395, 397, as if they were of Anglo-Scandinavian date!). A bundle of leafless stems was also recorded, presumably material discarded prior to plaiting. Short twisted lengths of this moss have also been noted from Carlisle (Annetwell St AML 107/89), presumably remains of cord or binding. Such plaits and twisted lengths of *Polytrichum* stem are known from a variety of other sites in the British Isles and a very long twisted example is described by (Knörzer 1984) from a 13th century well in Aachen, Germany; that author has more recently (1999) considered a wide range of evidence for caulking, much of it using mosses.

6.8 Habitats created by people: weeds

Although of rather little consequence in the study of the past use of plant resources (except in a few cases where they may have served as famine foods), the remains of plants which can be classified as weeds are abundant on most occupation sites—indeed, their presence is sometimes strong evidence for disturbance created by people, their domestic animals, or the activities they pursue, such as farming and building, when other evidence is lacking. We have already seen, however, in the context of charred plant remains associated with cereal grains and chaff from late prehistoric sites in NE England (van der Veen 1992), that the definition of what was a weed in the past (just as at the present time, cf. Perrins *et al.* 1992) is not straightforward.

This is not the place to review the evidence for this large and varied group of plants, except to remark that they may offer an opportunity to discuss:

- where or on what kind of soil a crop was grown—see, for example, **Coney St (39-41) 74-5 (W H Smith)** (some possible evidence from crop importation); **Allerton Grange DEAR 15/94**; **Bayram Hill DEAR 1/94**; **Catterick site 524 DEAR 2/94** (abundant stinking mayweed achenes may indicate crops grown on heavy soils)

- the kinds of sowing regimes practised in the past (taxa like corncockle being said to be particularly prevalent in autumn-sown crops);

- the nature of crop-processing activities contributing to a particular assemblage (discussed by, for example, van der Veen 1992);

- the nature of the environment local to the point of deposition in terms of the kinds of weed communities recorded (e.g. taking account of the prevalence of nitrophile annual weeds, weeds of trampled places, weeds of seasonally wet nutrient enriched soils and so on).

Clearly, an understanding of the modern ecology of these plants is essential, though we should perhaps be wary of relying too much on modern *associations* for interpreting those in the past; some modern groupings of weeds are surely a function of activities or conditions which did not necessarily obtain in the past.

7 Recommendations for the future

7.1 General remarks

It is clear from the chronological review that, whilst we now have a basic framework of data concerning plant macrofossil remains from archaeological deposits in the northern counties of England, there inevitably remain many gaps in our knowledge—in terms both of temporal and spatial coverage as well as our interpretation and understanding of the results we have so far obtained. As the maps in Figs 1-14 indicate, there is probably no period or place that is too well investigated archaeobotanically; close inspection of the available records for, for example, Roman Carlisle, Roman and medieval York, or medieval Beverley or Hull, or for the later prehistoric period in the counties of N Yorkshire, 'Cleveland', Durham and Northumberland—for all of which a considerable total volume of information exists—shows that we are still a long way from being able to synthesise data to the point where we can reliably probe patterns or investigate trends. Even where we seem to have many 'find spots' on the maps, inspection of the data behind them shows them to be very variable in quantity and quality—and useful (and statistically valid) comparisons between such very different datasets are inevitably very difficult to make.

But clearly, where resources are limited, priorities must be established. The following sections detail some recommendations to a series of target groups who all have a part to play in making decisions about the future course of archaeobotanical studies

in N England. Some are concerned with policy, others with practicalities; it seems artificial to separate the two.

7.2 To English Heritage

The compilation of this review could not easily have been undertaken without the use of the *Environmental Archaeology Bibliography (EAB)* and *Archaeobotanical Computer Database (ABCD)*, both created by Dr Philippa Tomlinson, formerly of the Environmental Archaeology Unit at the University of York. (The EAB was created at the request of and with funding from the former Ancient Monuments Laboratory of English Heritage, the ABCD during the tenure of a research studentship from the Science-Based Archaeology Committee of the former Science and Engineering Research Council. Both are currently being maintained by ARH.) For the purposes of this review, a series of database tables linked to the EAB was used to collect data concerning the reports discussed here—data relating to the date of the material, its archaeological provenance, the scale of work undertaken, and the broad nature of the results. Its coverage included all published and unpublished reports. The value of this compilation can be judged from the efficacy with which information could be added to the existing structure for reports arising during the period between the submission of the initial draft of this review (March 1998) and the commencement of revision (July 2002). *It is regarded as essential that this secondary database is maintained (along with the EAB and ABCD) so that updates and any future reviews and can be undertaken more efficiently and quickly*.

Currently about 90% of archaeobotanical data—both published and unpublished—recorded by ARH (and his immediate colleagues) in the past three decades is currently stored in an easily accessible form in an *Access* database (from which lists of taxa by site, period, context) can readily be retrieved. JPH likewise has maintained a long-term electronic system for all of her data but at the sample level by site. Each record also includes some archaeological information—context, date, feature type, processing volumes and methods, and so on. Each record also has a unique number and it is therefore possible to combine datasets for as many sites as necessary although the manipulation software was written in the early 1970s and hence dimensioned for computer power of the time. The two systems are therefore currently not at all compatible, having fundamentally different data structures, although JPH has manually translated her data for sites in the NW into an *Access* database. For simplicity a small *Fortran*, or similar, program needs to be written to enable translation currently done through tedious column shifting and copying in *Excel* to be achieved automatically. ***It is therefore recommended, firstly, that any remaining data not yet computerised (including any information such as dating or context type not available at the time the archaeobotanical records were made) are added to the respective databases as a matter of urgency; and, secondly, that a formal mechanism is established for combining the two sets of data into a regional database (which might be made accessible through, for example, the Archaeology Data Service).*** This would not supersede the ABCD since (a) it has not been practicable so far for that database to accommodate data at the level of individual assemblages (except for the smallest site archives), and (b) the ABCD currently restricts itself to *published* data. We consider it crucial that *unpublished* data are included in any regional database.

From the comments in Section 1 concerning the proportion of archaeobotanical work currently carried out in the region with the support of English Heritage it will be clear that this support is vital if the investment made so far is not to be wasted; developer-funded archaeobotany is often being assigned to workers with inadequate expertise or facilities, especially for archaeological evaluations and assessments where it is imperative that work is undertaken by (or under the close supervision of) those who are sufficiently experienced in the kinds of materials and local conditions likely to be encountered to be able to make decisions about the quality, significance and potential of archaeological material without long, detailed and inefficient analyses. ***We recommend that EH's commitment to support archaeobotanical work in the N counties of England is maintained and that formal support is given to initiatives to provide archaeobotanists working in the developer-funded sector with guidance at all levels—sampling, identification and interpretation—as well as some degree of 'quality control' of outputs.***

7.3 To Local Authority Curators and to Inspectors of Ancient Monuments

County, district, and town/city archaeologists and DCOs are best placed to influence both *which* archaeological deposits are excavated and *how* they are investigated, largely through the preparation or approval of specifications for interventions to be undertaken in response to the threat of destruction through development, whilst IAMs may be able to facilitate archaeological investigations both as part of the planning process and through the mechanism of scheduling. Both groups need to be clear that studies of plant remains are an integral part of the suite of techniques that can be used on almost all excavations to recover information about the past, whether simply through the identification of obvious biological remains encountered during excavation, or through analysis of plant fossils contained within deposits and mostly not apparent to the naked eye. But the results of archaeobotanical studies may be very much enhanced by integration with the information from other bioarchaeological investigations and with studies of the geoarchaeological context of the remains recovered and they certainly should not be seen as occurring in isolation. ***It is our contention that no archaeological intervention should be undertaken without due consideration of the need to carry out at least an evaluation of biological (and from the particular standpoint of this review, botanical) remains. Development control officers and inspectors might also want to consider the question of 'quality control', so that archaeobotanical studies—as with any other aspect of archaeological interventions—are adequately monitored for the appropriateness, accuracy and cost-effectiveness of the work undertaken. We would also argue for a formal mechanism for adding records or work carried out and of plant taxa recorded for all developer-funded excavations to the regional archaeobotanical database proposed above.***

For the purposes of prioritisation, perhaps the following are the periods and site types most in need of further archaeobotanical investigation (where appropriate deposits are available):

- any site with evidence for occupation or activity in the earlier prehistoric period; wetland sites of this period are likely to be a particularly valuable

source of information (aspects of both environment and economy are of interest here);

- Iron Age occupation sites, particularly those on the western side of the region; again, sites with waterlogged preservation are likely to be extremely useful;

- rural Roman/Romano-British sites not associated with military establishments, especially those of higher status (such as villas, rare in the region), for comparison with urban (and particularly the 'para-urban' military) sites (and, in the case of higher status sites, for comparison with 'native' settlements);

- urban sites where the immediately pre-Roman environment can be studied;

- almost any sites of Anglian date, especially W of the Pennines, and any material of Anglo-Scandinavian date other than from York (though a case can be made that we know a great deal about only one small part of the town at this date and evidence from further sites can be used to test existing models for Anglo-Scandinavian activity and explore pattern across the city—something which the rare, small-scale interventions of recent years have made possible to a limited extent);

- rural medieval sites in almost any part of the region;

- sites in the smaller medieval towns, again particularly W of the Pennines;

- almost any site of post-medieval date.

7.4 To field archaeologists

Since it is the field archaeologist who is entirely responsible for recording archaeological deposits and usually also responsible for the collection of samples and final interpretation of the records obtained, our recommendations in this section are primarily concerned with practicalities. In general, it may be said that the procedures outlined in English Heritage's 'MAP2' (and its successor, MoRPHE) for the management of archaeological projects and the guidelines for environmental studies (English Heritage 2002) are recommended.

The most important requirements for efficient and productive archaeobotanical investigations may be summarised thus:

- it is imperative that, wherever possible, a strategy for archaeobotanical (and other bio- and geoarchaeological) studies is integrated into the design for the project (even a watching brief may result in the exposure of deposits or remains which may be of archaeobotanical value or interest); good communication—in which notice of an intention to excavate is given at the earliest opportunity and an invitation to visit the site during excavation (if practicable for both parties) is extended—is extremely important;

- as part of the strategy, the question of sampling needs to be discussed at an early stage, though a degree of flexibility is always required in any archaeological intervention and the need to be able to sample more extensively or intensively than initially projected may have to be accommodated; in general, it should be the rule that, once excavated, most deposits and their contents are effectively lost to the world for ever and that it is better to take a sample of a deposit for which there is a clear archaeological or bioarchaeological question (even if only 'what is in this deposit?'), but which may never be examined, than to consign it to the spoil-heap; details of the kinds and numbers of samples are beyond the scope of this document, though a useful guide for archaeological evaluations has been prepared by the *Association for Environmental Archaeology* (AEA), and is also considered by EH in their guidelines for environmental studies (English Heritage 2002);

- if processing of 'bulk' samples is (as sometimes happens) to take place on site, and not undertaken by or under the close supervision of the archaeobotanist, it should be agreed precisely how the samples are to be treated (sample size, kind of sieving apparatus, mesh size, 'after-care' of recovered material) and careful records kept of the quantity of material processed, with due attention to labelling;

- for the post-excavation stage of an archaeological exercise, the need to maintain a dialogue with the archaeobotanist remains important; whether or not it is necessary to make a selection from the excavated material for study, it is vital that basic archaeological information is available at the beginning of the process of archaeobotanical study—for all material, the best dating and phasing should be provided, together with an honest indication of the reliability or otherwise of the dating, the current interpretation of the contexts sampled (which may, of course change—and, indeed, should take account of any relevant interpretative outcomes of the eventual results of the archaeobotanical study), and some assessment of their integrity, so that decisions can be made about which samples to examine as a priority, for example for the purposes of assessment, or in some cases which to reject or even discard; it is also important at this stage to ensure that any specific archaeological questions requiring consideration by the archaeobotanist are clearly stated and any possible conflict over the need to retain a certain proportion of the material for dating, for study by other workers, or for posterity, discussed;

- once analyses have been made and some kind of report compiled, dialogue must continue with regard to the fate of the information collected:

    - in the case of reports to developers—where there is usually no time for discussion of the results, feedback, and revision—a copy of the *full* report to which the archaeobotanical work has contributed should, if possible, be made available to the archaeobotanist (this is vital in providing a statement concerning the nature of the evidence from the site as a whole with which the archaeobotanist may be able to reconsider his/her evidence at some future date);

    - where a publication of some kind is envisaged, it is most important that the way the archaeobotanical report is to be presented is discussed; it may neither

be possible nor desirable to present the results in minute detail, but in this case thought needs to be given to a mechanism for lodging the data where it can be easily retrieved (as in an SMR, or local museum, with the main site archive, for example—although the ideal is probably now through some kind of web-accessible data archive);

o where the archaeobotanical report is not required as part of the excavation report, it should be established that the archaeobotanist is at liberty to publish in another place and assistance should be given in ensuring that the archaeological background needed to put the report in context is both accurate and sufficiently detailed (some comments concerning the information required in an archaeobotanical report are offered in the next section).

7.5 To other archaeobotanists

Recommendations in this section fall into two parts; the first is a set of minimum requirements for reports, the second a set of research topics which might be pursued with material already available or material yet to be excavated. The items in the list of requirements largely reflect the needs for filling the data fields the *Environmental Archaeology Bibliography* and *Archaeobotanical Computer Database* and would be essential for the regional database proposed above.

7.5.1 Requirements for reports on macrofossil plant remains

In order to make a proper archive, published or not, and to facilitate assimilation and interpretation of data by other workers, the following components of *any* report on macrofossil plant remains from archaeological excavations are deemed to be *essential*:

- the name of the site (with synonyms used in any documentation during or after the intervention);

- the location of the site, both in relation to nearby settlements (if not clearly an urban or suburban site) and a National Grid reference accurate to at least 100 m;

- the year(s) of excavation of the material under discussion (if not implicit in the site code);

- the name and address of the archaeological client or colleague for whom the work has been carried out (or the name and address of the author(s) of the report in the case of a published work);

- the nature of the excavation (watching brief, trial pitting, evaluation, assessment, full excavation);

- a brief summary of the nature of the archaeology, whether relevant to the material sampled or not (it may be important to know about deposits which could or should have been sampled but were not);

- the number and types of samples taken, with their archaeological date and context type *as far as is known* (with a statement about the nature and reliability of the dating, e.g. 'dating based on a preliminary examination of the pottery'); where a multi-period site is being investigated, or where the history of excavation is complex, it is essential that at least local phasing and spatial grouping of all the sampled contexts are recorded; this information may most easily be included as an appendix, especially if held originally in database form;

- the number of samples examined and processed (again, in an appendix, if appropriate), together with details of the methodology used (either in full or by reference to published descriptions) and the volumes and/or weights of raw sediment processed;

- where appropriate, a sediment description for all samples processed;

- details of the remains recorded from the processed samples (or a list of identifications for charcoal, uncharred wood and timber, and spot finds) at a level of detail sufficient for reconsideration by another worker (this may involve an archive separate from that eventually published or included in an unpublished report);

- where lists of plant macrofossils (other than straightforward wood and charcoal identifications) are presented, the order of taxa and their nomenclature should either follow a quoted authority (i.e. Flora or checklist) or be alphabetical; if any quantification is given, it must be clear what the numbers represent (original counts, concentrations, percentages, and so on, especially where only a proportion of a subsample has been examined in detail); it is *not* sufficient to present a bald list of identifications for any site for which there are data from more than one clearly-defined archaeological phase (table 126 of Hall and Kenward (1990), which lists taxa as present or absent from two sites with large numbers of samples from wellstratified and dated deposits of early Roman to high medieval date, for example, is almost completely useless!).

7.5.2 Research topics for future consideration

It may be useful to consider two categories of material, here: the known (i.e. material, including data, already available), and the unknown (that which might be generated by interventions undertaken in the region in the future). Naturally some of these topics have a significance or relevance beyond the N counties of England, though in some cases our region is a particularly important source of suitable material or expertise.

7.5.2.1 From existing resources

There are a number of topics which might be pursued using either samples already in store or data already obtained from previous investigations (in no particular order):

- further work on evidence for the past utilisation of peat and turves (a recurrent theme which has developed during the long gestation of this review);

- the pursuit of evidence for food plant remains not so far distinguished in deposits clearly primarily of faecal origin (of which there are plenty in store) would provide a means of increasing our knowledge of the range of foods consumed in our region in the past; on an analogy with the identification of wheat/rye 'bran' by a number of workers and discovery of *Allium* leaf epidermis by Philippa Tomlinson some years ago, it seems quite likely that further vegetative fragments, currently not thought identifiable, may be isolated and subsequently recorded from a large number of sites;

- further work should be carried out on the 'stable manure' 'indicator package' discussed by Kenward and Hall (1997), using parallel studies of plant and invertebrate macrofossils with the aim of refining the precision with which such material can be identified in archaeological deposits; ancillary to this would be an exploration, using biomolecular techniques, of some urban faecal deposits rich in waterlogged cereal chaff to determine if these can be attributed to livestock (probably pigs) rather than humans

- other indicator packages also deserve further consideration—not least that for tanning, which has largely been recognised since work on this review began (cf. Hall and Kenward 2003); some material examined prior to the recognition of the indicators at Layerthorpe Bridge, York, could, advantageously, be revisited.

Some suitable material for the pursuance of these investigations includes samples of Anglo-Scandinavian and medieval cess pit fills from many sites in York, but especially Skeldergate (if firm dating can be established), 16-22 Coppergate, Queens Hotel, The Bedern, St Saviourgate and Walmgate, as well as material from Roman and medieval Carlisle and from Vindolanda. Material containing possible stable manure might be obtained from a large number of sites—it would probably be most useful to obtain as wide a spread in spatial and temporal terms as possible, though the bulk of the samples would inevitably probably be of Roman or medieval date.

In addition, it may be worthwhile to revisit a variety of sites and samples to record material not recognised during the initial analysis. As an example, the exercise involving re-examination of Anglo-Scandinavian samples from **Pavement (6-8) 72** York (above) was very successful in testing the hypothesis that deposits of this period in this part of York (if not more widely in the city) normally contain at least small amounts of the remains of dyeplants. Clearly, however, the material to be re-examined needs to be carefully targeted and such studies will inevitably be hampered by lack of suitable material in store (though the re-analysis of the Pavement material involved the examination of dried residues which had remained perfectly stable through a period of more than 10 years and in which even quite delicate plant fragments were recognisable).

Some site-specific work which could be carried out to answer particular questions includes

- a study of the post-Roman/pre-early medieval 'dark earths' from Wellington Row and Micklegate (Queens Hotel), York (and elsewhere, if material exists), to

establish by means of extensive sieving what, if any, plant material is present (somewhat analogous deposits at North Bridge, Doncaster, in which plant material was very sparse, gave evidence for a consistent 'background rain' of charred plant remains which was only apparent on processing large numbers of GBA samples and taking especial care to examine the charred material obtained by 'washover' (here, the BS samples were often much less rewarding, perhaps a function of the aggressive processing employed);

- analysis of material from post-Conquest levels at 16-22 Coppergate to pursue the question of continuity (or the lack of it) from the preceding Anglo-Scandinavian deposits (this has only been addressed so far by means of a brief assessment).

7.5.2.2 From new material

Material from any of the sites/periods listed under Section 7.3 above will, of course, provide a continual source of new information, though slavish undirected analysis of samples from site after site is neither desirable nor warranted. Rather, for all such material, an initial assessment should be undertaken to establish the potential of the samples to provide useful archaeobotanical information and answer pertinent archaeological questions. Such assessment does not necessarily require the detailed recording of plant remains, though a basic record sufficient for the justification of further investigations (if appropriate) or for the preparation of an archive at that stage (if no further work is recommended) should be made.

A basic record would consist of a semi-quantitative list of taxa recorded during 'scanning' of sufficient of the processed sample (through checking some material from *all* fractions) to satisfy the investigator that they can form an opinion as to the amount of plant material present, the quality of its preservation, and the broad range of taxa and parts of plants represented—acknowledging fully that this is a somewhat subjective matter. Given the importance to interpretation of recording the widest possible range of components of samples (particularly for heterogeneous occupation deposits) it is probably appropriate for the archaeobotanist—who is most likely routinely to examine both sieved residues and washovers in detail—to undertake this task concomitantly with the specific recording of plant remains (although any competent bioarchaeologist *ought* to be able to recognise a wide range of materials, including plant and animal fossils, at least at the crude level of 'bark', 'wood', 'fly puparia', 'beetles', 'snails', 'fish bone', 'pottery', 'slag', and so on.

Another area of study which should be borne firmly in mind in undertaking investigations of newly exposed material is the question of in-ground decay. Although, of course, recent changes in quality and quantity of preservation of 'delicate' (*sensu* Kenward and Hall 2000) plant (or other biological) material can only be objectively assessed through studies of carefully collected sediments from the same body of deposits and involving an interval of, say, months or years, the recording of observations on the state of preservation of assemblages provides at least some data relevant to the issue.

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9 References

NB: References to archaeobotanical reports discussed in this review may be found (order by site name) in Appendix 1. The entries below are for those reports for which the author and date have been cited specifically in the text, together with all other bibliographic references.

Web-based resources

AEA Working Paper 2, *Environmental archaeology and archaeological evaluations*, online at http://www.envarch.net/publications/papers/evaluations.html

EAB: *Environmental Archaeology Bibliography*, on-line at http://ads.ahds.ac.uk/catalogue/specColl/eab_eh_2004/

MAP2: *Management of Archaeological Projects*, v 2, online at http://www.eng-h.gov.uk/guidance/map2/index.htm

Conventional Publications

Adam, P. (1990). *Saltmarsh Ecology*. Cambridge: University Press.

Allason-Jones, L. and Osler, A. (1986). The Gosforth (Tyne and Wear) boat. *Northern Archaeology* **7**(2), 17-29.

Bartley, D. D., Chambers, C. and Hart-Jones, B. (1976). The vegetational history of parts of south and east Durham. *New Phytologist* **77,** 437-68.

Beaumont, P., Turner, J. and Ward, P. F. (1969). An Ipswichian peat raft in glacial till at Hutton Henry, Co. Durham. *New Phytologist* **68**, 797-805.

Boardman, S. and Jones, G. (1990). Experiments on the effects of charring on cereal plant components. *Journal of Archaeological Science* **17**, 1-11.

Bowman, A. K. (1994). *Life and Letters on the Roman Frontier: Vindolanda and its People*. London: British Museum Press.

Bronk Ramsey, C., Pettitt, P. B., Hedges, R. E. M., Hodgins, G. W. L. and Owen, D. C. (2000). Radiocarbon dates from the Oxford AMS system: Archaeometry Datelist 30. *Archaeometry* **42**, 459-79.

Buckland, P. C., Greig, J. R. A. and Kenward, H. K. (1974). York: an early medieval site. *Antiquity* **48**, 25-33.

Buxton, K. and Howard-Davis, C. (2000). *Bremetanacum. Excavations at Roman Ribchester 1980, 1989-1990.* Lancaster Imprints Series 9. Lancaster.

Cardon, D. and du Chatenet, G. (1990). *Guide des Teintures Naturelles*. Lausanne: Dulachaux et Niestlé.

Carruthers, W. (1991). *Ripon 258 – plant macrofossil assessment*. Unpublished assessment report dated 15.11.91. Ancient Monuments Laboratory.

Caruana, I. D. (1992). Carlisle: excavation of a section of the Annexe ditch of the first Flavian fort, 1990. *Britannia* **23**, 45-108.
Charters, S., Evershed, R. P., Goad, L. J., Leyden, A., Blinkhorn, P. A. and Denham, V. (1993). Quantification and distribution of lipid in archaeological ceramics: implications for sampling potsherds for organic residue analysis and the classification of vessel use. *Archaeometry* **35**, 211-23.

Clark J. G. D. (1954) *Excavations at Star Carr*. *An Early Mesolithic site at Seamer near Scarborough, Yorkshire*. Cambridge: University Press.

Coles, B. (1998). Wood species for wooden figures; a glimpse of a pattern, pp. 163-73 in Gibson, A. and Simpson, D. (eds), *Prehistoric Ritual and Religion*. *Essays in honour of Aubrey Burl*. Stroud: Sutton.

Crackles, F. E. (1990). *Flora of the East Riding of Yorkshire.* Hull: University Press and Humberside County Council.

Dainton, M. (1992). A quick, semi-quantitative method for recording nematode gut parasite eggs from archaeological deposits. *Circaea, the Journal of the Association for Environmental Archaeology* **9**, 58-63.

Daniels, R. E. and Eddy, A. (1990). *Handbook of European Sphagna*. London: HMSO.

Dark, P. (2000). Revised 'absolute' dating of the early Mesolithic site of Star Carr, North Yorkshire, in the light of changes in early Holocene tree-ring chronology. *Antiquity* **74**, 304-7.

Davis, R. (1964). The trade and shipping of Hull, 1500-1700. *East Yorkshire Local History Society* **17.**

Dickson, J. H. (1973). *Bryophytes of the Pleistocene*. Cambridge: University Press.

Dimbleby, G. W. (1978). *Plants and Archaeology*. 2nd ed. London, etc.: Paladin.

[Dimbleby G W.] (1988). Appendix 2. Charcoal identified by Prof G W Dimbleby, p. 132 in Hayes, R. H., *North-East Yorkshire Studies: Archaeological Papers by Raymond H Hayes, MBE, FSA*. (ed. P R Wilson). Leeds: Yorkshire Archaeological Society, Roman Antiquities Section.

Dobney, K., Hall, A. and Kenward, H. (1999). *It's all garbage... A review of bioarchaeology in the four English* Colonia *towns*, pp. 15-35 in Hurst, H. (ed.), The Coloniae of Roman Britain: new studies and a review. *Journal of Roman Archaeology Supplementary Series* **36**.

Dobney, K., Hall, A. R., Kenward, H. K. and Milles, A. (1992). A working classification of sample types for environmental archaeology. *Circaea, the Journal of the Association for Environmental Archaeology* **9** (for 1991), 24-6.

English Heritage (2002). Environmental Archaeology. A guide to the theory and practice of methods, from sampling and recovery to post-excavation. *Centre for Archaeology Guidelines* **2002/01**. (available online via www.dur.ac.uk/eh.rsa/standards.html)

Evans, D. H. and Tomlinson, D. G. (1992). Excavations at 33-35 Eastgate, Beverley, 1983-86. *Sheffield Excavation Reports* **3**. Sheffield.

Evershed, R. P., Heron, C. and Goad, L. J. (1991). Epicuticular wax components preserved in potsherds as chemical indicators of leafy vegetables in ancient diets. *Antiquity* **65**, 540-4.

Gearey, B. R., Hall, A. R., Kenward, H., Bunting, M. J., Lillie, M. C. and Carrott, J. (2005). Recent palaeoenvironmental evidence for the processing of hemp (*Cannabis sativa* L.) in eastern England during the medieval period. *Medieval Archaeology* **49**, 317-22.

Godwin H. (1975). *History of the British Flora*. 2nd ed. Cambridge: University Press.

Green, J. P. (1989). *Norton Priory*. Cambridge: University Press.

Greig, J. (1986). The archaeobotany of the Cowick medieval moat and some thoughts on moat studies. *Circaea* **4**, 43-50.

Greig, J. (1988). Some evidence of the development of grassland plant communities, pp. 39-54 in Jones, M. (ed.), *Archaeology and the Flora of the British Isles*. Oxford University Committee for Archaeology Monograph 14/BSBI Conference Report 19. Oxford.

Hall, A. R. (1992). The last teasel factory in Britain, and some observations on teasel (*Dipsacus fullonum* L. and *D. sativus* (L.) Honckeny) remains from archaeological deposits. *Circaea, the Journal of the Association for Environmental Archaeology* **9**, 9-15.

Hall, A. R. (1996). *A survey of palaeobotanical evidence for dyeing and mordanting from British archaeological excavations*, pp. 635-40 in Turner, C. and Gibbard, P. (eds.), Quaternary stratigraphy and palaeoecology. *Quaternary Science Review* **15**.

Hall, A. (1998). *Adding colour to the story: recognising remains of dyeplants in medieval archaeological deposits*, pp. 101-9 in Dewilde, M., Ervynck, A. and Wielemans, A. (eds.), Ypres and the medieval cloth industry in Flanders. *Archeologie in Vlaanderen Monografie* **2**. Zellik: Instituut voor het Archeologisch Patrimonium.

Hall, A. (2003a) Weaving a thread or spinning a yarn? Towards an archaeological indicator package for textile working, pp. 37-44 in Groenman-van Waateringe, W., van Beek, B., and Metz, W. (eds.) *Het Instituut. Vijftig Jaar IPP/AAC*. [Amsterdam]

Hall, A. (2003b). Recognition and characterisation of turves in archaeological occupation deposits by means of macrofossil plant remains. *Centre for Archaeology Report* **16/2003**.

Hall, A. and Kenward, H. (1998). Disentangling dung: pathways to stable manure. *Environmental Archaeology* **1,** 123-6.

Hall, A. R. and Kenward, H. K. (1990). Environmental evidence from the Colonia: General Accident and Rougier Street. *The Archaeology of York* **14** (6), 289-434 + pls ii-ix + fiche 2-11. London: Council for British Archaeology.

Hall, A. and Kenward, H. (2003*). Can we identify biological indicator groups for craft, industry and other activities?*, pp. 114-30 in Murphy, P. and Wiltshire, P. E. J. (eds.), The environmental archaeology of industry. *Symposia of the Association for Environmental Archaeology* **20***.* Oxford: Oxbow.

Hall, A. R. and Kenward, H. K. (2004). *Setting people in their environment: plant and animal remains from Anglo-Scandinavian York*, pp. 372-426 + references 507-21 in Hall, R. A., Rollason, D. W., Blackburn, M., Parsons, D. N., Fellows-Jensen, G., Hall, A. R., Kenward, H. K., O'Connor, T. P., Tweddle, D., Mainman, A. J. and Rogers, N. S. H., Aspects of Anglo-Scandinavian York. *The Archaeology of York* **8** (4), 293-521 + xiv + separate map. York: Council for British Archaeology and York Archaeological Trust.

Hall, A. R., Kenward, H. K. and McComish, J. M. (2003). Pattern in thinly-distributed plant and invertebrate macrofossils revealed by extensive analysis of occupation deposits at Low Fisher Gate, Doncaster, U. K. *Environmental Archaeology* **8**, 129-44

Hall, A. R. and Tomlinson, P. (1996). User guide to the Environmental Archaeology Bibliography (EAB). *Ancient Monuments Laboratory Report* **6/96**, 21 pp. + 3 3.5" disks.

Hall, D., Wells, C. E. and Huckerby, E. (1995). The wetlands of Greater Manchester. *North West Wetlands Survey* **2**. *Lancaster Imprints* **3**.

Hall, R. A., Macgregor, H. and Stockwell, M. (1988). Medieval tenements in Aldwark, and other sites. *The Archaeology of York* **10** (2). 49-147 + pls. xvii-xxxii. London: Council for British Archaeology.

Hartley, M. and Ingilby, J. (1990). *Life and Tradition on the Moorlands of North-east Yorkshire*. Otley: Smith Settle.

Helbæk, H. (1952). Early crops in southern England. *Proceedings of the Prehistoric Society* NS **18**, 194-233.

Hillman, G. C. (1981). Reconstructing crop husbandry practices from charred remains of crops, pp. 123-62 in Mercer, R., *Farming Practice in British Prehistory*. Edinburgh: University Press.

Hillman, G. C. (1984). Interpretation of archaeological plant remains: the application of ethnographic models from Turkey, pp. 1-41 in van Zeist, W. and Casparie, W. A. (eds.), *Plants and Ancient Man*. Rotterdam: Balkema.

Huddart, D. and Glasser, N. F. (2002). *Quaternary of Northern England.* Peterborough: Joint Nature Conservation Committee.

Hudson-Edwards, K., Macklin, M. G., Finlayson R. and Passmore D. G. (1999). Medieval lead pollution in the river Ouse at York, England. *Journal of Archaeological Science* **26**, 809-19.

Hughes, P. D. M., Mauquoy, D., Barber, K. E. and Langdon, P. E. (2000). Mire-development pathways and palaeoclimate records from a full Holocene peat archive at Walton Moss, Cumbria, England. *The Holocene* **10**, 465-79.

Huntley J. P. (2002). *Charred plant remains from the Catterick area*. 443-5. In: Wilson P R. 2002. Cataractonium: Roman Catterick and its hinterland. Excavations and research, 1958-1997. Part II. *CBA Research Report* **129**. York: Council for British Archaeology.

Huntley, J. P. (2003). *Appendix III: Vindolanda: analysis of environmental samples. 1998-2002 excavations*, pp. 257-79 in Birley, A., The excavations of 2001-2002 Volume 1. *Vindolanda Research Report 2003*. Vindolanda Trust, Bardon Mill, Northumberland.

Huntley, J. P. (forthcoming). A review of wood and charcoal from archaeological sites in Northern England.

Hyland, A, (1990). *Equus : the Horse in the Roman World*. New Haven: Yale University Press.

Jessen, K. and Helbæk, H. (1944). Cereals in Great Britain and Ireland in prehistoric and early historic times. *Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter* **III**(2). 1-68.

Jones, A. K. G. (1983). *Report on a coprolite from 6-8 Pavement*, pp 225-9 in Hall, A. R., Kenward, H. K., Williams, D. and Greig, J. R. A., Environment and living conditions at two Anglo-Scandinavian sites. *The Archaeology of York* **14** (4), 157-240 and pl. i and fiche 1. London: Council for British Archaeology.

Jones, G. E. M. (1984). Interpretation of archaeological plant remains: ethnographic models from Greece, pp. 43-61 in van Zeist, W. and Casparie, W. A. (eds.), *Plants and Ancient Man*. Rotterdam: Balkema.

Jones, G. (1987). A statistical approach to the archaeological identification of crop processing. *Journal of Archaeological Science* **14**, 311-23.

Jones, M. (1985). Archaeobotany beyond subsistence reconstruction, pp. 107-28 in Barker, G. and Gamble, C. (eds.), *Beyond Domestication: Subsistence Archaeology and Social Complexity in Prehistoric Europe*. London: Academic Press.

Kenward, H. K. (forthcoming). Invertebrates in archaeology in the north of England.

Kenward, H. K. and Hall, A. R. (1995). Biological evidence from Anglo-Scandinavian deposits at 16-22 Coppergate*. The Archaeology of York* **14** (7), 435-797 + pl. xxii + loose figures. York: Council for British Archaeology.

Kenward, H. and Hall, A. (1997). Enhancing bioarchaeological interpretation using indicator groups: stable manure as a paradigm. *Journal of Archaeological Science* **24**, 663-73.

Kenward, H. and Hall, A. (2000). Decay of delicate organic remains in shallow urban deposits: are we at a watershed? *Antiquity* **74**, 519-25.

Kenward, H. and Hall, A. (2006a). *Easily-decayed organic remains in urban archaeological deposits: value, threats, research directions and conservation*, pp. 181-96 In Brinkkemper, O., Deeben, J., van Doesburg, J., Hallewas, D., Theunissen, E. M. and Verlinde, A.D. (eds.), Vakken in vlakken. Archeologische kennis in lagen. *Nederlandse Archeologische Rapporten* **32**.

Kenward, H. and Hall, A. (2006b). Development-driven archaeology: bane or boon for bioarchaeology? *Oxford Journal of Archaeology* **25**, 213-24.

Kenward, H., Hall, A. and Carrott, J. (2000). Environment, activity and living conditions at Deer Park Farms: evidence from plant and invertebrate remains. *Reports from the Environmental Archaeology Unit, York* **2000/57,** 82 pp.

Kenward, H. K., Hall, A. R. and Jones, A. K. G. (1980). A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits. *Science and Archaeology* **22**, 3-15.

Kenward, H. K., Hall, A. R. and Jones, A. K. G. (1986). Environmental evidence from a Roman well and Anglian pits in the legionary fortress. *The Archaeology of York* **14** (5), 241-88 + fiche 2. London: Council for British Archaeology.

Kenward, H. K., Hall, A. R. and McComish, J. M. (2004). Archaeological implications of plant and invertebrate remains from fills of a massive post-medieval cut at Low Fisher Gate, Doncaster, U.K. *Environmental Archaeology* **9**, 61-74.

Knörzer, K-H. (1984). Textilpflanzenfunde aus dem mittelalterlichen Aachen. *Decheniana* **137**, 226-33.

Knörzer, K-H. (1999). Kalfatern vom Neolithischen bis zum Mittelalter, pp. 83-7 in Rolle, R. and Andraschko, F. M. (eds.), Frühe Nutzung pflanzlicher Ressourcen. *Hamburger Werkstattreihe zur Archäologie* **4**. Hamburg. 174pp.

Leah, M. D., Wells, C. E., Appleby, C. and Huckerby, E. (1997). The wetlands of Cheshire. *North West Wetlands Survey* **4**. *Lancaster Imprints* **5**.

Lee E. (2006). *Management of Research Projects in the Historic Environment. The MoRPHE roject Manager's Guide*. Swindon: English Heritage.
Le Patourel, H. E. J. (1973). The moated sites of Yorkshire. *Society for Medieval Archaeology Monograph* **5**. London.

McAvoy, F. (1995). Excavation at the Withow Gap, Skipsea (Holderness), p. 16 in van de Noort, R. and Ellis, S. (eds), *First Annual Report. Humber Wetlands Survey (1994-95)*. University of Hull.

McCobb, L. M. E., Briggs, D. E. G., Evershed, R. P., Hall, A. R., and Hall, R. A. (2001). Preservation of fossil seeds from a 10th century AD cess pit at Coppergate, York. *Journal of archaeological Science* **28**, 929-40.

McGrail, S. (1990). Early boats of the Humber basin, pp. 109-30 in Ellis, S. and Crowther, D. R. (eds.), *Humber Perspectives: a Region through the Ages*. Hull: University Press.

McGrail, S. and O'Connor, S. (1979). The Giggleswick Tarn logboat. *Yorkshire Archaeological Journal* **51**, 41-9.

Mellars, P. (1976). Settlement patterns and industrial variability in the British Mesolithic, pp. 375-99 in Sieveking, G. de G., Longworth, I. H. and Wilson, K. E. (eds.), *Problems in Economic and Social Archaeology*. London: Duckworth.

Middleton, R., Wells, C. E. and Huckerby, E. (1995). The wetlands of North Lancashire. *North West Wetlands Survey* **3**. *Lancaster Imprints* **4**.

Miller, I. (ed.) (2002). *Steeped in History: the Alum Industry of North-East Yorkshire*. North York Moors National Park Authority.

Millett, M. and McGrail, S. (1988). The archaeology of the Hasholme logboat. *Archaeological Journal* **144** (for 1987), 69-155.

Moffett, L., Robinson, M. A. and Straker, V. (1989). *Cereals, fruit and nuts: charred plant remains from neolithic sites in England and Wales and the neolithic economy*, pp. 243-61 in Milles, A., Williams, D. and Gardner, N. (eds.), The beginnings of agriculture. *British Archaeological Reports International Series* **496** (*Symposia of the Association for Environmental Archaeology* **8**).

Monckton, H. A. (1966). *A History of English Ale and Beer*. London &c.: Bodley Head.

Morris, C. A. (2000). Craft, industry and everyday life: wood and woodworking in Anglo-Scandinavian and medieval York. *The Archaeology of York* **17** (13), 2073-2452. York: Council for British Archaeology.

Padden, A. N., John, P., Collins, M. D., Hutson, R. and Hall A. R. (2000). Indigo-reducing *Clostridium isatidis* isolated from a variety of sources, including a 10th-century Viking dye vat. *Journal of Archaeological Science* **27**, 953-64.

Perrins, J., Williamson, M. and Fitter, A. (1992). A survey of differing views of weed classification: implications for regulation of introductions. *Biological Conservation* **60**, 47-56.

Piggott, S. (1958). Native economies and the Roman occupation of the north, pp. 1-27 in Richmond, I. A. (ed.), *Roman and Native in North Britain*. Edinburgh: Nelson.

Pitts, M. (1979). Hides and antlers: a new look at the gatherer-hunter site at Star Carr, North Yorkshire, England. *World Archaeology* **11**, 32-41.

Ramm, H. G. (1971). The end of Roman York, pp. 179-99 in Butler, R. M. (ed.), *Soldier and Civilian in Roman Yorkshire.* Leicester: University Press.
Ramsbottom, J. (1953). *Mushrooms and Toadstools*. London: Collins, New Naturalist.

Robinson, J. E. (1902). *The Flora of the East Riding of Yorkshire*. London: A. Brown and Sons.

Robinson M. (1988). *The significance of the tubers of* Arrhenatherum elatius *(L.) Beauv. from Site 4, cremation 15/11*, p.102 in Lambrick, G., The Rollright Stones, megaliths, monuments and settlements in the prehistoric landscape. *English Heritage Archaeological Report* **6**. London: HBMC(E).

Robinson, M. A. and Straker, V. (1991). Silica skeletons of macroscopic plant remains from ash, pp. 3-13 in Renfrew, J. M. (ed.), *New Light on Early Farming. Recent Developments in Palaeoethnobotany*. Edinburgh: University Press.

Rodwell, J. (ed.) (2000). *British Plant Communities 5. Maritime Communities and Vegetation of Open Habitats*. Cambridge: University Press.

Roeder, C. (1900). Recent Roman discoveries in Deansgate and on Hunt's Bank, and Roman Manchester re-studied (1897-1900). *Transactions of the Lancashire and Cheshire Antiquarian Society* **17** (for 1899), 87-212.

Simmons, I. G. and Innes, J. B. (1988). The later mesolithic period (6000-5000bp) on Glaisdale Moor, North Yorkshire. *Archaeological Journal* **145**, 1-12.

Simmons, I. G. and Innes, J. B. (1996). Prehistoric charcoal in peat profiles at North Gill, North Yorkshire Moors, England. *Journal of Archaeological Science* **23**, 193-7.

Simmons, I. G., Turner, J. and Innes, J. B. (1989). An application of fine resolution pollen analysis to late Mesolithic peats of an English upland, pp. 206-17 in Bonsall, C. (ed.) *The Mesolithic in Europe: Papers Presented at the Third International Symposium, Edinburgh, 1985*. Edinburgh: John Donald.

Spikins, P. (1999). Mesolithic northern England. Environment, population and settlement. *British Archaeological Reports, British Series* **283.** Oxford.

Smith, B. M. (2002). A palaeoecological study of raised mires in the Humberhead Levels. *British Archaeological Reports, British Series* **336**. Oxford.

Smith, R. A. (1911). Lake dwellings in Holderness, Yorks., discovered by Thos. Boynton Esq., F.S.A., 1880-1. *Archaeologia* **62**, 593-610.

Taylor, G. W. (1983). Detection and identification of dyes on Anglo-Scandinavian textiles. *Studies in Conservation* **28**, 153-60.

Usai, M-R. (2002). Northern Regional Review of Environmental Archaeology: Geoarchaeology in Northern England II: Site review, discussion, and research priorities. *Centre for Archaeology Report* **24/2002**. 64pp.

Usai, M-R. (2005). Geoarchaeology of Northern England 1: The landscape and geography of Northern England. *Centre for Archaeology Report* **54/2005**, 37pp.

van der Veen, M. (1991). Native communities in the frontier zone - uniformity or diversity? pp. 446-50 in Maxfield, V. A. and Dobson, M. J. (eds.), *Roman Frontier Studies 1989. Proceedings of the XVth International Congress of Roman Frontier Studies*. Exeter: University of Exeter Press.

van der Veen, M. (1992). Crop husbandry regimes: an archaeobotanical study of farming in northern England 1000 BC - AD 500. *Sheffield Archaeology Monograph* 3. Sheffield.

van der Veen, M. and Jones, G. (2006). A re-analysis of agricultural production and consumption: implications for understanding the British Iron Age. *Vegetation History and Archaeobotany* **15**, 217-28.

van Driel-Murray, C., Wild, J. P., Seaward, M. and Hillam, J. (1993). The early wooden forts. Preliminary reports on leather, textiles, environmental evidence and

dendrochronology. *Vindolanda Research Reports, New Series* **III**. Bardon Mill, Hexham: Vindolanda Trust (publ. by Roman Army Museum Pubs. Trust).

Vera, F. W. M. (2000). *Grazing Ecology and Forest History*. Wallingford, Oxon.: CABI Publishing.

Waddington, C. [with Bailey, G., Bayliss, A., Bommer, I., Milner, N., Pedersen, K., Shiel, R. and Stevenson, T.] (2003). A mesolithic settlement site at Howick, Northumberland: a preliminary report. *Archaeologia Aeliana* (5th Ser.) **32**, 1-12.

Walton, P. (1989). Textiles, cordage and raw fibre from 16-22 Coppergate. *The Archaeology of York* **17** (5), 283-488 + pls. xv-xxxiv + Fiche 1. London: Council for British Archaeology.

Walton Rogers, P. (1997). Textile production at 16-22 Coppergate. *The Archaeology of York* **17** (11), 1687-1867. York: Council for British Archaeology.

Watson J. (1989). Mineral preserved wood associated with metalwork from Wetwang Slack, Yorkshire. *AML Report New Series* **23/89**.

Watson, J. (1993). Carpentry details of mineral preserved wood on iron coffin fittings from Thwing, North Yorkshire. *AML Report New Series* **116/93**.

Wells, C., Huckerby, E., and Hall, V. (1997). Mid- and late-Holocene vegetation history and tephra studies at Fenton Cottage, Lancashire, UK. *Vegetation History and Archaeobotany* **6**, 153-66.

Wells C E and Hodgkinson D. (2001). A late Bronze Age human skull and associated worked wood from a Lancashire wetland. *Proceedings of the Prehistoric Society* **67,** 163-74.

Wells C E, Hodgkinson D and Huckerby E. (2000). Evidence for the possible role of beaver (Castor fiber) in the prehistoric ontogenesis of a mire on northwest England, UK. *The Holocene* **10,** 503-8.

Wilson, D. G. (1975). Plant remains from the Graveney Boat and the early history of *Humulus lupulus* L. in W. Europe. *New Phytologist* **75**, 627-48.

Wright, E. V., Hedges, R. E. M., Bayliss, A. and van de Noort, R. (2001). New AMS radiocarbon dates for the North Ferriby boats - a contribution to dating prehistoric seafaring in northwestern Europe. *Antiquity* **75**, 726-34.

Table 1. Kinds of plant macrofossil remains, in broad terms, encountered in archaeological deposits in N England. The number of ticks indicates the relative frequency with which the remains are encountered for each mode of preservation. (√) indicates rare instances of preservation, often relevant to only one or a few particular taxa.

[a] *The vegetative parts of woody plants—trees and shrubs—are generally more likely to survive and to be identifiable than those of herbaceous taxa. Plant galls—abnormal structures resulting from the presence of an insect, typically a small wasp, laid as an egg into the plant tissue—are rare but often distinctive.*

[b] *Though fruits and seeds may be distinguished botanically, they are often equivalent structures in terms of dispersal and are thus sometimes termed 'propagules' or 'disseminules' (which terms also usually include structures which are involved in* vegetative *reproduction); the usual shorthand form is often simply 'seeds'. Note that grains of cereals are, technically, fruits.*

[c] *Chaff includes a number of distinctive parts of the ear (the ear-stalk or* rachis*), as well as the structures which enclose the grains (husks or hulls, more properly* paleas, lemmas *and* glumes*) and the 'beards' (*awns*); fragments of straw, particularly fragments of the flowering stalks (*culms*), the 'joints' on the culms (*culm nodes*) and sometimes the basal parts of the culm. All of these parts may also be recovered in a 'silicified' form, where the silica present in the cell walls fuses during charring under certain circumstances to produce a 'skeleton' which retains the form of the original structure; concomitant removal of carbon leaves the specimens with a characteristic white or whitish-grey colour. Some other remains may also be preserved in this way.*

[d] *Liverworts are extremely rarely preserved, though a remarkable number (11) is claimed for boat caulking from a prehistoric boat from* NLI *(Brigg Logboat 1886 (mosses 2)). Remains of the 'sporophyte' generation of mosses, in the form of capsules, are extremely rare, except for those of the bog mosses,* Sphagnum*, whose characteristic discoid lids are much more frequently encountered than the body of the capsule.*

[d] *Algae and fungi are now conventionally regarded as separate from plants, the former being grouped with the Protista, the latter in their own Kingdom.*

Major 'plant' group	**Parts recovered**	**Preserved by**		
		charring	mineral replacement	'water-logging'
Seed plants (flowering plants, conifers)	wood, bark, twigs, cones (of conifers)	√√√	√	√√√
	leaves, herbaceous stems, buds, flowers (including catkins), galls[a]	(√)	(√)	√√√
	fruits and seeds[b]	√√√	√√√	√√√

Major 'plant' group	Parts recovered	Preserved by		
		charring	mineral replacement	'water-logging'
	cereal chaff[c]	√√√		√√
Pteridophytes (ferns, horsetails and their relatives)	vegetative parts: fern fronds and stalks, horsetail stem fragments and rhizomes; clubmoss shoots	(√)		√√√
Bryophytes (mosses and liverworts[d])	vegetative shoots	(√)		√√√
Algae[e]	charophyte oogonia			√
	'seaweed' thallus fragments	√		
Fungi[e]	fruiting bodies (mainly 'brackets' and 'puff-balls')	√		√√

Table 2. Administrative areas *within English Heritage's Northern Region and relevant to this review. The codes are those used in the* Environmental Archaeology Bibliography *for the three relevant 'county' fields. Note that for simplicity some urban areas which have achieved status as unitary authorities are still included within their historic counties.*

EH Region	***Current (2007) Local Government Authority (unitary authority or county with districts)***	***... formerly (1974-95/8)***	***... formerly (pre-1974 'historic counties')***
North East	**Hartlepool**(CVH)	Cleveland (CLV)	Co. Durham (DUR)
	Middlesbrough (CVM)	Cleveland (CLV)	Yorkshire (NYR)
	Redcar & Cleveland (CVR)	Cleveland (CLV)	Co. Durham (DUR)
	Stockton-on-Tees (CVS)	Cleveland (CLV)	Co. Durham (DUR) and Yorkshire (NYR)
	Darlington (DUR)	Co. Durham (DUR)	Co. Durham (DUR)
	Durham *(DUR)* *Districts:* Chester-le-Street, Derwentside, Durham, Easington, Sedgefield, Teesdale, Wear Valley)	Co. Durham (DUR)	Co. Durham (DUR) and parts of Yorkshire (NYR)
	[Former County of Tyne & Wear] *Metropolitan Boroughs:* Gateshead (TWG), Newcastle-upon-Tyne (TWN), North Tyneside (TWT), South Tyneside (TWS), Sunderland (TWU)	Tyne & Wear (T&W)	parts of Northumberland (NHU) and Co. Durham (DUR)
	Northumberland (NHU) *Districts:* Alnwick, Berwick-upon-Tweed, Blyth Valley, Castle Morpeth, Tynedale, Wansbeck	Northumberland (NHU)	Northumberland (NHU)

EH Region	***Current (2007) Local Government Authority (unitary authority or county with districts)***	***... formerly (1974-95/8)***	***... formerly (pre-1974 'historic counties')***
North West	**Cumbria** (CUM) *Districts:* Allerdale, Barrow-in-Furness, Carlisle, Copeland, Eden, South Lakeland	Cumbria (CUM)	Cumberland (CMB), Westmorland (WSM), parts of Lancashire (LAN) and Yorkshire (NYR)
	Lancashire (LAN) *Districts:* Burnley, Chorley, Fylde, Hyndburn, Lancaster, Pendle, Preston, Ribble Valley, Rossendale, South Ribble, West Lancashire, Wyre	Lancashire (LAN)	Lancashire (LAN) and parts of Yorkshire (WYR)
	Blackburn with Darwen (LAN)	Lancashire (LAN)	Lancashire (LAN)
	Blackpool (LAN)	Lancashire (LAN)	Lancashire (LAN)
	Greater Manchester Area *Metropolitan Boroughs:* Bolton (GMB), Bury (GMU), Manchester (GMM), Oldham (GMO), Rochdale (GMR), Salford (GML), Stockport (GMS), Tameside (GMA), Trafford (GMT), Wigan (GMW)	Greater Manchester (GRM)	parts of Lancashire (LAN) and Cheshire (CHE)
	Merseyside *Metropolitan Boroughs:* Knowsley (MEK), Liverpool (MEL), St Helens (MEH), Sefton (MES), Wirral (MEW)	Merseyside (MER)	parts of Lancashire (LAN) and Cheshire (CHE)
	Halton (MER)	Merseyside (MER)	parts of Lancashire (LAN) and Cheshire (CHE)

EH Region	***Current (2007) Local Government Authority (unitary authority or county with districts)***	***... formerly (1974-95/8)***	***... formerly (pre-1974 'historic counties')***
	Warrington (MER)	Merseyside (MER)	parts of Lancashire (LAN) and Cheshire (CHE)
	Cheshire (CHE) *Districts:* Chester, Congleton, Crewe & Nantwich, Ellesmere Port & Neston, Macclesfield, Vale Royal	Cheshire (CHE)	Cheshire (CHE) and parts of Lancashire (LAN)
Yorkshire	**East Riding of Yorkshire** (EYR)	(North) Humberside (HUM)	Yorkshire (EYR and parts of WYR)
	Kingston-upon-Hull (KUH)	(North) Humberside (HUM)	Yorkshire (EYR)
	North East Lincolnshire (NEL)	(South) Humberside (HUM)	Lincolnshire (all in Lindsey) (LIN)
	North Lincolnshire (NLI)	(South) Humberside (HUM)	Lincolnshire (all in Lindsey) (LIN)
	Former County of South Yorkshire *Metropolitan Boroughs:* Barnsley (SYB), Doncaster (SYD), Rotherham (SYR), Sheffield (SYS)	South Yorkshire (SYR)	Yorkshire (WYR)
	Former County of West Yorkshire *Metropolitan Boroughs:* Bradford (WYB), Calderdale (WYC), Kirklees (WYK), Leeds (WYL), Wakefield (WYW)	West Yorkshire (WYR)	Yorkshire (WYR)

EH Region	***Current (2007) Local Government Authority (unitary authority or county with districts)***	***... formerly (1974-95/8)***	***... formerly (pre-1974 'historic counties')***
	North Yorkshire (NYR) *Districts:* Craven, Hambleton, Harrogate, Richmondshire, Ryedale, Scarborough, Selby	North Yorkshire (NYR)	Yorkshire (NYR and parts of EYR and WYR)
	York (YOR)	North Yorkshire (NYR)	York (County Borough) (YOR)

Table 3. Evidence for crop and wild-collected plants from Neolithic deposits in Northern England.

Sites where dating is to 'Neolithic/Bronze Age' are marked N/B. Published sites are marked with a '$'. The order of counties is roughly anti-clockwise from the SE of the region. The three-point scale indicates material comprising a very few remains (+) to cases where at least one context yielded abundant remains of the taxon concerned. Abbreviations: c—chaff; flb—floret bases; g—grain; glb—glume-bases; h—some or all grains 'hulled'; n—some or all grains 'naked'; nts—nutshell; spf—spikelet forks; brackets indicate tentative identifications.

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
E Yorkshire												
Brandesburton ASUD 662	(++)						++				+	
Callis Wold AML 1871											+	
Caythorpe Pipeline $	(++)				+	+	+				+++	crab apple ++
Cottage Farm CfA 95/2001	(+)				+		+				+	crab apple +
Leven-Brandesburton EAU 94/15											+	
W Yorkshire							++				+	*Triticum* sp. ++
Bell Hill EAC 76/01												
N Yorkshire												

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
A1 Walshford-Dishforth DEAR 4/93	+	+glb					++h +n				+++	crab apple +++ other wild fruits + onion couch tubers +
Nosterfield 95 DEAR 13/96							+					apple/pear seeds +
Nosterfield 97 HA (I)							+(n)				++	*Triticum* sp. + gorse roundwood and spines
Nosterfield 97 HA (II)												flax +
Thornborough 99 HA							+					
Wath Quarry EAU 2001/34											+	
West Heslerton 78-82 $											+	
Cleveland												
Little Maltby Farm DEAR 47/97											+	sloe stones +
Northumberland												
Coupland Enclosure (Milfield basin)	+	+glb +spf		(+) glb	(+)		+				++	
Milfield Basin ASUD 678											+	

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
Thirlings 73-81							+n		+		+++	
Milfield sites $ N/B							+					one 6-row hulled barley pottery impression only
Whitton Hill 82-3	+			(+)			+n				+	
Cumbria												
Crosby by-pass DEAR 35/94							+	+				
Holbeck Park Ave OAN											+	*Triticum* sp. +

Table 4. Evidence for crop and wild-collected plants from Bronze Age deposits in Northern England.

Conventions and abbreviations as in Table 3, with 'E' following site name indicating an early Bronze Age date and 'L' 'Late/Later Bronze Age' date and B/I indicates material dates as later Bronze to early Iron Age.

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
E Yorkshire												
Cowlam Wold Barrows 68 $											+	
Paddock Hill (Octon) AML 14/93	+	++		+	+			+				
W Yorkshire												
Bell Hill EAC 76/01											+	*Triticum* sp. +
Manor Farm (A1-M1) 92-8 $	(+)		+									
N Yorkshire												
Newbridge Quarry EAU 2000/27 B/I							+		+			
West Heslerton (draft plant report)							+				+++	
Cleveland												

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
Barnaby Side DEAR 24/96												heather and gorse charcoal
Eston Nab 84-7 $L		+glb					+				++	*Triticum* sp. +

Northumberland												
Cheviot Quarry EAU 2000/78											+	Cereal grains
Hallshill 81-6	+	+glb	+	+glb			+(?h and n)				+	*Triticum* sp. grains and glumes flax
Marygate (Lindisfarne) ASUD 926					+		+		++	+	+	flax + (oat and bread wheat remains seem suspiciously early; ?intrusive)
Cumbria												
Ewanrigg 83-7 $				(++) glb			++h					
Manor Farm (Borwick) $ E												Cerealia +
Cheshire												
Beeston Castle 68-85 $	++	++ glb	++	++ glb	(+)		+		+		+	many grains and glume-bases identified as emmer/spelt or wheat/barley; a few bread wheat/spelt

Table 5. Evidence for crop and wild-collected plants from deposits dated to the pre-Roman Iron Age in Northern England.

Conventions and abbreviations as in Table 3 with lb—lemma bases and ri—rachis internodes.

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
S Yorkshire												
Sutton Common 87-93 $	+	+ glb	++	++ glb	?		++					a few wheat grains det. as *T.* cf. *monococcum/ dicoccum*
W Yorkshire												
Grims Ditch South (A1-M1) 92-8 $		+spf						+ri				emmer/spelt grains
N Yorkshire												
Scorton Quarry 96 HA		(+)	(+)	++			+h	+ri, lb	+			?evidence of burnt turves
Cleveland												
Eston Nab 84-7 $												no cereals but ?indicators of burnt turves

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
Thorpe Thewles 80-2 (earlier contexts)	+	+	++	++			++	+ri	+	+		many *Triticum* grains and chaff; abundant 'weeds' (actually mostly *Danthonia* caryopses and *Montia* seeds with brome caryopses) and more than half the cereal grains were unidentifiable; dating extends to mid 2nd C. CE

Table 6. Evidence for crop and wild-collected plants from deposits dated broadly to the Iron Age in Northern England.

Conventions and abbreviations as in Table 3 with lb—lemma bases and ri—rachis internodes.

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
Humberside												
Creyke Beck DEAR 21/98			+	+ glb			+	+				
W Yorkshire												
Normanton Golf Course 98 HA			(+)	++ glb			+				+	?2- and 6-Row barleys present
N Yorkshire												
Manor Cottage ASUD 792				+ glb								*Danthonia* and sedge; small grasses
Staple Howe 51-6 $					++							'*T. aestivum* L. ssp. *compactum*' grain
Cleveland												
Catcote 87				+ glb			+					*Triticum* sp. + (grain and chaff)

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
Catcote School (nr) ASUD 669				+ glb			+h					
Barnaby Side DEAR 24/96												charred heather and peat; no cereal remains
Kilton Thorpe Ln 2001 ASUD 846 and Kilton Thorpe Ln 2001 ASUD 847			++	+ glb	+		+	+				*Montia* and *Danthonia*
Nunthorpe-Newby 2000 EAC 65/01				+ glb								sedge nutlets and *Montia* seeds
Newton Bewley 98 ASUD 729	+						+h					also 'wheat' grains
Durham												
Coxhoe $		(+) glb		+ glb								single grains of wheat and barley; five identified just as 'Cereal'; *Danthonia*
Northumberland												
Fawdon Dene ASUD 756			(+)				+				+	

Site	*T. dicoccon*		*T. spelta*		*T. 'aestivo-compactum'*		*Hordeum vulgare*		*Avena*		*Corylus avellana*	Other evidence and notes
	g	c	g	c	g	c	g	c	g	c	nts	
Chevington Chapel DEAR 1/98 and Chevington Chapel DEAR 14/98				+ glb								*Danthonia*
Cheshire												
Beeston Castle 68-85 $	++	++ glb	++	++ glb	+		+	+ri	+			bulk of wheat grains and chaff identified as emmer/spelt; some bread wheat/spelt; oats perhaps largely 'wild'; cereal remains and associated weeds perhaps largely reworked BA material

10 Appendices

10.1 Appendix 1

This is a gazetteer of sites in Northern Region for which there are reports on macrofossil plant remains. It excludes reports specifically devoted to wood and charcoal identifications, apart from some concerned with mineral-preserved wood associated with artefacts. The order and format follow the entries in the *Environmental Archaeology Bibliography*. Report citations in the text are linked to entries in this gazetteer, as are the site report numbers used in the maps. This list includes all reports that have come to the authors' notice but will surely lack some material, both published and unpublished, not least *most reports produced after 2002*.

NB: Site number entries marked '*' are not considered in the text in this review (although some appear in tables and/or on maps), usually because the information they contain had some limitations in terms of site location and/or dating; where reports have subsequently been superseded, in part or as a whole, sometimes by published versions, the entries are marked '#'. In a few cases more than one 'specialist' report is cited for a given site entry; which report is relevant to the discussion in the text will usually be clear from the context.

Counties falling within the remit of this review are generally abbreviated in the text to three-letter codes, following the system used in the *Environmental Archaeology Bibliography*; For the following, these codes represent the administrative areas obtaining in the period between the two far-reaching local government reorganisations of 1974 and 1996, i.e. CHE—Cheshire; CLV—Cleveland; CUM—Cumbria; DUR—Co, Durham; GRM—Greater Manchester; MER—Merseyside; NHU—Northumberland; NYR—North Yorkshire; SYR—South Yorkshire; T&W—Tyne & Wear; WYR—West Yorkshire. Sites in the former North and South Humberside now appear under EYR—East Riding of Yorkshire; NEL—NE Lincolnshire; and NLI—N Lincolnshire. The multitudinous post-1996 unitary authorities replacing the 1974-96 'metropolitan counties' of Cleveland, Greater Manchester, Merseyside, Tyne & Wear, South Yorkshire and West Yorkshire have not been used in the text, though they are to be found in one of the 'county' fields the 'master' version of the *EAB* and appear in both this appendix and Appendix 2). These abbreviations are largely relevant to rural sites and small towns; for the larger towns, the use of a 'county' as a locational device seems superfluous. Table 2 explores further the minefield that is changing local government boundaries. Note also that we have rendered references to two major urban centres thus: Hull and Newcastle, following the style of their city/town councils.

Key to post-1996 'Counties' (column headed Cty), with unitary authorities marked $: CHE—Cheshire; CUM—Cumbria; CVH—Hartlepool$; CVM—Middlesbrough$; CVR—Redcar and Cleveland$; CVS—Stockton-on-Tees$; DUR—County Durham; EYR—East Riding of Yorkshire; GML— Salford$; GMM—Manchester$; KUH—(Kingston upon) Hull; LAN—Lancashire; MEH—St Helens$; MEK—Knowsley$; MEL—Liverpool$; MEW—Wirral$; NEL—N E Lincolnshire; NHU— Northumberland; NLI—N Lincolnshire; NYR—North Yorkshire; SYB—Barnsley$; SYD—Doncaster$; SYR—Rotherham$; TWG—Gateshead$; TWN—Newcastle$; TWS—South Tyneside$; TWT—North Tyneside$; WYB—Bradford$; WYK—Kirklees$; WYL—Leeds$; WYW—Wakefield$; XXX—report relate to more than one county/district; YOR—City of York$

Site no.	Site	Location	Cty	Reference
*22	**A1 Leeming-Dishforth 95 EAU 95/43**	Ripon/Northallerton	NYR	Carrott J, Issitt M and Large F. 1995. An assessment of biological remains from excavations associated with improvements to the A1 between Leeming and Dishforth, North Yorkshire (site code: LEE95). Reports from the EAU, York 95/43. 7 pp.
25	**A1 Walshford-Dishforth DEAR 4/93**	Roecliffe, nr Boroughbridge	NYR	Huntley J P. 1993. A1 Walshford-Dishforth (WD93). An assessment of the palaeoenvironmental samples. Part IIa: a selection from fields 88, 89, 90. [Durham Environmental Archaeology Report 4/93].
*28	**A66 AML 2/91**	Various sites, Stainmore (Brough/Bowes)	DUR	Huntley J P. 1991. What carbonised plant remains? A macrobotanical investigation of material from excavations along the A66. AML Report New Series 2/91.
*29	**A66 EAU 99/62**	Greta Bridge ... Scotch Corner	NYR	Carrott J and Hall A. 1999. Evaluation of biological remains from A66 improvements (archaeological trial trenching), Greta Bridge to Stephen Bank and Carkin Moor to Scotch Corner, North Yorkshire (site code: ASS99). Reports from the EAU, York 99/62, 5 pp.
95	**Abbey St 90**	Carlisle	CUM	Cool H E M [and Jones J]. 1992. Wooden artefacts. 68-79. In: Caruana I D. Carlisle: Excavation of a section of the annexe ditch of the first Flavian fort, 1990. Britannia 23. 45-109. Huntley J P. 1992. Botanical samples. 49 and 51. In: Caruana I D. Carlisle: Excavation of a section of the annexe ditch of the first Flavian fort, 1990. Britannia 23. 45-109.
96	**Abbey Walk 97**	Selby	NYR	Daniell J R G and Huntley J P. 1999. Selby, 16 Gowthorpe St (16GOW) and Abbey Walk (GSS97). Unpublished report, Department of Archaeology, University of Durham.
133	**Acaster Hill ASUD 716**	Husthwaite, nr Easingwold	NYR	[Cotton J and Gidney L.] 2000. Acaster Hill, Husthwaite, North Yorkshire, AHH00: plant macrofossil and faunal evaluation ASUD Report 716. 7pp.

Site no.	Site	Location	Cty	Reference
*137	**Acklam Wold (J&H)**	nr Malton	NYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
143	**Adams Hydraulics I EAU 90/01**	York	YOR	Alldritt D, Carrott J B, Hall A R, Kenward H K and Richardson J E. 1990. Environmental evidence from Adams Hydraulics I (YAT/Yorkshire Museum sitecode: 90.13). Prep. for York Archaeol. Trust. [90/1]
144	**Adams Hydraulics II EAU 91/12**	York	YOR	Carrott J B, Hall A R and Kenward H K. 1991. Environmental evidence from Adams Hydraulics II (YAT/Yorkshire Museum sitecode: 90.13). Unpub. report prep. for York Archaeol. Trust. [91/12]
145	**Adams Hydraulics III EAU 91/05**	York	YOR	Allison E P, Carrott J B, Hall A R and Kenward H K. 1991. Environmental evidence from Adams Hydraulics III (YAT/Yorkshire Museum sitecode 1991.13). Unpub. report prep. for York Archaeol. Trust. [91/5]
146	**Addingham 71-5 & 89-90**	Ilkley/Skipton	WYB	Bastow M . 1997. Seeds. 180. In: Adams M. 1997. Excavation of a pre-Conquest cemetery at Addingham, West Yorkshire. Medieval Archaeol. 40 (for 1996). 151-91.
*152	**Adwick le Street DEAR 25/96**	nr Doncaster	SYD	Huntley J P. 1996. Adwick-le-Street: ALS96. An assessment of the environmental samples. Durham Environmental Archaeology Report 25/96.
*155	**Ailcy Hill EAU 98/15**	Ripon	NYR	Carrott J, Hughes P, Johnstone C and Worthy D. 1998. Evaluation of the biological remains from Ailcy Hill, Ripon (site code HARGM:8947). Reports from the EAU, York 98/15.

Site no.	Site	Location	Cty	Reference
160	**Albion St 92 EAU 92/12**	Driffield	EYR	Carrott J B, Dobney K M, Hall A R, Kenward H K and Milles A. 1992. An evaluation of the bioarchaeological value of some Roman and medieval deposits and bone from excavations in Albion Street, Driffield, North Humberside (site code DAD92) Unpub. report prep. for Humberside Archaeol. Unit. [92/12]
*179	**Aldro (J&H)**	nr Leavening, Malton/Pocklington	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
180	**Aldwark (21-33) (Ebor Brewery) 73-4**	York	YOR	Seaward M R D and Williams D. 1976. An interpretation of mosses found in recent archaeological excavations. J. Archaeol. Sci. 3. 173-7.
181	**Aldwark (36) 83 AML 59/89**	York	YOR	Tomlinson, P. R. 1989. Plant remains from 36 Aldwark (Police Garage), York. AML Report New Series 59/89.
*#182	**Aldwark (36) EAU 89/17**	York	YOR	Tomlinson, P. R. 1989. Plant remains from 36 Aldwark (Police Garage), York. Prep. for York Archaeol. Trust and Ancient Monuments Laboratory. [89/17]
184	**Aldwark (7-9) 85 AML 58/89**	York	YOR	Tomlinson, P. R. 1989. Plant remains from 7-9 Aldwark, York. AML Report New Series 58/89.
*#185	**Aldwark (7-9) EAU 89/18**	York	YOR	Tomlinson, P. R. 1989. Plant remains from 7-9 Aldwark, York. Prep. for York Archaeol. Trust and Ancient Monuments Laboratory. [89/18]
191	**Aldwark (adj 1-5) EAU 88/05**	York	YOR	Hall, A. R. 1988. Medieval and post-medieval plant remains from a site adjacent to 1-5 Aldwark, York (YAT site code 1976-7.15). Unpub. report deposited at EAU and Ancient Monuments Laboratory. [88/5]

Site no.	Site	Location	Cty	Reference
*#221	**All Saints (York) EAU 96/47**	Pavement, York	YOR	Carrott J, Hall A, Issitt M, Kenward H and Large F. 1996. Assessment of plant and invertebrate remains from excavations associated with renovations at All Saints Church, Pavement, York (site code 95.47). Reports from the EAU, York 96/47.
222	**All Saints (York) EAU 98/30**	York	YOR	Hall A, Kenward H and Carrott J. 1998. Technical report: Plant and invertebrate remains from excavations associated with renovations at All Saints Church, Pavement, York (site code 95.47). Reports from the Environmental Archaeology Unit, York 98/30, 20 pp.
*223	**All Saints School 91 EAU 91/36**	The Mount, York	YOR	Carrott, J. and Hall, A. 1991. Report on 'soil' samples from All Saints School, The Mount, York. Unpub. report prep. for MAP. [91/36]
224	**All Saints School 93 EAU 93/10**	Nunnery Lane, York	YOR	Carrott J, Dobney K, Hall A, Jaques D, Lancaster S and Kenward H K. 1993. An evaluation of two samples for biological analysis and some bone from excavations at All Saints School, Nunnery Lane, York (YAT/Yorkshire Museum site code 1993.15 Unpub. report prep. for York Archaeol. Trust. [93/10]
229	**Allerton Grange DEAR 15/94**	A1, Boroughbridge/Wetherby	NYR	Huntley J P. 1994. Allerton Grange, North Yorkshire: AG94. The environmental samples. Durham Environmental Archaeology Report 15/94.
*230	**Allerton Grange Farm DEAR 40/94**	A1, Boroughbridge/Wetherby	NYR	Huntley J P. 1994. Allerton Grange Farm Borrow Pit. The peat sample. Durham Environmental Archaeology Report 40/94.
231	**Allerwash 72**	Newbrough, nr Hexham	NHU	Clarke H H. 1973. Analysis of material from Bronze Age burial at Allerwash. 94-5. In: Newman T G and Miket R F. A dagger-grave at Allerwash, Newbrough, Northumberland. Archaeol. Aeliana 5th Ser. 1. 87-95.
239	**Alnwick Castle Gardens ASUD 681**	Alnwick	NHU	[Cotton J.] 2000. ACG00 Alnwick Castle Gardens: plant macrofossil evaluation. ASUD Report 681. 7pp.

Site no.	Site	Location	Cty	Reference
*256	**Ambleside 82**	Ambleside	CUM	Anon. 1993. The wood objects. 68-9. In: Leech R H. The Roman Fort and Vicus at Ambleside: Archaeological research in 1982. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 93. 51-74.
257	**Ambleside AML 11/93**	Ambleside	CUM	Carruthers W. 1993. A charred grain deposit from Ambleside Roman Fort granary, Cumbria. AML Report New Series 11/93.
*#285	**Annetwell St AML 1/89**	Carlisle	CUM	Huntley J P. 1989. Plant remains from Annetwell Street Carlisle, Cumbria: the bulk samples. AML Report New Series 1/89.
286	**Annetwell St AML 107/89**	Carlisle	CUM	Huntley J P. 1989. Plant remains from Annetwell Street, Carlisle: a synthesis. AML Report New Series 107/89.
288	**Annetwell St AML 17/89**	Carlisle	CUM	Huntley J P. 1989. A short note on cereal bran from the Roman fort at Annetwell Street, Carlisle, Cumbria. AML Report New Series 17/89.
290	**Annetwell St AML 37/89**	Carlisle	CUM	Huntley J P. 1989. Waterlogged plant remains from Annetwell Street, Carlisle. Part 2: Data Analysis. AML Report New Series 37/89.
*#291	**Annetwell St AML 3885**	Carlisle	CUM	van der Veen M. 1983. Carbonised plant remains from Carlisle. First interim report. AML Report OS 3885.
*292	**Annetwell St AML 81/89**	Carlisle	CUM	Goodwin K. 1989. Waterlogged plant remains from Annetwell Street, Carlisle, Cumbria. Part 1: Sample descriptions. AML Report New Series 81/89.
*304	**Annigate 95 DEAR 5/96**	nr Wolviston, Billingham	CVS	Huntley J P. 1996. Annigate, Cleveland: AWC96. An assessment of the environmental samples. Durham Environmental Archaeology Report 5/96.
315	**Appleton le Moors 94**	nr Pickering	NYR	Hall A. 1996. Appendix B. Charcoal from two samples associated with a medieval oven from a site at Appleton-le-Moors, N. Yorkshire. 10-11. In: Allison M. and Rahtz P. A medieval oven at Appleton-le-Moors. The Ryedale Historian 18. 6-11.

Site no.	Site	Location	Cty	Reference
320	**Appletree EAU 2000/46**	Hadrian's Wall, nr Gilsland	CUM	Hall A. 2000. Assessment of plant and invertebrate remains from the Appletree Section, Cumbria. Reports from the EAU, York 2000/46. 5 pp.
331	**Archibalds DEAR 54/97**	North Rd., Durham City	DUR	Huntley, J.P. 1997. Archibalds, North Road, Durham City: ARC95. The environmental sample from context 267, an early medieval trampled surface. Durham Environmental Archaeology Report 54/97.
332	**Archibalds DEAR 8/96**	North Rd., Durham City	DUR	Huntley J P. 1996. Archibalds site, Durham City: ARC95. An assessment of the environmental samples. Durham Environmental Archaeology Report 8/96.
*348	**Arras Cottages ASUD 722**	nr Market Weighton	EYR	[Cotton J.] 2000. Arras Cottages, Market Weighton, East Yorkshire, AC00: plant macrofossil assessment. ASUD Report 722. 5pp.
*#349	**Arras Cottages ASUD 723**	nr Market Weighton	EYR	[Cotton J.] 2000. Arras Cottages, Market Weighton, East Yorkshire, AC00(B): plant macrofossil evaluation. ASUD Report 723. 6pp.
350	**Arras Cottages ASUD 782 (TSEP)**	nr Market Weighton	EYR	[Cotton J.] 2000. Arras Cottages, Market Weighton, East Yorkshire, AC00(B): plant macrofossil full analysis. ASUD Report 782. 11pp.
378	**Askham Bog 78 (hemp)**	nr York	YOR	Greig J R A and Hall A R. 1981. Askham Bog. 507-8. In: Bradshaw R H W, Coxon P, Greig J R A and Hall A R. 1981. New fossil evidence for the past cultivation and processing of hemp (Cannabis sativa L.) in Eastern England. New Phytol. 89. 503-10.
379	**Askham Bog 78 (macros)**	nr York	YOR	Hall A, Gosden S, Greig J and Fitter A. 1979. The history of Askham Bog. Ch. II. 8-21. In: Fitter A and Smith C (eds). A wood in Ascam. York: Sessions/Yorkshire Naturalists' Trust.
*394	**Austerfield Quarry ASUD 698**	nr Bawtry	SYD	[Cotton J.] 2000. Austerfield Quarry, South Yorkshire, AQ00: plant macrofossil evaluation. ASUD Report 698. 6pp.

Site no.	Site	Location	Cty	Reference
*418	**Aylesby 94 EAU 94/51**	nr Grimsby	NEL	Carrott J, Irving B, Issitt M, Jaques D, Kenward H, Large F, McKenna B and Milles A. 1994. Biological remains from excavations at Aylesby, Humberside (Humber bank strategic works, sitecode: HBS94). Reports from the EAU, York 94/51. 8 pp.
421	**Aysgarth-Hawes Main DEAR 6/91**	Aysgarth/Hawes	NYR	Huntley J P. 1991. AHM: Aysgarth to Hawes Main. A botanical assessment of environmental samples. [Durham Environmental Archaeology Report 6/91.]
424	**BBC site (Carlisle) DEAR 1/92**	Carlisle	CUM	Huntley J P. 1992. Plant remains from the BBC site, Carlisle - ANN-H. [Durham Environmental Archaeology Report 1/92.]
*426	**Back Field ASUD 733**	Pocklington	EYR	[Cotton J.] 2000. Back Field, Pocklington, BFP00: plant macrofossil evaluation. ASUD Report 733. 5pp.
*#429	**Back Silver St 75 AML 2155**	Durham City	DUR	Donaldson A. 1976. [Identification of charcoal and seeds from] Back Silver Street, 1975. AML Report OS 2155.
431	**Back Silver St 75-6**	Durham City	DUR	Donaldson A M. 1980. App III Environmental report. 123-4. In: Clipson J. Back Silver Street, Durham, 1975-6 excavations. Archaeol. Aeliana 5th Ser. 8. 109-26.
432	**Back Swinegate EAU 94/13**	York	YOR	Carrott J, Dobney K, Hall A, Jaques D, Kenward H, Lancaster S & Milles A. 1994. Assment of biol. remains from excns at 12-18 Swinegate, 8 Grape Lane, and 14, 18, 20 and 22 Back Swinegate/Little Stonegate, York (YAT/Yorks Mus codes 89-90.28 & 90.1). Reports from the EAU, York 94/13. 16 pp. + 53 pp. appendix.
462	**Baldwin Ave DEAR 5/98**	Bottesford, nr Scunthorpe	NLI	Huntley, J.P. 1998. Baldwin Avenue, Bottesford, Scunthorpe, Lincs: BWA97. An assessment of the environmental samples from ?medieval ditch fills. Durham Environmental Archaeology Report 5/98.

Site no.	Site	Location	Cty	Reference
520	**Bar Ln DEAR 16/96**	Boroughbridge	NYR	Huntley J P. 1996. Bar Lane, Boroughbridge, N. Yorkshire: BL95. The charred plant remains. Durham Environmental Archaeology Report 16/96.
*522	**Bar Ln DEAR 36/98**	Boroughbridge	NYR	Huntley, J.P. 1998. Bar Lane, Boroughbridge: BL98. An assessment of the environmental samples from late prehistoric deposits. Durham Environmental Archaeology Report 36/98.
537	**Barmby on the Marsh PRS 2001/02**	nr Howden	EYR	Carrott J, Hall A, Jaques D and Kenward H. 2001. Evaluation of biological remains from excavations at Barmby-on-the-Marsh, East Riding of Yorkshire (site code: BOM2001). Palaeoecology Research Services Report 2001/02.
540	**Barnaby Side DEAR 24/96**	Guisborough	CVR	Huntley J P. 1996. Barnaby Side: GBS95. Assessment of the environmental samples. Durham Environmental Archaeology Report 24/96.
*541	**Barnaby Side Farm DEAR 2/95**	Guisborough	CVR	Huntley J P. 1995. Barnaby Side Farm, Guisborough: GBS94. An assessment of the environmental samples. Durham Environmental Archaeology Report 2/95.
547	**Barnard Castle 76-8**	Barnard Castle	DUR	Donaldson A M, Jones A K G and Rackham D J. 1980. Appendix. Barnard Castle, Co. Durham. A dinner in the Great Hall: report on the contents of a fifteenth-century drain. 86-96. In: Austin D. 1980. Barnard Castle, Co. Durham. Second Interim Report: excavation in the Inner Ward 1976-8: the later medieval period. J. British Archaeol. Association 133. 76-96.
550	**Barnard Castle AML 2928**	Barnard Castle	DUR	Donaldson A. 1979. Barnard Castle moat. Botanical report. AML Report OS 2928.
*551	**Barnard Castle AML 3923**	Barnard Castle	DUR	Donaldson A. 1983. Barnard Castle, Co. Durham. Botanical remains from the Great Moat, Courtyard and guarderobes [sic]. AML Report OS 3923.

Site no.	Site	Location	Cty	Reference
*570	**Barrasford ASUD 656**	nr Hexham	NHU	[Cotton J.] 2000. Barrasford, Northumberland - BQ99. Plant macrofossil assessment, March 2000. ASUD Report 656. 5pp.
*580	**Barrow Rd 99 EAU 2000/03**	Barton-upon-Humber	NLI	Carrott J, Hall A and Jaques D. 2000. Assessment of biological remains from excavations at Barrow Road, Barton-upon-Humber, North Lincolnshire (site code: BOH99). Reports from the Environmental Archaeology Unit, York 2000/03, 5 pp.
*603	**Barton Moss NWWS 2**	Urmston/Leigh, nr Manchester	GML	Hall D, Wells C E and Huckerby E. 1995. The wetlands of Greater Manchester. North West Wetlands Survey 2. Lancaster Imprints 3.
*604	**Barton St EAU 98/02**	Barrow-on-Humber, nr Barton-on-Humber	NLI	Carrott J, Hughes P, Jaques D, Johnstone C and Worthy D. 1998. Evaluation of biological remains from Barton Street, Barrow on Humber (site code BRBD.1). Reports from the EAU, York 98/2.
624	**Baxtergate (16) (Hedon) EAU 2001/29**	Hedon	EYR	Hall A, Kenward H, Jaques D, Rowland S and Carrott J. 2001. Evaluation of biological remains from 16 Baxtergate, Hedon, East Riding of Yorkshire (site code: BAH2001). Reports from the Environmental Archaeology Unit, York 2001/29, 9 pp.
625	**Baxtergate (63-4) (Whitby) EAU 93/26**	Whitby	NYR	Hall A, Jaques D, Kenward H and Large F. 1993. Biological remains from excavations of medieval deposits at 63-64 Baxtergate, Whitby (site code WB2). Unpub. report prep. for Malton Archaeological Projects. 15 pp. + appendices 1-4. [93/26]
626	**Baxtergate (Whitby) 92 EAU 92/04**	Whitby	NYR	Carrott J B, Dobney K M, Hall A R and Kenward H K. 1992. An evaluation of biological remains from excavations in Baxtergate, Whitby (site code WHITBY 92). Unpub. report prep. for Malton Archaeological Projects. [92/4]
627	**Baxters Warehouse 99 ASUD 640**	nr Quayside, Newcastle	TWN	[Cotton J]. 1999. Baxter's Warehouse, Newcastle upon Tyne BAX99: plant macrofossil analysis. ASUD Report 640.
641	**Bayram Hill DEAR 1/94**	A1, nr Knaresborough	NYR	Huntley J P. 1994. Bayram Hill, North Yorkshire: BH93. The environmental samples. Durham Environmental Archaeology Report 1/94.

Site no.	Site	Location	Cty	Reference
654	**Bear Park Kiln 96 DEAR 15/96**	nr Durham City	DUR	Huntley J P. 1996. Bear Park Kiln, Durham: NX96. The charred plant remains. Durham Environmental Archaeology Report 15/96.
675	**Beckside North PRS 2002/06**	Beverley	EYR	Jaques D, Hall A, Kenward H and Carrott J. 2002. Evaluation of biological remains from excavations at Beckside North, Beverley, East Riding of Yorkshire (site code: BEC2001) Palaeoecology Research Services Report 2002/06.
*677	**Beckview Tilery 86 EAU 93/05**	Beverley	EYR	Carrott J, Dobney K, Hall A, Jaques D, Manser I and Kenward H. 1993. An evaluation of biological remains from excavations of medieval deposits at North Beckside (site code NBS93) and Beckview Tilery (1827.1986 BLY). Unpub. report prep. for Humberside Archaeol. Unit. [93/5.]
681	**Bedern 73-6 (Foundry)**	York	YOR	Hall A R and Kenward H K. 1993. [environmental evidence]. 157-9. In: Richards J D. 1993. The Bedern Foundry. The Archaeology of York 10(3). London: CBA. 149-210 and fiche 1.
*#685	**Bedern 73-81 (cess pit)**	York	YOR	Hall A R, Jones A K G and Kenward H K. 1983. Cereal bran and human faecal material from archaeological deposits. 85-104. In: Proudfoot B (ed). Site, environment and economy. BAR IS 173. Symposia of the AEA 3. Oxford.
687	**Bedern/Aldwark 76-81 (Anglian pits)**	York	YOR	Kenward H K, Hall A R and Jones A K G. 1986. Environmental evidence from a Roman well and Anglian pits in the Legionary fortress. The Archaeology of York 14(5). London: CBA. 241-88 and fiche 2.
688	**Bedern 76-81 (well fills)**	York	YOR	Kenward H K, Hall A R and Jones A K G. 1986. Environmental evidence from a Roman well and Anglian pits in the Legionary fortress. The Archaeology of York 14(5). London: CBA. 241-88 and fiche 2.

Site no.	Site	Location	Cty	Reference
692	**Bedern AML 56/93**	York	YOR	Hall A, Kenward H and Robertson A. 1993. Medieval and post-medieval plant and invertebrate remains from Area X, The Bedern (South-West), York. AML Report New Series 56/93.
693	**Bedern AML 57/93**	York	YOR	Hall A, Kenward H and Robertson A. 1993. Medieval and post-medieval plant and invertebrate remains from Area IV, The Bedern (North-East), York. AML Report New Series 57/93.
694	**Bedern AML 58/93**	York	YOR	Hall A, Kenward H and Robertson A. 1993. Medieval and post-medieval plant and invertebrate remains from Area II, The Bedern (North-East), York. AML Report New Series 58/93.
712	**Beeston Castle 68-85**	nr Tarporley, Chester/Nantwich	CHE	Jones G and Moss R. 1993. The charred plant remains from prehistoric contexts. 80-3 and Fiche M1:F1-M2:E4. In: Ellis P. Beeston Castle, Cheshire a report on the excavations 1968-85 by Laurence Keen and Peter Hough. English Heritage Archaeol. Rep. 23.
*718	**Beeston Castle AML 1806**	nr Tarporley, Chester/Nantwich	CHE	Arthur J R B. 1975. [Seed identification from Beeston Castle.] AML Report OS 1806.
732	**Bell Hill EAC 76/01**	Stourton, nr Leeds	WYL	Snelling A. 2001. Bell Hill, Stourton, near Leeds - BHS01. Environmental Archaeology Consultancy Report EAC 76/01.
739	**Belling Mill 73**	North Tynedale	NHU	Donaldson A M. 1977. Soil samples and wood fragments. 138-9. In: Harbottle B and Newman T G. Excavation and survey in North Tynedale, 1973-1975. Archaeol. Aeliana 5th Ser. 5. 121-54.
*#740	**Belling Mill AML 2161**	North Tynedale	NHU	Donaldson A. 1976. Blackfriars, Newcastle, Blackgate, 1975: Belling Mill 1973 - botanical reports. AML Report OS 2161.
*#766	**Berwick-upon-Tweed AML 2198**	Berwick-upon-Tweed	NHU	Donaldson A. 1977. [Botanical report on material from] Palace Street East and Ravensdowne, Berwick upon Tweed. AML Report OS 2198.
*#767	**Berwick-upon-Tweed AML 2266**	Berwick-upon-Tweed	NHU	Donaldson A. 1977. Botanical report on material from Berwick on Tweed 1976. AML Report OS 2266.

Site no.	Site	Location	Cty	Reference
*#805	**Billingley Drive 99 EAC**	Thurnscoe, Barnsley/Doncaster	SYR	Giorgi J A. 2001. The charred plant remains. In: Rackham D J, Giorgi J A and Gale R. 2001. Billingley Drive, Thurnscoe, South Yorkshire - BDT99. Environmental archaeology report. Unpublished report, Environmental Archaeology Consultancy.
*#806	**Billingley Drive 99 EAC (assessment)**	Thurnscoe, Barnsley/Doncaster	SYR	Rackham J. 2001. Billingley Drive, Thurnscoe, South Yorkshire - BDT99. Environmental archaeology assessment. Unpublished report, Environmental Archaeology Consultancy.
827	**Binns Store DEAR 12/98**	Grainger St, Newcastle	TWN	Huntley, J.P. 1998. Former Binn's Department Store, Newcastle upon Tyne: BMN97. The plant remains in environmental samples from 13th-16th century deposits. Durham Environmental Archaeology Report 12/98.
834	**Birdoswald 87-92**	nr Gilsland (Hadrian's Wall)	CUM	Huntley J P. 1997. Macrobotanical evidence from the horrea. 141-4. In: Wilmott T. 1997. Birdoswald. Excavations of a Roman fort on Hadrian's Wall and its successor settlements: 1987-92. English Heritage Archaeological Report 14. London: English Heritage.
835	**Birdoswald AML 104/91**	nr Gilsland (Hadrian's Wall)	CUM	Huntley J P. 1991. Macrobotanical remains from the Roman fort of Banna (Birdoswald, Cumbria). AML Report New Series 104/91.
844	**Bishop Burton 93 EAU 93/03**	nr Beverley	EYR	Carrott J, Dobney K, Hall A, Jaques D, Kenward H and Manser I. 1993. An evaluation of biological remains from medieval and Roman deposits at Bishop Burton, N. Humberside (site code BBB93). Unpub. report prep. for Humberside Archaeol. Unit. [93/3]
*845	**Bishop Burton/Dale Gate EAU 2000/65**	nr Beverley	EYR	Jaques D, Hall A, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations south of Bishop Burton, east of Dale Gate (site code: TSEP373). Reports from the Environmental Archaeology Unit, York 2000/65, 8 pp.

Site no.	Site	Location	Cty	Reference
847	**Bishop Wilton 93 EAU 93/06**	Malton/Pocklington	EYR	Carrott J, Dobney K, Hall A, Jaques D, Kenward H and Milles A. 1993. An evaluation of biological remains from excavations at Bishop Wilton, N. Humberside (site code VBW93). Unpub. report prep. for Humberside Archaeol. Unit. [93/6]
848	**Bishop Wilton 93 EAU 93/09**	Malton/Pocklington	EYR	Carrott J, Dobney K, Hall A, Jaques D, Kenward H, Large F and Milles A. 1993. Evaluation of biological remains from further samples from excavations at Bishop Wilton, N. Humberside (site code VBW93). Unpub. report prep. for Humberside Archaeol. Unit. 3 pp. [93/9]
849	**Bishop Wilton EAU 2000/43**	Malton/Pocklington	EYR	Jaques D, Carrott J, Hall A and Rowland S. 2000. Evaluation of biological remains from excavations at Bishop Wilton, North Yorkshire (site code: KINCM2000.108). Reports from the Environmental Archaeology Unit, York 2000/43 5 pp.
850	**Bishop Wilton EAU 2001/18**	Malton/Pocklington	EYR	Jaques D, Hall A and Carrott J. 2001. Evaluation of biological remains from excavations at Bishop Wilton, East Riding of Yorkshire (site code: KINCM 2000.108). Reports from the Environmental Archaeology Unit, York 2001/18, 5 pp.
*864	**Bishopthorpe Rd (292) EAU 98/28**	York	YOR	Carrott J, Hall A, Jaques D and Worthy D. 1998. Evaluation of biological remains from 292 Bishopthorpe Road, York (site code YORYM 1998.162). Reports from the Environmental Archaeology Unit, York 98/28, 3 pp.
865	**Black Carts DEAR 18/98**	Hadrian's Wall	NHU	Huntley, J P. 1998. Black Carts, Northumberland: CAS-623. Assessment of bulk environmental samples and pollen monoliths from sections across Hadrian's Wall. Durham Environmental Archaeology Report 18/98.
874	**Black Gate DEAR 7/91**	Newcastle	TWN	Huntley J P. 1991. Black Gate wood (Newcastle): assessment and evaluation. [Durham Environmental Archaeology Report 7/91.]

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*#882	**Blackfriargate (Hull) EAU 84/19**	Hull	KUH	McKenna, W. J. B. 1984. Excavations in High Street and Blackfriargate, Hull. The environmental evidence. Unpub. report [84/19]
898	**Blackfriars St (Carlisle) 77-9**	Carlisle	CUM	Donaldson A M. 1990. The botanical remains. 319 and Fiche 3/4-8. In: McCarthy M R. 1990. A Roman, Anglian and medieval site at Blackfriars Street, Carlisle. Excavations 1977-9. (vol. ed. C M Brooks). Cumberland and Westmorland Antiq. Archaeol. Soc. Res. Ser. 4. Carlisle Archaeol. Unit.
*905	**Blackgate 76 AML 2199**	Newcastle	TWN	Donaldson A. 1977. Botanical report on silt from a medieval castle ditch Blackgate, Newcastle, 1976. AML Report OS 2199.
*906	**Blackgate 76 AML 2267**	Newcastle	TWN	Donaldson A. 1977. Botanical report on silt from a medieval castle ditch, Blackgate, Newcastle, 1976.. AML Report OS 2267.
#907	**Blackgate AML 2392**	Newcastle	TWN	Donaldson A. 1977. Botanical report on moat deposits at Blackgate, Newcastle, including C17 ?night soil. AML Report OS 2392.
908	**Blackgate AML 2393**	Newcastle	TWN	Donaldson A. 1977. Identification of wooden heels from 17th c. deposits at Blackgate. AML Report OS 2393.
913	**Blackgate DEAR 41/94**	Newcastle	TWN	Huntley J P. 1994. Blackgate, Newcastle upon Tyne: BG90, BG92. An assessment of the plant remains. Durham Environmental Archaeology Report 41/94.
930	**Blake St EAU 86/07**	York	YOR	Hall, A. R. 1986. Plant remains from the City Garage site, Blake Street, York (YAT code 1975-6.6). Unpub. report deposited at York Archaeol. Trust, EAU and Ancient Monuments Laboratory. [86/7]
935	**Blanket Row EAU 2001/12**	Hull	KUH	Carrott J, Hall A, Jaques D, Johnstone C, Kenward H and Rowland S. 2001. Technical Report: Plant and animal remains from excavations in Blanket Row, Kingston-upon-Hull (site codes BWH97-00). Reports from the Environmental Archaeology Unit, York 2001/12, 127 pp.

Site no.	Site	Location	Cty	Reference
#936	**Blanket Row EAU 97/18**	Hull	KUH	Carrott J, Hall A, Issitt M, Jaques D, Johnstone C, Kenward H and Large F. 1997. An evaluation of biological remains from excavations at Blanket Row (Shaft 9), Hull (site code: BWH97). Reports from the EAU, York 97/18. 8 pp.
*#937	**Blanket Row EAU 99/01**	Hull	KUH	Johnstone C, Large F, Jaques D, Worthy D, Hall A, Carrott J and Kenward H. 1999. Assessment of biological remains from Blanket Row, Hull (sitecode: BWH98). Reports from the EAU, York 99/1. 35 pp.
952	**Blossom St (12-20) EAU 91/18**	York	YOR	Carrott J B, Hall A R, Kenward H K and Large F. 1991. Environmental evidence from excavations at 12-20 Blossom Street (YAT/Yorkshire Museum sitecode: 1991.11). Unpub. report prep. for York Archaeol. Trust. [91/18]
*953	**Blossom St (28-40) 2000 EAU 2000/50**	York	YOR	Carrott J, Hall A and Jaques D. 2000. Evaluation of biological remains from excavations at 28-40 Blossom Street, York (site code: YORYM 2000.566). Reports from the Environmental Archaeology Unit, York 2000/50, 7 pp.
*954	**Blossom St (47) 91 EAU 92/13**	York	YOR	Carrott J B, Hall A R, and Kenward H K. 1992. An evaluation of biological remains from excavations at 47 Blossom Street, York (YAT site code 1991.22). Unpub. report prep. for York Archaeol. Trust. [92/13]
955	**Blubberhouses Moor 59**	Harrogate/Skipton	NYR	Davies, J. 1966. A mesolithic site on Blubberhouses Moor, Wharfedale, West Riding of Yorkshire. Yorkshire Archaeol. J. 41. 61-70.
*957	**Blue Bridge Ln 94 EAU 94/55**	York	YOR	Brothwell D, Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1994. An evaluation of biological remains from excavations at Blue Bridge Lane, York (site code: 94.2288). Reports from the EAU, York 94/55. 5 pp.

Site no.	Site	Location	Cty	Reference
*980	**Bolton AML 1819**	nr Pocklington	EYR	[Arthur J R B, Paradine P J and Keepax C A. 1975. [Seed identifications from Bolton.] AML Report OS 1819.
#982	**Bolton Common EAU 2000/67**	Pocklington/Stamford Bridge	EYR	Hall A, Rowland S, Kenward H and Carrott J. 2000. Evaluation of biological remains from excavations at Bolton Common (site code: TSEP 243). Reports from the Environmental Archaeology Unit, York 2000/67, 5 pp.
*#985	**Bolton Hall EAU 2000/66**	Pocklington/Stamford Bridge	EYR	Jaques D, Hall A, Rowland S, Kenward H and Carrott J. 2000. Evaluation of biological remains from excavations at Bolton Hall, Bolton (site code: TSEP 238). Reports from the Environmental Archaeology Unit, York 2000/66, 7 pp.
986	**Bolton Hall EAU 2002/04**	Pocklington/Stamford Bridge	EYR	Jaques D, Hall A, Rowland S, Kenward and Carrott J. 2002. Technical Report: Biological remains from a site at Bolton Hall, Bolton, East Riding of Yorkshire (site code: TSEP 238). Reports from the Environmental Archaeology Unit, York 2002/4. 31pp.
993	**Bonny Grove Farm 92**	nr Middlesbrough	CVM	Huntley J P. 1996. Environmental samples from Bonny Grove Farm. 57-8. In: Annis R. Bonny Grove Farm and Dixon's Bank: two Romano-British settlement sites in Cleveland. Durham Archaeol. J. 12. 41-60.
*#994	**Bonny Grove Farm DEAR 16/94**	nr Middlesbrough	CVM	Huntley J P. 1994. Bonny Grove Farm, Cleveland: BGF94. The environmental samples. Durham Environmental Archaeology Report 16/94.
998	**Bootham Engineering Works EAU 2000/45**	Lawrence St, York	YOR	Carrott J, Hall A, Kenward H and Rowland S. 2000. Evaluation of biological remains from excavations at Bootham Engineering Works, Lawrence Street, York (site code: YBE00). Reports from the Environmental Archaeology Unit, York 2000/45, 5 pp.

Site no.	Site	Location	Cty	Reference
*999	**Bootham School EAU 96/19**	York	YOR	Carrott J, Hall A, Issitt M, Kenward H and Large F. 1996. Evaluation of biological remains from excavations at Bootham School, York (site code: 1996.169). Reports from the EAU, York 96/19. 3 pp.
1019	**Botchergate (53-63) OAN**	Carlisle	CUM	Huckerby E. 2002. Palaeoenvironmental evidence. 37-8. In: Miller I. 2002. 53-63 Botchergate, Carlisle. Post-excavation assessment. Oxford Archaeology (North) Report.
1024	**Bottle Bank DEAR 35/98**	Gateshead	TWG	Huntley, J.P. 1998. Bottle Bank, Gateshead, Tyne and Wear: BB97. Assessment of the plant remains from Roman and medieval deposits. Durham Environmental Archaeology Report 35/98
1025	**Bottle Bank LUAU**	Gateshead	TWG	[Howard-Davis C.] 2001. Bottle Bank, Gateshead, Tyne and Wear. Excavation assessment report. Lancaster University Archaeological Unit Report.
1033	**Bowling Green (Berwick) ASUD 682**	Berwick-upon-Tweed	NHU	[Cotton J]. 2000. Berwick-upon-Tweed untreated discharges 1998-1999 (BUT98): plant macrofossil and pollen assessment and analysis. ASUD Report 682.
1034	**Bowling Green (Carlisle) DEAR 2/93**	Carlisle	CUM	Huntley J P. 1993. Carlisle Bowling Green: CAR BLG-A. A botanical report from the environmental samples. [Durham Environmental Archaeology Report 2/93.]
1065	**Bradley St 91-3**	Castleford	WYW	Hinton P. 1998. The plant remains. 53. In: Crockett A and Fitzpatrick A P. 1998. Archaeological mitigation in the Flavian fort annexe and later Roman settlement at Bradley Street, Castleford, West Yorkshire, 1991-93. Yorkshire Archaeol. J. 70, 35-60.
1096	**Brandesburton ASUD 662**	nr Brandesburton, Holderness	EYR	[Cotton J.] 2000. Brandesburton, East Yorkshire - SQB00: plant macrofossil assessment, March 2000. ASUD Report 662. 8pp.
*1118	**Ingram Farm DEAR 37/94**	Breamish, Wooler/Alnwick	NHU	Huntley J P. 1994. Breamish Ingram Farm, Northumberland: BIF94. An assessment of the palaeoenvironmental samples. Durham Environmental Archaeology Report 37/94.

Site no.	Site	Location	Cty	Reference
*1119	**Breamish Valley 99 ASUD**	E Cheviots, Wooler/Rothbury	NHU	[Cotton J.] 2000. Breamish Valley, Northumberland: BIF99. [ASUD Report]
1130	**Brecks Ln HA**	Pockley, nr Helmsley	NYR	Holden T G. 1997. Assessment of a sediment sample from Breck's Lane, Pockley, North Yorkshire. [Report from Headland Archaeology]1p.
1172	**Bridge St (Chester) PRS 2002/16**	Chester	CHE	Hall A, Jaques D, Carrott J and Kenward H. 2002. Assessment of biological remains from excavations at Bridge Street, Chester (site code: CHE/25BS'01). Palaeoecology Research Services Report 2002/16.
1179	**Bridgegate ASUD 791**	Howden	EYR	[Cotton J.] 2001. Bridgegate, Howden, HBG01: plant macrofossil evaluation. ASUD Report 791. 8pp.
*1184	**Bridlington 95 DEAR 27/95**	Bridlington	EYR	Huntley J P. 1995. Bridlington wastewater treatment site: BES95. An evaluation of the environmental samples. Durham Environmental Archaeology Report 27/95.
1191	**Brigg Raft 1888 & 1974**	Brigg	NLI	Hillman G. 1981. Macroscopic remains of an estuarine flora. 147-52. In: McGrail S (ed). The Brigg 'Raft' and her prehistoric environment. BAR BS 89. Oxford. (National Maritime Museum, Greenwich, Archaeological Series 6)
1193	**Brigg Logboat 1886 (mosses 2)**	Brigg	NLI	Sheppard, T. 1910. The pre-historic boat from Brigg. Trans. East Riding Antiq. Soc. 17, 33-54.
1209	**Britannia Car Park EAU 2001/05**	York	YOR	Jaques D, Hall A and Carrott J. 2001. Evaluation of biological remains from excavations at Britannia car park, York (site code: YBC00). Reports from the Environmental Archaeology Unit, York 2001/05, 3 pp.

Site no.	Site	Location	Cty	Reference
*#1249	**Brook Farm 91 (Kates Pad)**	Over Wyre, Fylde	LAN	Wells C. 1992. Kate's Pad, Brook Farm macrofossil diagram. 17-18. In: Huckerby E, Wells C and Middleton R. 1992. Recent palaeoecological and archaeological work in Over Wyre, Lancashire. North West Wetlands Survey Annual Report 1992. 9-18.
*1250	**Brook Farm NWWS 3**	Over Wyre, N Fylde	LAN	Middleton R, Wells C E and Huckerby E. 1995. The wetlands of North Lancashire. North West Wetlands Survey 3. Lancaster Imprints 4.
*1251	**Brook House Farm (Merseyside) 93**	Halewood, nr Liverpool	MEK	Darrah R. 2000. Worked wood. 46-9. In: Cowell R W. 2000. Brook House Farm, Halewood. 27-66. In Cowell R W and Philpott R A. Prehistoric, Romano-British and medieval settlement in lowland North West England: archaeological excavations along the A5300 road corridor in Merseyside. Liverpool: National Museums and Galleries on Merseyside. Shimwell D W [and Ogle M l]. 2000. Macro-botanic evidence. 50-3. In: Cowell R W. 2000. Brook House Farm, Halewood. 27-66. In Cowell R W and Philpott R A. Prehistoric, Romano-British and medieval settlement in lowland North West England: archaeological excavations along the A5300 road corridor in Merseyside. Liverpool: National Museums and Galleries on Merseyside.
*1267	**Hadrians Wall (Twelfth Pilgrimage)**	sites on or near Hadrian's Wall	XXX	Huntley J P. 1999. Environmental evidence from Hadrian's Wall. 49-64. In: Bidwell P. (ed). Hadrian's Wall 1989-1999. A summary of recent excavations and research [prepared for the Twelfth Pilgrimage of Hadrian's Wall, 14-21 August 1999]. Cumberland and Westmorland Antiq and Archaeol Soc/Soc of Antiqs of Newcastle upon Tyne.
*1271	**Broomlee Lough AML 2268**	nr Housesteads (Hadrians Wall)	NHU	Donaldson A. 1977. Fruit and seed identifications from peat near Broomlee Lough, near Housesteads, Northumberland. AML Report OS 2268.

Site no.	Site	Location	Cty	Reference
1272	**Broomrigg 48-9**	Ainstable, Carlisle/Penrith	CUM	Orr M Y. 1950. Report on the charcoal. 41. In: Hodgson K S and Harper K. The prehistoric site at Broomrigg near Ainstable: the excavations of 1948-49. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 50. 30-42.
1278	**Brough St Giles (IA) 88-90**	nr Brompton-on-Swale, Richmond	NYR	Huntley J P. 1996. Carbonised plant remains. 36-7. In: Cardwell P and Speed G. Prehistoric occupation at St Giles by Brompton Bridge, North Yorkshire. Durham Archaeol. J. 12. 27-40.
1279	**Brough St Giles (hospital) 88-90**	nr Brompton-on-Swale, Richmond	NYR	Huntley J P. 1996. Carbonized seeds and pollen. 225-33. In: Cardwell P. Excavation of the hospital of St Giles by Brompton Bridge, North Yorkshire. Archaeol. J. 152 (for 1995). 109-245.
*#1283	**Brough St Giles AML 90/91**	nr Brompton-on-Swale, Richmond	NYR	Huntley J P. 1991. The carbonised seeds, charcoal and pollen from Brough Saint Giles, North Yorkshire: BSG88, BSG89 & BSG90. AML Report New Series 90/91.
1290	**Brough on Humber 58-61**	Brough, nr Hull	EYR	Arthur J R B. 1969. The seeds and other fragments. 222-23. In: Wacher J. Excavations at Brough-on-Humber 1958-1961. Reports of the Research Committee of the Society of Antiquaries of London 25. Dalby D H. 1969. Mosses. 222. In: Wacher J. Excavations at Brough-on-Humber 1958-1961. Reports of the Research Committee of the Society of Antiquaries of London 25.
1294	**Brougham Castle AML 2592**	nr Penrith	CUM	Keepax C A. 1978. Brougham Castle charcoal identifications. Revised report. AML Report OS 2592.
1295	**Brougham Castle DEAR 5/92**	nr Penrith	CUM	Huntley J P. 1992. Brougham - BRE91. A botanical assessment of the samples. [Durham Environmental Archaeology Report 5/92.]
*1299	**Browns Yd EAU 2001/01**	Victoria Rd, Beverley	EYR	Carrott J, Hall A, Jaques D and Rowland S. 2001. Evaluation of biological remains from excavations at Brown's Yard, Beverley (site code: 2001.259). Reports from the Environmental Archaeology Unit, York 2001/01, 4 pp.

Site no.	Site	Location	Cty	Reference
1305	**Brucegate DEAR 6/99**	Berwick-upon-Tweed	NHU	Huntley J P. 1999. Brucegate, Berwick: BGB99. Evaluation of samples from medieval deposits. Durham Environmental Archaeology Report 6/99.
*1364	**Bursea Grange 86**	nr Holme-on-Spalding-Moor	EYR	[Huntley, J.] 1999. The botanical samples. 70. In: Halkon P. and Millett M. (eds.) Rural settlement and industry: studies in the Iron Age and Roman archaeology of lowland East Yorkshire. Yorkshire Archaeol Rep. 4.
1365	**Bursea House 83-4, 87, 91-2**	nr Holme-on-Spalding-Moor	EYR	Palmer, C. 1999. The charred botanical remains. 131 and 133-41. In: Halkon, P. and Millett, M. (eds.) Rural settlement and industry: studies in the Iron Age and Roman archaeology of lowland East Yorkshire. Yorkshire Archaeol Rep. 4. Leeds: Yorkshire Archaeol Soc/Hull: East Riding Archaeol Soc.
*1369	**Burton Fleming AML 2891**	Bridlington/Filey	EYR	Keepax C A. 1979. Replaced organic Burton Fleming. AML Report OS 2891.
*1371	**Burton Fleming AML 67/92**	Bridlington/Filey	EYR	Watson J and Edwards G.1992. The identification of organic material preserved on ironwork from Burton Fleming, Yorkshire. AML Report New Series 67/92.
*1388	**Burythorpe Church 95 EAU 95/50**	nr Malton	NYR	Carrott J, Hall A, Issitt M and Large F. 1995. Evaluation of biological remains from excavations at Burythorpe Church, North Yorkshire (site code: BC95). Reports from the EAU, York 95/50. 6 pp.
*1389	**Burythorpe Quarry 94 EAU 95/49**	nr Malton	NYR	Carrott J, Hall A, Issitt M and Large F. 1995. Evaluation of biological remains from excavations at Burythorpe Quarry, North Yorkshire (site code: BQ94). Reports from the EAU, York 95/49. 4 pp.
*1459	**Callis Wold AML 1871**	nr Bishop Wilton	EYR	Paradine P J. 1975. [Identification of seed from Callis Wold, Humberside.] AML Report OS 1871.

Site no.	Site	Location	Cty	Reference
1492	**Canalside/Witter Pl PRS 2001/06**	Chester	CHE	Carrott J, Hall A, Jaques D and Kenward H. 2001. Evaluation of biological remains from excavations at Canalside/Witter Place, Chester (site code: CHE/SES01) Palaeoecology Research Services Report 2001/06.
*#1522	**Carberry Hall Farm EAU 2000/72**	Wilberfoss/Fangfoss	EYR	Jaques D, Hall A, Kenward H, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at Carberry Hall Farm (site code: TSEP 908). Reports from the Environmental Archaeology Unit, York 2000/72, 5 pp.
1523	**Carberry Hall Farm EAU 2002/05**	Wilberfoss/Fangfoss	EYR	Jaques D, Hall A, Kenward H, Rowland S and Carrott J. 2002. Technical Report: Biological remains from a site at Carberry Hall Farm, East Riding of Yorkshire (site code: TSEP908). Reports from the Environmental Archaeology Unit, York 2002/05, 20pp.
*1529	**Carlisle 73-5 AML 3222**	Carlisle	CUM	Donaldson A. 1980. Carlisle 1973-75 Comments on seed reports. [Addendum to AML report no. 2402] AML Report OS 3222.
*1530	**Carlisle 73-6 AML 2402**	Carlisle	CUM	Keepax C A and others. 1977. Roman Carlisle: environmental investigations. AML Report OS 2402.
1533	**Carlisle 77 AML 2483**	Carlisle	CUM	Donaldson A. 1978. Botanical remains from Carlisle CEU 1977. AML Report OS 2483.
1534	**Carlisle 78 AML 3219**	Carlisle	CUM	Donaldson A. 1980. Carlisle 1978: Material from well (Medieval). AML Report OS 3219.
*1540	**Carlisle AML 24/91**	Carlisle	CUM	Jones J. 1991. Conservation of the Carlisle Roman writing tablets. AML Report New Series 24/91.
1546	**Carlisle AML 3174**	Carlisle	CUM	Keepax C A and Watson J. 1980. Wood identification: Carlisle. AML Report OS 3174.
1555	**Carmelite Friary (Newcastle) 65**	Newcastle	TWN	Clark H H. 1968. Wood. 222. In: Harbottle B. Excavations at the Carmelite Friary, Newcastle Upon Tyne, 1965 and 1967.

Site no.	Site	Location	Cty	Reference
1557	**Carmelite St EAU 91/15**	York	YOR	Carrott J B, Hall A R and Kenward H K. 1991. Assessment of biological remains from excavations at Carmelite Street, York (YAT/Yorkshire Museum sitecode: 1991.9). Unpub. report prep. for York Archaeol. Trust. [91/15]
*1570	**Carnaud Metal Box 97**	James St, Carlisle	CUM	Drury D. 1998. Archaeological work at the Carnaud Metal Box site, James Street, Carlisle. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 98. 233-48.
*1578	**Carr House Sands HA**	Hartlepool Bay	CVH	Holden T G. 1996. The plant macrofossils from Carr House Sands, Hartlepool. [Report from Headland Archaeology 3pp.
1579	**Carr Lodge Farm 2000 EAC 24/02**	Loversall, nr Doncaster	SYR	Rackham D J and Scaife R G. 2002. Carr Lodge Fam, Loversall, Doncaster CLF00. Environmental archaeology assessment. Environmental Archaeology Consultancy Report EAC 24/02.
*#1580	**Carr Naze 93 EAU 94/07**	Filey	NYR	Carrott J, Dobney K, Hall A, Irving B, Issitt M, Jaques D, Kenward H, Lancaster S, Large F and Milles A. 1994. Assessment of biological remains from excavations at Carr Naze, Filey, N. Yorkshire (YAT/Yorkshire Mus sitecode 93.5002) Reports from the EAU, York 94/7. 13 pp.
1581	**Carr Naze 93-4**	Filey	NYR	Dobney K, Jaques D, Carrott J, Hall A, Issitt M and Large F. 2001. Biological remains. 148-82. In: Ottaway P. 2000. Excavations on the site of the Roman signal station at Carr Naze, Filey, 1993-94. Archaeol. J. 157 (for 2000). 79-199.
*#1582	**Carr Naze 94 EAU 95/15**	Filey	NYR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Johnstone C, Kenward H, Large F, Milles A and Shaw T. 1995. Assessment of biological remains from excavations at Carr Naze, Filey, N. Yorkshire (site code FCN 1994.1). Reports from the EAU, York 95/15. 21 pp.

Site no.	Site	Location	Cty	Reference
#1583	**Carr Naze 93-4 EAU 96/26**	Filey	NYR	Dobney K, Jaques D, Carrott J, Hall A, Issitt M and Large F. 1996. Biological remains from excavations at Carr Naze, Filey, N. Yorkshire: Technical Report. Reports from the EAU, York 96/26. 71 pp. + 31 pp. appendices.
1585	**Carrawburgh 50**	Hexham (Brocolitia, Hadrians Wall)	NHU	Blackburn K. 1951. Appendix I. Report upon the natural pine-cones from the temple of Mithras at Carrawburgh. 86. In: Richmond I A and Gillam J P. 1951. The temple of Mithras at Carrawburgh. Archaeol. Aeliana 4th Ser. 29. 1-92. Smythe J A. 1951. Appendix III. Report upon the deposit found in the bowl of the iron altar-shovel from Carrawburgh. 87. In: Richmond I A and Gillam J P. 1951. The temple of Mithras at Carrawburgh. Archaeol. Aeliana 4th Ser. 29. 1-92.
1601	**Cartergate 94 EAU 94/22**	Grimsby	NEL	Carrott J, Hall A, Hill M, Issitt M, Jaques D, Kenward H, Milles A and Nicholson C. 1994. Evaluation of biological remains from excavations in Cartergate, Grimsby (site code CGG94). Reports from the EAU, York 94/22. 7 pp.
*1621	**Castle Car Park 92 EAU 92/06**	York	YOR	Carrott J B, Dobney K M, Hall A R and Kenward H K. 1992. Environmental evidence from Castle Car Park, York (YAT/Yorkshire Museum site code: 1992.5). Unpub. report prep. for York Archaeol. Trust. [92/6]
*1622	**Castle Car Park 95 EAU 95/32**	York	YOR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H, Large F and Milles A. 1995. An evaluation of biological remains from excavations at Castle Car Park, York (site code: 1995.58). Reports from the EAU, York 95/32. 7 pp.
1625	**Castle Ditch (Newcastle) 74-6**	Newcastle	TWN	Donaldson A M. 1981. Botanical report. 243-4. In: Harbottle B and Ellison M. An excavation in the Castle Ditch, Newcastle upon Tyne 1974-6. Archaeol. Aeliana 5th Ser. 9. 75-250.

Site no.	Site	Location	Cty	Reference
*1626	**Castledyke AML 4326**	Barton-upon-Humber	NLI	Watson J. 1984. Organic material assocd with metal objects from Castle Dyke, Barton. AML Report OS 4326.
*1635	**Castle Hill Farm EAU 2000/60**	Swine, nr Hull	EYR	Hall A, Rowland S, Kenward H and Carrott J. 2000. Evaluation of biological remains from excavations north-east of Castle Hill Farm, Swine (site code: TSEP458). Reports from the Environmental Archaeology Unit, York 2000/60, 3 pp.
1655	**Castle St (Blanket Row) EAU 99/12**	Hull	KUH	Carrott J, Hall A, Jaques, D, Kenward H, Large F and Worthy D. 1999. Evaluation of biological remains from excavations at Blanket Row (Stakis Casino), Hull (site code STK98). Reports from the EAU, York 99/12.
1656	**Castle St (Carlisle) 81-2**	Carlisle	CUM	Goodwin K and Huntley J P. 1991. Chapter 9. The waterlogged plant remains and woodland management studies. Fascicule 1, Fiche 1/54-64. In: McCarthy M R (ed). The structural sequence and environmental remains from Castle Street, Carlisle: excavations 1981-2. Cumberland and Westmorland Antiq. Archaeol. Soc. Res. Ser. 5. Kendal. Padley T. 1991. Chapter 25. The wooden objects. Fascicule 3, Fiche 3/203-27. in: McCarthy M R (ed). The structural sequence and environmental remains from Castle Street, Carlisle: excavations 1981-2. Cumberland and Westmorland Antiq. Archaeol. Soc. Res. Ser. 5. Kendal.
1660	**Castle St (Carlisle) AML 4010**	Carlisle	CUM	van der Veen M. 1983. Carlisle, Castle Street. Environmental small finds. AML Report OS 4010.
#1665	**Castle St (Carlisle) AML 77/88**	Carlisle	CUM	Goodwin K and Huntley J P. 1988. Analysis of waterlogged plant remains from Castle Street, Carlisle, Cumbria. AML Report New Series 77/88.

Site no.	Site	Location	Cty	Reference
*1670	**Castle St (Hull) EAU 95/31**	Hull	KUH	Carrott J, Hall A, Issitt M, Kenward H and Large F. 1995. Evaluation of biological remains from excavations at Castle Street, Hull (associated with upgrading works on the A63. Site codes: 1994.481 and 1994.483). Reports from the EAU, York 95/31. 3 pp.
1676	**Castledyke 89-90 EAU 92/02**	Barton-upon-Humber	NLI	Carrott J B, Dobney K M, Hall A R and Milles A. 1992. Investigation of plant and invertebrate remains from the Anglian cemetery at Castledyke, Barton-on-Humber, S. Humberside (site code CS89-90). Unpub. report prep. for Humberside Archaeol. Unit. [92/2]
*1677	**Castledyke AML 74/93**	Barton-upon-Humber	NLI	Edwards G and Watson J. 1993. Organic material associated with metalwork from Castledyke, Barton, South Humberside. AML Report New Series 74/93.
1681	**Castleford 74-85**	Castleford	WYW	Bastow M E [and Boardman S.] 1999. The botanical material. 163-222 (and Apps. 3-6. 329-42). In: Abramson P, Berg D S and Fossick M R. 1999. Roman Castleford. Excavations 1974-85. II. The structural and environmental evidence. Yorkshire Archaeology 5. Wakefield: West Yorkshire Archaeology Service.
*1686	**Castlethorpe I EAU 92/39**	nr Brigg	NLI	Milles A, Dainton M, Hall A and Kenward H. 1992. An evaluation of the bioarchaeological potential of deposits from excavations at Castlethorpe 1, Scawby Brook, Brigg, S. Humberside, 1992. Unpub. report prep. for Humberside Archaeol. Unit. [92/39]
*1687	**Castlethorpe II EAU 92/40**	nr Brigg	NLI	Milles A, Dobney K, Hall A and Kenward H. 1992. An evaluation of the bioarchaeological value of deposits from excavations a Castlethorpe 2, Brigg, South Humberside, 1992. Unpub. report prep. for Humberside Archaeol. Unit. [92/40]
1692	**Catcote 87**	Hartlepool	CVH	Huntley J P. 1989. The plant remains. 29-31. In: Vyner B E and Daniels R. Further investigations of the Iron Age and Romano-British settlement site at Catcote, Hartlepool, Cleveland, 1987. Durham Archaeol. J. 5. 11-34.

Site no.	Site	Location	Cty	Reference
*#1693	**Catcote AML 16/89**	Hartlepool	CVH	Huntley J P. 1989. Carbonised plant remains from Catcote, Hartlepool, Cleveland. AML Report New Series 16/89.
1695	**Catcote School (nr) ASUD 669**	Hartlepool	CVH	[Cotton J.] 2000. HCS99 excavation near Catcote School, Hartlepool, Teesside: plant macrofossil assessment. ASUD Report 669. 6pp.
*1696	**Catesby Business Park BUFAU 895.01**	Balby Carr, nr Doncaster	SYD	Ciaraldi M and Greig J. 2002. Seeds. 7-8. In: Jones L. 2002. Land at Catesby Business Park, Balby Carr, Doncaster, South Yorkshire: an archaeological evaluation 2002. BUFAU Project 895.01.
1707	**Catterick (RAF) (kiln)**	Catterick	NYR	Huntley J P. 1996. The biological material. 293-6. In: Busby P A, Evans, J, Huntley J P and Wilson P R. 1996. A pottery kiln at Catterick. Britannia 27. 283-97.
*1709	**Catterick 58-97 (overview)**	Catterick	NYR	Huntley J P. 2002. Charred plant remains from the Catterick area. 443-5. In: Wilson P R. 2002. Cataractonium: Roman Catterick and its hinterland. Excavations and research, 1958-1997. Part II. CBA Res. Rep. 129. York: CBA.
1713	**Catterick AML 109/87**	Catterick	NYR	Watson J. 1987. Identification of wood associated with metalwork from Catterick, North Yorkshire. AML Report New Series 109/87.
*1717	**Catterick AML 4645**	Catterick	NYR	Watson J. 1985. Mineral preserved organic material associated with metalwork from Catterick, Yorkshire. AML Report OS 4645.
#1723	**Catterick site 524 DEAR 2/94**	Catterick	NYR	Huntley J P. 1994. Catterick (A1) North Yorkshire: CAS site 524. The plant remains from context 1012. Durham Environmental Archaeology Report 2/94.
1724	**Catterick sites 506 & 511 DEAR 3/94**	Catterick	NYR	Huntley J P. 1994. Catterick (A1) North Yorkshire: CAS sites 506 and 511. An assessment of the palaeoenvironmental samples. Durham Environmental Archaeology Report 3/94.
1732	**Causeway House**	by Stanegate, nr Vindolanda	NHU	Pearson A. 1990. [Identifications]. 135. In: Emery N, Warner J and Pearson A. 1990. Causeway House, Northumberland. Archaeol. Aeliana 5th Ser. 18. 131-49.

Site no.	Site	Location	Cty	Reference
1740	**Cawthorn Camps 2000 EAU 2001/17**	nr Pickering	NYR	Hall A. 2001. Assessment of plant remains (mainly charcoal) from excavations at Cawthorn Camps, North Yorkshire, 2000 (site code CAS645). Reports from the Environmental Archaeology unit, York 2001/17, 11pp.
1741	**Cawthorn Camps 99 EAU 2000/09**	nr Pickering	NYR	Hall A and Kenward H. 2000. Assessment of plant and invertebrate remains from excavations at Cawthorn Camps, N. Yorkshire, 1999 (site 654). Reports from the EAU, York 2000/9. 8pp.
*#1743	**Caythorpe Gas Pipeline DEAR 3/92**	nr Rudston	EYR	Huntley J P. 1992. Caythorpe Gas Pipeline - CGP92. Botanical assessment of the environmental samples. [Durham Environmental Archaeology Report 3/92.]
1746	**Caythorpe Pipeline**	nr Rudston	EYR	Huntley J P. 1996. The plant remains. 80-1. In: Abramson P. Excavations along the Caythorpe Gas pipeline, North Humberside. Yorkshire Archaeol. J. 68. 1-88.
1770	**Champney Rd 93 EAU 93/01**	Beverley	EYR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H, Lancaster S and Milles A. 1993. Evaluation of biological remains from excavations in Champney Road, Beverley (site code BCR93). 8 pp. Unpub. report prep. for Humberside Archaeol. Unit. [93/1]
1777	**Chapel Farm (rear) PRS 2002/14**	9 Runner End, Holme-on-Spalding-Moor	EYR	Hall A, Kenward H and Carrott J. 2002. Evaluation of biological remains from a watching brief on land to the rear of Chapel Farm, 9 Runner End, Holme-upon-Spalding-Moor, East Riding of Yorkshire (site code: HRE02). Palaeoecology Research Services Report 2002/14.
1779	**Chapel Haddlesey-Eggborough Pipeline EAU 99/31**	Selby/Knottingley	NYR	Hall A, Kenward H, Large F and Worthy D. 1999. Evaluation of bioarchaeological remains from a site on the Chapel Haddlesey to Eggborough pipeline (site code OSA99WB03). Reports from the Environmental Archaeology Unit, York 99/31, 4 pp.

Site no.	Site	Location	Cty	Reference
1782	**Chapel Lane Staith 78**	Hull	KUH	Underdown S. 1979. The plant remains. 73-7. In: Ayers B. Excavations at Chapel Lane Staith 1978. East Riding Archaeol. 5. Hull Old Town Rep. Ser. 3.
1783	**Chapel Lane Staithe 2000**	Hull	KUH	Rackham D J. 2001. Chapel Lane Staithe - CLS00. Environmental archaeology assessment. Environmental Archaeology Consultancy Report.
1830	**Chester House (dating)**	nr Acklington	NHU	Holbrook N and van der Veen M. 1995. Radiocarbon dates from the settlement at Chester House, Northumberland. Archaeol. Aeliana 5th Ser. 23. 314-17.
1831	**Chester House 85**	nr Acklington	NHU	van der Veen, M. 1992. Crop Husbandry Regimes. An archaeobotanical study of farming in northern England 1000 BC - AD 500. Sheffield Archaeol. Monographs 3. Sheffield.
1833	**Middle Chare 78-9**	Chester-le-Street	DUR	Donaldson A M. 1991. Middle Chare botanical report. Fiche 2, 143-6. In: Evans J, Jones R F J and Turnbull P. 1991. Excavations at Chester-le-Street, Co. Durham, 1978-9. Durham Archaeol. J. 7. 5-48 and fiche 1-2.
*#1834	**Chester le Street AML 2929**	Chester-le-Street	DUR	Donaldson A. 1979. Chester le Street fort. Botanical report. AML Report OS 2929.
*#1836	**Chester le Street DEAR 2/91**	Chester-le-Street	DUR	Huntley J P. 1991. Chester-le-Street Roman fort. The botanical assessment. [Durham Environmental Archaeology Report 2/91.]
1838	**Chesters Bridge AML 29/93**	(Hadrian's Wall)	NHU	Huntley J P. 1993. The carbonised plant remains from excavations at Chesters Roman bridge abutment, Chesters, Northumberland. AML Report New Series 29/93.
1843	**Chevington Chapel DEAR 1/98**	Chevington, nr Acklington/Widdrington	NHU	Huntley, J.P. 1998. Chevington Chapel, Northumberland: CHV97. Assessment of the environmental samples from Iron Age and medieval deposits. Durham Environmental Archaeology Report 1/98.

Site no.	Site	Location	Cty	Reference
1844	**Chevington Chapel DEAR 14/98**	Chevington, nr Acklington/Widdrington	NHU	Huntley, J.P. 1998. Chevington Chapel, Northumberland: CHV97. Part 2: assessment of further environmental samples from Iron Age deposits. Durham Environmental Archaeology Report 14/98.
1846	**Cheviot Quarry EAU 2000/78**	Milfield, nr Wooler	NHU	Hall A. 2000. Assessment of plant remains from excavations at Cheviot Quarry, Milfield, Northumberland (site code 02-02-00). Reports from the EAU, York 2000/78, 7pp.
1901	**Church Chare 90-1**	Chester-le-Street	DUR	Huntley J P. 1993. Environmental report. Palaeobotanical evidence. 71-4. In: Bishop M C. Excavations in the Roman fort at Chester-le-Street (Concangis), Church Chare 1990-91. Archaeol. Aeliana 5th Ser. 21. 29-85.
*#1903	**Church Chare AML 84/91**	Chester-le-Street	DUR	Huntley J P. 1991. Plant remains from Church Chare, Chester-le-Street, 1990-91 (CC90). AML Report New Series 84/91.
1905	**Church Close 84-5 (Anglo-Saxon)**	Hartlepool	CVH	Huntley J. 1988. The botanical remains. 201-2. In: Daniels R. The Anglo-Saxon monastery at Church Close, Hartlepool, Cleveland. Archaeol. J. 145. 158-210.
1906	**Church Close 84-5 (medieval)**	Hartlepool	CVH	Huntley J. 1990. The botanical remains. 398-9. In: Daniels R. The development of medieval Hartlepool: excavations at Church Close, 1984-85. Archaeol. J. 147. 337-410.
*#1908	**Church Close 84-5 AML 74/87**	Hartlepool	CVH	Huntley J P. 1987. Botanical remains from Hartlepool: Church Close 1984/85. AML Report New Series 74/87.
1910	**Church Farm (Flamborough) EAU 99/16**	Lily Ln, Flamborough	EYR	Carrott J, Hall A, Johnstone C, Large F, Speight H and Worthy D. 1999. Evaluation of bioarchaeological remains from Church Farm, Lily Lane, Flamborough, East Riding of Yorkshire (site code: LLF99). Reports from the EAU, York 99/16.
1911	**Church Fenton ASUD 823**	Church Fenton, Tadcaster/Selby	NYR	[Cotton J.] 2001. Church Fenton, North Yorkshire, CF01: plant macrofossil evaluation. ASUD Report 823. 5pp.

Site no.	Site	Location	Cty	Reference
1917	**Church Ln (Wheldrake) 2001 EAC 35/01**	Wheldrake, nr York	YOR	Rackham J and Snelling A. 2001. Wheldrake, Church Lane - WCL01. Environmental archaeology assessment. Environmental Archaeology Consultancy Report EAC 35/01.
1918	**Church Moss 95**	Davenham, nr Northwich	CHE	Hughes P D M, Kenward H K, Hall A R and Large F D. 2000. A high-resolution record of mire development and climatic change spanning the Late-glacial - Holocene boundary at Church Moss, Davenham (Cheshire, England). Journal of Quaternary Science 15. 697-724.
*1919	**Church Moss 95 EAU 96/36**	Davenham, nr Northwich	CHE	Carrott J, Hall A, Kenward H, Large F and Usai R. 1996. Assessment of plant and invertebrate remains from Late Devensian and Early Flandrian mire deposits at Church Moss, Davenham, Cheshire (site code DV95). Reports from the EAU, York 96/36.
*#1920	**Church Moss 95 EAU 98/26**	Davenham, nr Northwich	CHE	Hughes P, Kenward H, Hall A & Large F. 1998. Reconstruction of Lateglacial and Early Holocene mire succession and rates of climatic change from plant macrofossils, invertebrate remains and pollen at Church Moss, Davenham, Cheshire (site code: DV95). Reports from the EAU, York 98/26. 95 pp.
1928	**Church St (Burton Pidsea) EAU 2001/28**	Burton Pidsea, Holderness	EYR	Hall A, Kenward H and Carrott J. 2001. Evaluation of biological remains from excavations at Church Street, Burton Pidsea, East Riding of Yorkshire (site code: CSB2001). Reports from the Environmental Archaeology Unit, York 2001/28. 3pp.
1944	**Church St (Whitby) ASUD 709**	Whitby	NYR	[Cotton J.] 2000. Whitby, North Yorkshire - CSW98, CSW99 and WS99: plant macrofossil evaluation and foraminiferal analysis. ASUD Report 709. 25pp.
*#1945	**Church St (Whitby) DEAR 9/99**	Whitby	NYR	Huntley J P. 1999. Church St sewer, Whitby: CSW98. Evaluation of environmental samples from medieval and post-medieval deposits. Durham Environmental Archaeology Report 9/99.

Site no.	Site	Location	Cty	Reference
1946	**Church St (York) 72-3**	York	YOR	Greig J R A. 1976. The plant remains. 23-8. In: Buckland P C (ed). The environmental evidence from the Church Street Roman sewer system. The Archaeology of York 14(1). London: CBA.
*#1947	**Church St (York) AML 2543**	York	YOR	Greig J R A. 1978. Seed and pollen remains from the Roman Sewer at Church Street, York. AML Report OS 2543.
1948	**Church St carpark (Whitby) ASUD 709**	Whitby	NYR	[Cotton J.] 2000. Whitby, North Yorkshire - CSW98, CSW99 and WS99: plant macrofossil evaluation and foraminiferal analysis. ASUD Report 709. 25pp.
1964	**Citadel Way EAU 2001/37**	Hull	KUH	Hall A, Rowland S, Kenward H and Carrott J. 2001. Evaluation of biological remains from excavations at Citadel Way, Kingston upon Hull (site code: BMW2001). Reports from the Environmental Archaeology Unit, York 2001/37, 4 pp.
1965	**Citadel Way PRS 2001/03**	Hull	KUH	Hall A, Kenward H, Jaques D and Carrott J. 2001. Evaluation of biological remains from further excavations on land adjacent to Paragon BMW, Citadel Way, Kingston upon Hull (site code: BMW2001). Palaeoecology Research Services Report 2001/03.
*1967	**City Arms EAU 2001/44**	Fawcett St, York	YOR	Jaques D, Hall A and Carrott J. 2001. Evaluation of biological remains from excavations at City Arms, Fawcett Street, York (site code: 2001.10748). Reports from the Environmental Archaeology Unit, York 2001/44, 3 pp.
*1976	**Clarence St EAU 98/41**	York	YOR	Johnstone C, Hall A, Worthy D and Carrott J. 1998. Evaluation of biological remains from Clarence Street, York (sitecode: YC98). Reports from the Environmental Archaeology Unit, York 98/41, 3 pp.
1987	**Claxton Quarry DEAR 23/94**	Billingham/Hartlepool	CVH	Huntley J P and Stokes P R G. 1994. Claxton Quarry Extension, Cleveland. CXQ93. Assessment of the environmental evidence. Durham Environmental Archaeology Report 23/94.

Site no.	Site	Location	Cty	Reference
1990	**Claypath 99 ASUD 636**	Durham City	DUR	Cotton J A. 1999. Durham City Centre: DCC99. An evaluation of archaeobotanical remains from Durham Claypath. ASUD Report 636.
1992	**Claypath AML 4899**	Durham City	DUR	van der Veen M. 1986. The plant remains from Durham Claypath. AML Report OS 4899.
1993	**Clayton Hall LUAU**	Clayton-le-Woods, nr Leyland	LAN	Anon. 2000. Clayton Hall, Clayton-le-Woods, Lancashire. Archaeological evaluation report. Lancatser University Archaeological Unit Report.
2010	**Clifford St (2) EAU 2000/17**	York	YOR	Hall A. and Kenward H. 2000. Technical report: Plant and invertebrate remains from Anglo-Scandinavian deposits at 2 Clifford Street, York (site code 99.256). Reports from the EAU, York2000/17, 24 pp.
*2011	**Clifton Moorgate 94 EAU 94/43**	nr York	YOR	Carrott J, Hall A, Issitt M, Kenward H and Large F. 1994. An evaluation of biological remains from excavations at Clifton Moorgate, York (CLM94). Reports from the EAU, York 94/43. 4 pp.
*2012	**Clifton Moorgate 94 EAU 95/19**	nr York	YOR	Carrott J, Hall A, Issitt M, Large F, McKenna B and Milles A. 1995. A further evaluation of biological remains from excavations at Clifton Moorgate, York (site code: CLM94). Reports from the EAU, York 95/19. 3 pp.
2016	**Close Gate 88-9**	Newcastle	TWN	Huntley J P. 1994. Plant remains. 134-44, 149-51. In: Fraser R, Maxwell R and Vaughan J E (eds). Excavations adjacent to Close Gate, Newcastle 1988-89. Archaeol. Aeliana 5th Ser. 22. 85-151.
*#2018	**Closegate 88 AML 124/90**	Newcastle	TWN	Huntley J P. 1991. Plant remains from the medieval site at Closegate, Newcastle upon Tyne: CG88. AML Report New Series 124/90.
*#2020	**Closegate 90 AML 125/90**	Newcastle	TWN	Huntley J P. 1990. Further plant remains from the medieval site at Closegate, Newcastle upon Tyne: CG90. AML Report New Series 125/90.

Site no.	Site	Location	Cty	Reference
2044	**Coffee Yd EAU 89/12**	York	YOR	Robertson A, Tomlinson P and Kenward H K. 1989. Plant and insect remains from Coffee Yard, York. Prep. for York Archaeol. Trust. [89/12]
*2100	**Conesby Quarry Sidings EAU 2001/07**	nr Scunthorpe	NLI	Hall A and Kenward H. 2001. Evaluation of biological remains from borehole samples from Conesby Quarry Sidings, North Lincolnshire (site code: CQS2000). Reports from the Environmental Archaeology Unit, York 2001/07, 4 pp.
*2102	**Coney St (13-17) EAU 91/13**	York	YOR	Carrott J B, Hall A R and Kenward H K. 1991. Environmental evidence from 13-17 Coney Street (YAT/Yorkshire Museum sitecode: 1991.3). Unpub. report prep. for York Archaeol. Trust. [91/13]
*2103	**Coney St (3-7) EAU 97/01**	York	YOR	Carrott J, Issitt M, Jaques D and Large F. 1997. Evaluation of biological remains from excavations at 3-7 Coney Street, York (site code: 1996.409). Reports from the EAU, York 97/1. 3 pp. + 1 p. appendix.
2104	**Coney St (39-41) 74-5 (W H Smith)**	York	YOR	Williams D. 1979. The plant remains. 52-62 and 81-91. In: Kenward H K and Williams D. Biological evidence from the Roman warehouses in Coney Street. The Archaeology of York 14(2). London: CBA. 45-100.
*#2105	**Coney St (39-41) AML 2021**	York	YOR	Arthur J R B. 1976. [Grain identification: Coney St. York.] AML Report OS 2021.
2121	**Cooper Farm EAU 99/13**	Long Riston, Beverley/Hornsea	EYR	Hall A, Johnstone C, Large F and Worthy D. 1999. Evaluation of bioarchaeological remains from Coopers Farm, Long Riston, East Riding of Yorkshire (site code: CFR99). Reports from the EAU, York 99/13. 6 pp.
2126	**Coppergate (16-22) (Anglo-Scand)**	York	YOR	Kenward H K and Hall A.R. 1995. Biological evidence from Anglo-Scandinavian deposits at 16-22 Coppergate. The Archaeology of York 14(7). York: CBA. 435-797.

Site no.	Site	Location	Cty	Reference
*#2127	**Coppergate (16-22) (Period 3) EAU 99/30**	York	YOR	Hall A and Kenward H. 1999. Plant and invertebrate remains from Anglo-Scandinavian deposits at 16-22 Coppergate, York: Technical Report. Part 1: Period 3. Reports from the EAU, York 99/30. 74pp.
*#2128	**Coppergate (16-22) (Period 4A/B) EAU 99/38**	York	YOR	Hall A. and Kenward H. 1999. Plant and invertebrate remains from Anglo-Scandinavian deposits at 16-22 Coppergate, York: Technical Report. Part 2: Periods 4A and 4B. Reports from the EAU, York 97/38. 127pp.
*#2129	**Coppergate (16-22) (Period 5A) EAU 99/47**	York	YOR	Hall A. and Kenward H. 1999. Plant and invertebrate remains from Anglo-Scandinavian deposits at 16-22 Coppergate, York: Technical Report. Part 3: Period 5A. Reports from the EAU, York 99/47. 39 pp.
*#2130	**Coppergate (16-22) (Period 5B) EAU 99/49**	York	YOR	Hall A and Kenward H. 2000. Plant and invertebrate remains from Anglo-Scandinavian deposits at 16-22 Coppergate, York: technical report. Part 4: Period 5B. Reports from the Environmental Archaeology Unit, York 99/49, 124 pp.
*#2131	**Coppergate (16-22) (Period 5C) EAU 99/63**	York	YOR	Hall A and Kenward H. 2000. Plant and invertebrate remains from Anglo-Scandinavian deposits at 16-22 Coppergate, York: technical report. Part 5: Period 5C. Reports from the Environmental Archaeology Unit, York 99/63, 28 pp.
*#2132	**Coppergate (16-22) (bran)**	York	YOR	Hall A R, Jones A K G and Kenward H K. 1983. Cereal bran and human faecal material from archaeological deposits. 85-104. In: Proudfoot B (ed). Site, environment and economy. BAR IS 173. Symposia of the AEA *. Oxford.
*2133	**Coppergate (16-22) (dyeplants)**	York	YOR	Hall A R, Tomlinson P R, Hall R A, Taylor G, and Walton P. 1984. Dyeplants from Viking York. Antiquity 58. 58-60.
2134	**Coppergate (16-22) (hair moss)**	York	YOR	Hall A R. 1989. Hair moss. 395 and 397. In: Walton P. Textiles, cordage and raw fibre from 16-22 Coppergate. The Archaeology of York 17(5). London: CBA. 283-454 and plates 15-34 and fiche.

Site no.	Site	Location	Cty	Reference
*2136	**Coppergate (16-22) (textile production)**	York	YOR	Hall A R. 1997. [Flax remains]. 1719. In: Walton Rogers P. 1997. Textile production at 16-22 Coppergate. The Archaeology of York 17(11). York: CBA. Hall A R. 1997. [dyeing and mordanting] 1767-9. In: Walton Rogers P. 1997. Textile production at 16-22 Coppergate. The Archaeology of York 17(11). York: CBA. Hall A R. 1997. Teasels. 1774. In: Walton Rogers P. 1997. Textile production at 16-22 Coppergate. The Archaeology of York 17(11). York: CBA.
*2137	**Coppergate (16-22) (woad bacteria)**	York	YOR	Padden A N , John P, Collins M D, Hutson R and Hall A R. 2000. Indigo-reducing Clostridium isatidis isolated from a variety of sources, including a 10th-century Viking dye vat. J. Archaeol. Sci. 27. 953-64.
*2139	**Coppergate (16-22) (worked wood)**	York	YOR	Morris, C.A. 2000. Craft, industry and everyday life: wood and woodworking in Anglo-Scandinavian and medieval York. The Archaeology of York 17(13). York: CBA.
2169	**Coppergate (16-22) EAU 96/09**	York	YOR	Carrott J, Hall A, Issitt M, Kenward H and Large F. 1996. Plant and invertebrate remains from post-Conquest deposits at 16-22 Coppergate, York (site code 1976-81.7): assessment of bioarchaeological potential and draft project design. Reports from the EAU, York 96/9. 20 pp. + 52 pp. tables.
2171	**Coppergate (5-7) 74**	York	YOR	Hall A R, Kenward H K, Williams D and Greig J R A. 1983. Environment and living conditions at two Anglo-Scandinavian sites. The Archaeology of York 14(4). London: CBA. 157-240 and fiche 1.
2175	**Coppergate Helmet**	York	YOR	Hall A R, Jones A K G, Kenward H K and O'Connor T P. 1992. The environmental evidence. 875-81. In: Tweddle D. The Anglian helmet from Coppergate. The Archaeology of York 17(8). London: CBA. 851-1201.

Site no.	Site	Location	Cty	Reference
*#2176	**Coppergate Helmet AML 4491**	York	YOR	Hall A R. 1985. Plant remains from deposits associated with the 8th century 'Anglian Helmet' from the Coppergate-Piccadilly Development, York. AML Report OS 4491.
*2189	**Corbridge AML 158/87**	Corbridge	NHU	Watson J. 1987. Mineral preserved organic material from the Corbridge hoard. AML Report New Series 158/87.
*2206	**Cosins Chapel 96 DEAR 10/96**	Aukland Castle, Bishop Auckland	DUR	Huntley J P. 1996. Cosin's Chapel, Aukland Castle: BAC96. The environmental sample from context 14. Durham Environmental Archaeology Report 10/96.
2211	**Cottage Farm CfA 95/2001**	Sewerby, nr Bridlington	EYR	Huntley J P. 2001. Sewerby Cottage Farm, Martongate, Bridlington, East Yorkshire (SCF): Assessment of charred plant remains from neolithic deposits. Centre for Archaeology Report 95/2001.
#2213	**Cottam 93 EAU 94/32**	Malton/Driffield	EYR	Carrott J, Hall A, Issitt M, Kenward H, Large F and Milles A. 1994. An assessment of biological remains from excavations at the Anglian site at Cottam, North Humberside (site code COT93). Reports from the EAU, York 94/32. 8 pp.
2215	**Cottam 93-6**	Malton/Driffield	EYR	Carrott J, Hall A, Issitt M, Kenward H, Large F and Milles A. 2000. Assessment of biological remains from COT93. 83-4. In: Richards, J.D. Cottam: an Anglian and Anglo-Scandinavian settlement on the Yorkshire Wolds. Archaeol. J.l 156 (for 1999), 1-110. Hall, A. 2000. Plant macrofossils from COT95. 84. In: Richards, J.D. Cottam: an Anglian and Anglo-Scandinavian settlement on the Yorkshire Wolds. Archaeol. J.l 156 (for 1999), 1-110.
2222	**County Hall (Beverley) EAU 2001/25**	Beverley	EYR	Hall A, Rowland S, Carrott J, and Jaques D. 2001. Evaluation of biological remains from excavations at County Hall, Beverley, East Riding of Yorkshire (sitecode: CHB2001). Reports from the Environmental Archaeology Unit, York 2001/25, 9 pp.

Site no.	Site	Location	Cty	Reference
2224	**County House EAU 97/52**	Monkgate, York	YOR	Carrott J, Hughes P, Johnstone C, Large F and Worthy D. 1997. Evaluation of biological remains from County House, Monkgate, York (site code 1997.103). Reports from the EAU, York 97/52. 7 pp.
2227	**Coupland Enclosure (Milfield basin)**	nr Wooler	NHU	Huntley J P. 1999. [Charred plant remains from the Milfield Basin, Northumberland. Neolithic deposits at Coupland Enclosure.] Durham: Department of Archaeology.
*#2244	**Cowick**	nr Snaith	EYRI	Greig J. 1986. The archaeobotany of the Cowick medieval moat and some thoughts on moat studies. Circaea 4. 43-50.
2245	**Cowick 76**	nr Snaith	EYR	Hayfield C and Greig J. 1989. Excavation and salvage work on a moated site at Cowick, South Humberside, 1976. Yorkshire Archaeol. J. 61. 41-70.
*#2247	**Cowick Moat AML 4498**	nr Snaith	EYR	Greig J R A. 1985. The history of Cowick Moat as shown by the plant remains. AML Report OS 4498.
*2250	**Cowlam (J&H)**	nr Sledmere, Malton/Driffield	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
2252	**Cowlam Wold Barrows 68**	Driffield/Bridlington (Yorks. Wolds)	EYR	Anon. 1984. Botanical [including data from earlier excavations]. 29. In: Watts L and Rahtz P. Cowlam Wold Barrows. York University Archaeological Publications 3.
*2257	**Cowstand Farm ASUD 687**	nr Catterick	NYR	Cotton J. 2000. Plant macrofossil assessment. In: Hale D. [comp.] 2000. Cowstand Farm evaluation, Catterick, North Yorkshire (CFC00): post excavation works. ASUD Report 687, 11pp.
2262	**Coxhoe**	nr Durham City	DUR	van der Veen M and Haselgrove C C. 1983. Evidence for pre-Roman crops from Coxhoe, Co. Durham. Archaeol. Aeliana 5th Ser. 11. 23-5.

Site no.	Site	Location	Cty	Reference
*#2263	**Coxhoe (crop plants)**	nr Durham City	DUR	van der Veen M. 1985. Evidence for crop plants from north-east England. 197-219. In: In: Fieller N R J, Gilbertson D D and Ralph N G A. Palaeobiological Investigations: Research design, methods and data analysis. BAR IS 266. Symposia of the AEA *. Oxford.
*2268	**Crab Ln WYAS 757**	Crossgates, nr Seamer	NYR	Richardson J. 1999. Crab Lane and Crossgates, Seamer, North Yorkshire. Environmental assessment of flotation samples. West Yorkshire Archaeological Service Report 757.
2280	**Crawley Edge 75-7**	Stanhope, Weardale	DUR	Donaldson A. 1992. Charcoal from beneath Cairn A. 44. In: Young R and Welfare A T. Fieldwork and excavation at the Crawley Edge cairnfield, Stanhope, Co. Durham. Durham Archaeol. J. 8. 27-49.
*#2281	**Crawley Edge AML 2265**	Stanhope, Weardale	DUR	Donaldson A. 1977. Crawley Edge, Stanhope. Botanical report. AML Report OS 2265.
2291	**Creyke Beck DEAR 21/98**	Cottingham, nr Hull	EYR	Huntley, J.P. 1998. Creyke Beck, Cottingham, nr. Hull: CBC97. An assessment of the environmental samples from late prehistoric deposits: part 2. Durham Environmental Archaeology Report 21/98.
*2294	**Creyke Beck DEAR 41/97**	Cottingham, nr Hull	EYR	Huntley, J.P. 1997. Creyke Beck, Cottingham, East Yorkshire: CBC97. An evaluation of the soil samples. Durham Environmental Archaeology Report 41/97.
2302	**Croftlands 77**	nr Wigton	CUM	Donaldson A M. 1982. Appendix. Fruits and seeds in ditch samples from Croftlands. 32-3. In: Higham N J. 'Native' settlements on the north slopes of the Lake Distict. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 82. 29-33.
*#2303	**Croftlands AML 2930**	nr Wigton	CUM	Donaldson A. 1979. Croftlands, near Bassenthwaite, Cumbria. Botanical report. AML Report OS 2930.
2315	**Crosby By-pass DEAR 35/94**	nr Carlisle	CUM	Huntley J P. 1994. Crosby by-pass, Cumbria. An assessment of the palaeoenvironmental samples and wood identification. Durham Environmental Archaeology Report 35/94.

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*2327	**Crossgates Farm EAU 96/56**	Seamer, nr Scarborough	NYR	Hall A, Issitt M, Jaques D and Large F. 1996. Evaluation of biological remains from excavations at Crossgates Farm, Seamer, N. Yorkshire (site code CG96). Reports from the EAU, York 96/56.
*2337	**Crown Car Park 78**	Nantwich	CHE	[Colledge S M.] 1979. Environmental Report. 36. In: McNeil Sale R (et al.). Archaeology in Nantwich, Crown Car Park Excavations Interim report. [see also - AML Lab report No: 3347. 1981] Liverpool University.
*2338	**Crown Car Park AML 3347**	Nantwich	CHE	Colledge S. 1981. A report on the micro- and macroscopic plant remains from the Crown Court Park site in Nantwich. AML Report OS 3347.
2339	**Crown Court 85-6**	Newcastle	TWN	Huntley J P. 1989. The plant remains. 180-2. In: O'Brien C, Bown L, Dixon S, Donel L, Gidney, L J, Huntley J P, Nicholson R and Walton P. Excavations at Newcastle Quayside: the Crown Court site. Archaeol. Aeliana 5th Ser. 17. 141-205. Walton P. Caulking, textiles and cordage. 167-76. In: O'Brien C, Bown L, Dixon S, Donel L, Gidney, L J, Huntley J P, Nicholson R and Walton P. Excavations at Newcastle Quayside: the Crown Court site. Archaeol. Aeliana 5th Ser. 17. 141-205.
*#2341	**Crown Court AML 84/88**	Newcastle	TWN	Huntley J P. 1988. Plant remains from Newcastle Crown Court, Tyne and Wear. AML Report New Series 84/88.
2343	**Crown Hotel 99 EAU 99/22**	Boroughbridge	NYR	Johnstone C, Carrott J, Hall A, Large F and Worthy D. 1999. Assessment of biological remains from The Crown Hotel, Boroughbridge, North Yorkshire (site code HARGM:9553). Reports from the EAU, York 99/22. 6pp.
*2391	**Dale Ln 96 HA**	South Elmsall, Doncaster/Barnsley	WYW	Holden T G. 1997. Environmental assessment of the samples from South Elmsall (SEL96). [Report from Headland Archaeology] 2pp.

Site no.	Site	Location	Cty	Reference
2397	**Dalton Parlours 76**	Collingham, nr Wetherby	WYL	Bastow M and Murray J. 1990. Botanical remains, the assemblage from Well 1. 259-66. In: Wrathmell S and Nicholson A. (eds.) Dalton Parlours. Iron Age settlement and Roman villa. Yorkshire Archaeology 3. West Yorkshire Archaeol. Service. Wakefield. Murray J. 1990. The carbonised remains from selected Roman deposits. 189-94. In: Wrathmell S and Nicholson A. (eds.) Dalton Parlours. Iron Age settlement and Roman villa. Yorkshire Archaeology 3. West Yorkshire Archaeol. Service. Wakefield.
2398	**Damside (Lancaster) 90 DEAR 4/92**	Lancaster	LAN	Huntley J P. 1992. Lancaster Damside - LDS90. A botanical assessment of the samples. [Durham Environmental Archaeology Report 4/92]
2405	**Dancing Ln/Main St ASUD 881**	Long Riston, Beverley/Hornsea	EYR	[Cotton J.] 2001. Dancing Lane and Main Street, Long Riston, East Yorkshire (DLR01): plant macrofossil assessment. ASUD Report 881. 6pp.
*2416	**Danefield Wood 97 HA**	Chevin, Otley	WYL	Holden T G. 1997. Danefield Wood, Chevin, Otley, West Yorkshire [assessment of plant remains]. [Report from Headland Archaeology] 2pp.
*2418	**Danes Moss NWWS 4**	nr Macclesfield	CHE	Leah M D, Wells C E, Appleby C and Huckerby E. 1997. The wetlands of Cheshire. North West Wetlands Survey 4. Lancaster Imprints 5.
2433	**Davygate (British Gas) EAU 97/51**	York	YOR	Carrott J, Hughes P, Jaques D, Kenward H, Large F and Worthy D. 1997. An evaluation of biological remains from excavations at British Gas, Davygate, York (site code: 1997.102). Reports from the EAU, York 97/51. 12 pp.
2434	**Davygate 55-8**	York	YOR	Taylor G. 1962. [Plant identifications.] 581. In: Wenham P. Excavations and discoveries within the legionary fortress in Davygate, York, 1955-8. Yorkshire Archaeol. J. 40 (for 1961). 507-87.

Site no.	Site	Location	Cty	Reference
2435	**Davygate Centre EAU 98/09**	York	YOR	Carrott J, Hall A, Hughes P, Jaques D, Kenward H and Worthy D. 1998. An assessment of biological remains from excavations at the former Davygate Centre, York (site code: 97.125). Reports from the EAU, York 98/9.
*2465	**Delhi ASUD 826**	Blagdon Hall, Morpeth/N'castle	NHU	[Cotton J.] 2001.Delhi, Blagdon Hall, Northumberland, DBH01: plant macrofossil evaluation. ASUD Report 826, 4pp.
*2506	**Digg Ln 87 EAU 89/26**	Moreton, nr Wallasey	MEW	Tomlinson, P. R. 1989. Charred plant remains from Dig[g] Lane, Mor[e]ton, 1987. [89/26]
*2507	**Digg Ln EAU 89/29**	Moreton, nr Wallasey	MEW	Tomlinson, P. R. 1989. The plant remains from excavations at Digg Lane, Moreton. Prep. for Liverpool Museum. [89/29]
*2509	**Dimlington**	Holderness	EYR	Penny L F, Coope G R and Catt J A. 1969. Age and insect fauna of the Dimlington silts. Nature 224. 65-7.
*2522	**Dod Law**	nr Wooler	NHU	van der Veen, M. 1992. Crop Husbandry Regimes. An archaeobotanical study of farming in northern England 1000 BC - AD 500. Sheffield Archaeol. Monographs 3. Sheffield.
2523	**Dod Law West**	nr Wooler	NHU	van der Veen M. 1990. Plant remains. 33-8. In: Smith C. Excavations at Dod Law West Hillfort, Northumberland. Northern Archaeol. 9 (for 1988-9). 1-55.
*#2531	**Dominican Friary (Beverley) AML 21/90**	Beverley	EYR	Allison E P, Hall A R, Kenward, H K, McKenna W J B, Nicholson C and O'Connor T P. 1990. Environmental evidence from the Dominican Friary, Beverley, Humberside. AML Report New Series 21/90.

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2534	**Dominican Priory (Beverley) 86-9**	Beverley	EYR	Allison E P, Hall A R, Kenward H K, McKenna W J B, Nicholson C M and O'Connor T P. 1996. 4.2 Environmental evidence. 195-212 and Fiche 3 passim. In: Foreman M. Further excavations at the Dominican Priory, Beverley, 1986-89. Sheffield Excavation Reports 4. Sheffield.
*2540	**Doncaster AML 1818**	Doncaster	SYD	Arthur J R B and Paradine P J . 1975. [Seed identification from Doncaster shield.] AML Report OS 1818.
2561	**Doubstead 80**	Scremerston, nr Berwick-upon-Tweed	NHU	Donaldson A M. 1982. Botanical Report. 18-9. In: Jobey G. 1982. The settlement at Doubstead and Romano-British settlement on the coastal plain between Tyne and Forth. Archaeol. Aeliana 5th Ser. 10. 1-23.
2570	**Dowbridge Close 94 EAU 95/02**	Kirkham, nr Preston	LAN	Carrott J, Hall A, Issitt M, Kenward H, Large F and McKenna B. 1995. Plant and invertebrate remains from excavations at Dowbridge Close, Kirkham, Lancashire (site code: KD94). Reports from the EAU, York 95/2. 15 pp. + 28 pp. appendix.
2581	**Dragonby (woad)**	nr Scunthorpe	NLI	van der Veen M, Hall A R and May J. 1993. Woad and the Britons painted blue. Oxford J. Archaeol. 12. 367-71.
2582	**Dragonby 64-73**	nr Scunthorpe	NLI	May J [and Simpson W G]. 1996. Wooden artifacts. Chapter 17. 387-91. In: May J. Dragonby. Report on excavations at an Iron Age and Romano-British settlement in North Lincolnshire. (2 vols.) Oxbow Monograph 61. Oxford. van der Veen M. 1996. The plant macrofossils from Dragonby. 197-211 in Chapter 9. Plant remains. 173-214. In: May J. Dragonby. Report on excavations at an Iron Age and Romano-British settlement in North Lincolnshire. (2 vols.) Oxbow Monograph 61. Oxford.

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2589	**Drigg LUAU**	nr Seascale	CUM	Town M, Howard-Davis C and Huckerby E. 2001. Drigg, Cumbria. Assessment of archaeological evaluation. Lancaster University Archaeological Unit Report.
2603	**Dubby Sike 84**	Upper Teesdale	DUR	van der Veen M. 1988. The plant remains. 10-12. In: Coggins D and Gidney L J. A late prehistoric site at Dubby Sike, Upper Teesdale, Co. Durham. Durham Archaeol. J. 4. 1-12.
*#2604	**Dubby Sike AML 4761**	Upper Teesdale (Cow Green Resr)	DUR	van der Veen M. 1986. The plant remains from Dubby Sike, Upper Teesdale (Co. Durham). AML Report OS 4761.
*2614	**Duggleby Lodge EAU 93/12**	nr Malton	NYR	Carrott J, Hall A and Kenward H. 1993. An examination of samples from excavations at Duggleby Lodge, North Yorkshire, for plant and animal remains. Unpub. report prep. for Ian Lawton. [93/12]
2628	**Dundas St EAU 90/09**	York	YOR	Hall A R, Kenward H K and O'Connor T P. 1990. Dundas Street 89.22 [Report on the borehole samples]. Unpub. report prep. for D. Brinklow, York Archaeol. Trust. [90/9]
2650	**Durham Almshouses DEAR 25/97**	Palace Green, Durham City	DUR	Huntley, J.P. 1997. The Almshouses, Palace Green, Durham: DAH97. The environmental samples. Durham Environmental Archaeology Report 25/97.
2655	**Durham Castle (Fellows Garden) (plants)**	Durham City	DUR	Huntley J P. 1993. Fellow's Garden, Durham - FG91. The plant remains. Archive report.
2662	**Durham Prison DEAR 22/97**	Durham City	DUR	Huntley, J.P.1997. Durham Prison: DPR97. The enviromental sample. Durham Environmental Archaeology Report 22/97.
2690	**Easingwold By-pass 93 EAU 93/32**	Easingwold, Crankley's Ln site	NYR	Carrott J, Dobney K, Hall A, Kenward H, Jaques D, Large F and Milles A. 1993. An assessment of environmental samples from excavations in Crankleys Lane, on the Easingwold by-pass (Y.A.T./Yorkshire Museum sitecode 1993.5000). Unpublished report prep. for YAT [93/32]

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2691	**Easingwold By-pass 93 EAU 94/36**	Easingwold, Crankley's Ln site	NYR	Carrott J, Hall A, Issitt M, Kenward H and Large F. 1994. Assessment of biological remains from further samples from excavations in Crankleys Lane, on the Easingwold by-pass (YAT/Yorkshire Museum sitecode 1993.5000). Reports from the EAU, York 94/36. 6 pp.
2704	**East Gate (Mitre Yd) 73**	Lancaster	LAN	Wilson D G. 1988. Horse dung from Roman Lancaster: a botanical report. 170-8. In: Jones G D B and Shotter D C A. Roman Lancaster. Rescue archaeology in an historic city 1970-75. Brigantia Monograph No. 1. Department of Archaeology, Univ. of Manchester.
2705	**East Gilmoor ASUD 732**	nr Kirkbymoorside	NYR	[Cotton J.] 2000. East Gilmoor, North Yorkshire, EMG00: plant macrofossil evaluation. ASUD Report 732. 6pp.
2706	**East Halton Skitter EAU 2000/32**	Immingham	NLI	Jaques D, Carrott J, Hall A, Kenward H and Rowland S. 2000. Evaluation of biological remains from excavations at East Halton Skitter, North Lincolnshire (Humber link pipeline project site S26, site code: EHS00). Reports from the EAU, York 2000/32. 14pp.
*2711	**East Knapton 93-4**	nr Malton	NYR	Huntley J P. 1997. Palaeoenvironmental samples. 35-7. In: Lee J. 1997. The Knapton generating station and gas pipeline excavations. Yorkshire Archaeol. J. 69. 21-38.
*2712	**East Knapton DEAR 21/94**	nr Malton	NYR	Huntley J P. 1994. Knapton Gas Pipeline: KP94. An assessment of the environmental samples. Durham Environmental Archaeology Report 21/94.
*2714	**East Lea ASUD 690**	Stockton/Darlington	DUR	[Cotton J.] 2000. East Lea evaluation, Little Stainton, County Durham (LSE00): plant macrofossil assessment. ASUD Report 690. 5pp.
2727	**East Rd ASUD 679**	Northallerton	NYR	[Cotton J.] 2000. East Road, Northallerton, North Yorkshire (ERN99): plant macrofossil assessment. ASUD Report 679. 5pp.

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*2728	**East Rd ASUD 788**	Northallerton	NYR	[Cotton J.] 2001. East Road, Northallerton ERN99: plant macrofossil evaluation. ASUD Report 788. 8pp.
2739	**Eastern Ln 98**	Berwick-upon-Tweed	NHU	Huntley J P. nd. Plant remains from BEL98. Unpublished report, Department of Archaeology, University of Durham.
2740	**Eastern Ln DEAR 52/97**	Berwick-upon-Tweed	NHU	Huntley, J.P. 1997. Eastern Lane, Berwick upon Tweed, Northumberland: BEL97. An assessment of the environmental samples from medieval deposits. Durham Environmental Archaeology Report 52/97.
2743	**Eastgate (Beverley) 83-6**	Beverley	EYR	McKenna W J B. 1992. The environmental evidence. 227-33. In: Evans D H and Tomlinson D G. Excavations at 33-35 Eastgate, Beverley, 1983-86. Sheffield Excavation Reports 3. Sheffield.
*#2752	**Eastgate (Beverley) 84 EAU 88/30**	Beverley	EYR	McKenna W J B. 1988. The environmental evidence from excavations at Eastgate, Beverley, North Humberside in 1984. Unpublished report prepared for the Humberside Archaeology Unit. [88/30]
2755	**Eastgate South (Driffield) EAU 2001/36**	Driffield	EYR	Hall A and Carrott J. 2001. Evaluation of biological remains from excavations at Eastgate South, Driffield, East Riding of Yorkshire (site code: DES2001). Reports from the Environmental Archaeology Unit, York 2001/36, 4 pp.
2756	**Eastgate St (3-15) (Chester) 90-1**	Chester	CHE	Harrison L. 1995. The environmental remains. Environmental remains from soil samples. 58-9. In: Matthews K J. Excavations at Chester. The evolution of the heart of the city. Investigations at 3-15 Eastgate Street 1990/1. Chester City Council Archaeological Service Excavation and Survey Reports 8.
2785	**Edderside 89-90 DEAR 3/91**	?nr Silloth	CUM	Huntley J P. 1991. Plant remains from Edderside, Cumbria 1989 and 1990: EDD90. Durham Environmental Archaeology Report 3/91.

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#2824	**Elton West Garth 91 DEAR 13/93**	nr Stockton on Tees	CVS	Huntley J P. 1994. Elton West Garth - EWG91: an assessment of the carbonised plant remains. Durham Environmental Archaeology Report 13/93.
2825	**Elton West Garth 93 DEAR 17/94**	nr Stockton on Tees	CVS	Huntley J P. 1994. Elton West Garth, Cleveland: EWG93. The environmental samples. Durham Environmental Archaeology Report 17/94.
*2846	**Escomb Church ASUD 808**	nr Bishop Auckland	DUR	[Cotton J.] 2001. Escomb Church, Bishop Auckland, Co. Durham ECD01: plant macrofossil evaluation. ASUD Report 808. 3pp.
*#2849	**Eskmeals AML 3978**	Newbiggin, nr Ravenglass	CUM	van der Veen M. 1983. Plant remains from Eskmeals. AML Report OS 3978.
2853	**Eston Nab 84-7**	Eston, Middlesbrough	CVR	van der Veen M. 1989. The plant remains. 87-8. In: Vyner B E. The hill-fort at Eston Nab, Eston, Cleveland. Archaeol. J. 145. 60-98.
2864	**Ewanrigg 83-7**	Maryport	CUM	Huntley, J P. 1992. Carbonised plant remains. 349-50. In: Bewley R H, Longworth I H, Browne S, Huntley J P and Varndell G. Excavation of a Bronze Age cemetery at Ewanrigg, Maryport, Cumbria. Proc. Prehist. Soc. 58. 325-54.
#2865	**Ewanrigg AML 85/88**	Maryport	CUM	Huntley J P. 1988. Plant remains from Ewanrigg, Cumbria. AML Report New Series 85/88.
*#2866	**Ewanrigg Cemetery AML 4400**	Maryport	CUM	van der Veen M. 1984. Plant remains from Ewanrigg Cemetery AML Report OS 4400.
*2867	**Ewanrigg Settlement 86-7**	Maryport	CUM	Huntley J P. 1992. The carbonised grain from Ewanrigg context 349. 29-30. In: Bewley R H. Excavations on two crop-mark sites in the Solway Plain, Cumbria. Ewanrigg settlement and Swarthy Hill 1986-1988. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 92. 23-47.

Site no.	Site	Location	Cty	Reference
*2897	**Far Ings PRS 2002/05**	Barton-upon-Humber	NLI	Hall A, Kenward H and Carrott J. 2002. Evaluation of biological remains from a sample recovered during a watching brief at Far Ings, Barton, North Lincolnshire (site code: FIB2001) Palaeoecology Research Services Report 2002/05.
2901	**Farm Wood Quarry 57**	Chelford, nr Alderley Edge	CHE	Simpson I A and West R G. 1958. On the stratigraphy and palaeobotany of a Late-Pleistocene organic deposit at Chelford, Cheshire. New Phytol. 57. 239-50.
*2911	**Faverdale ASUD 746**	Darlington	DUR	[Cotton J.] 2001. Faverdale, Darlington, FV00: plant macrofossil evaluation. ASUD Report 746. 7pp.
2913	**Fawdon Dene ASUD 756**	E Cheviots, Wooler/Rothbury	NHU	[Cotton J]. 2001. 4.6 Environmental samples. 27-32. In: [Waddington C. and McOmish D.] 2001. The Breamish Valley Archaeology Project. Annual Report 2000. ASUD Report 756.
2915	**Feasegate (BHS store) EAU 98/16**	York	YOR	Carrott J, Hughes P, Jaques D, Johnstone C, Kenward H and Worthy D. 1998. Assessment of biological remains from BHS store, Feasegate, York (site code YORYM1998.2) Reports from the EAU, York 98/16.
*#2921	**Fellows Garden 91 DEAR 4/91**	University College, Durham City	DUR	Huntley J P. 1991. Fellows' Garden, University College, Durham: FG91. A palaeoenvironmental assessment. [Durham Environmental Archaeology Report 4/91]
*#2922	**Fellows Garden 91 DEAR 8/91**	University College, Durham City	DUR	Huntley J P. 1991. Fellows' Garden, University College, Durham Castle: FG91. A botanical assessment. [Durham Environmental Archaeology Report 8/91]
*2939	**Fenton Cottage (inc tephra)**	Over Wyre, Fylde	LAN	Wells C, Huckerby, E, and Hall V. 1997. Mid- and late-Holocene vegetation history and tephra studies at Fenton Cottage, Lancashire, UK. Vegetation History and Archaeobotany 6. 153-66.

Site no.	Site	Location	Cty	Reference
*#2941	**Fenton Cottage 90-1**	Over Wyre, Fylde	LAN	Wells C. 1991. Macrofossil analysis. 21-3. In: Wells C and Huckerby H. 1991. Macrofossil and pollen investigations at Fenton Cottage, Out Rawcliffe, Over Wyre, Lancashire. North West Wetlands Survey Annual Report 1991. 21-5.
*2943	**Fenton Cottage NWWS 3**	Over Wyre, N Fylde	LAN	Middleton R, Wells C E and Huckerby E. 1995. The wetlands of North Lancashire. North West Wetlands Survey 3. Lancaster Imprints 4.
2945	**North Ferriby Boat No 2 78-80**	Hull	EYR	Buckland P C, Beal C J and Heal S V E. 1990. Recent work on the archaeological and palaeoenvironmental context of the Ferriby boats. 131-46. In: Ellis S and Crowther D R (eds). Humber perspectives: a region through the ages. Hull: University Press.
2946	**North Ferriby Boat No 5**	Hull	EYR	Buckland P C. 1994. Appendix. 55. In: Wright E V and Switsur V R. The Ferriby 5 boat fragment. Archaeol. J. 150 (for 1993). 46-56.
*2954	**Fetter Ln EAU 97/45**	York	YOR	Carrott J, Hughes P, Johnstone C and Large F. 1997. An evaluation of biological remains from excavations at 19 Fetter Lane, York (site code: 1997.96). Reports from the EAU, York 97/45. 8 pp.
*2955	**Fetter Ln EAU 98/37**	York	YOR	Johnstone C, Jaques D, Large F and Carrott J. 1998. Evaluation of biological remains from Fetter Lane, York (sitecode: 1998.692). Reports from the EAU, York 98/37. 8 pp.
2964	**Figham Common EAU 98/17**	Beverley	EYR	Carrott J, Hughes P, Jaques D, Johnstone C, Kenward H and Worthy D. 1998. Evaluation of biological remains from Figham Common, Beverley (site code FCB98). Reports from the EAU, York 98/17. 8 pp.
2984	**Fishergate (46-54) 85-6 (Anglian)**	York	YOR	Allison E, Hall A, Jones A, Kenward H and Robertson A. 1996. Report on plant and invertebrate remains. 85-107. In: Kemp R L. Anglian settlement at 46-54 Fishergate. The Archaeology of York 7 (1). York: Council for British Archaeology.

Site no.	Site	Location	Cty	Reference
2985	**Fishergate (46-54) 85-6 (Priory)**	York	YOR	Allison E, Hall A, Jones A, Kenward H, O'Connor T and Robertson A. 1996. Report on plant and invertebrate remains. Fiche 2:C-G. In: Kemp, R L (with Graves C P). The Church and Gilbertine Priory of St Andrew, Fishergate. The Archaeology of York 11(2). York: CBA.
*#2993	**Fishergate (46-54) EAU 89/01**	York	YOR	Allison E P, Hall A R, Jones A K G, Kenward H K and Robertson A. 1989. Report on plant and invertebrate remains from deposits associatedd with the Gilbertine Priory of St Andrew, from excavations at 46-54 Fishergate, York (site code 1985-6.9). Prep. for York Archaeol. Trust. [89/1]
*#2994	**Fishergate (46-54) EAU 89/02**	York	YOR	Allison E P, Hall A R, Jones A K G, Kenward H K and Robertson A. 1989. Report on plant and invertebrate remains from Anglian deposits from excavations at 46-54 Fishergate, York (site code 1985-6.9). Prep. for York Archaeol. Trust. [89/2]
3006	**Fishlake Village ASUD 748**	nr Thorne	SYD	[Cotton J.] 2001. Fishlake Village, South Yorkshire (FIV00): plant macrofossil assessment. ASUD Report 748. 5pp.
*#3032	**Flat Ln EAU 2000/68**	nr Barmby Moor, nr Pocklington	EYR	Jaques D, Hall A, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at Flat Lane, Barmby Moor (site code: TSEP 254). Reports from the Environmental Archaeology Unit, York 2000/68, 5 pp.
*3033	**Flat Ln EAU 2002/10**	nr Barmby Moor, nr Pocklington	EYR	Jaques D, Hall A, Rowland S and Carrott J. 2002. Technical Report: biological remains from excavations at Flat Lane, Barmby Moor (site code: TSEP 254). Reports from the Environmental Archaeology Unit, York 2002/10, 9 pp. + 9pp Appendix.
*3034	**Flaxby 94 EAU 94/35**	nr Knaresborough	NYR	Carrott J, Hall A, Issitt M, Large F and Milles A. 1994. Evaluation of biological remains from excavations at Flaxby, North Yorkshire (site code FB94). Reports from the EAU, York 94/35. 4 pp.

Site no.	Site	Location	Cty	Reference
3041	**Flemingate 95 EAU 95/48**	Beverley	EYR	Dobney K, Hall A, Jaques D, Kenward H, Large F and Shaw T. 1995. An evaluation of biological remains from excavations at Flemingate, Beverley (site code: FG95). Reports from the EAU, York 95/48. 5 pp.
3042	**Flemingate House 93 EAU 93/07**	Beverley	EYR	Carrott J, Dobney K, Hall A, Jaques D, Kenward H, Lancaster S and Milles A. 1993. Evaluation of biological remains from excavations at Flemingate House, Beverley (site code FHB93). 5 pp. Unpub. report prep. for Humberside Archaeol. Unit. [93/7]
3049	**Flixborough 89 EAU 2000/56**	nr Scunthorpe	NLI	Hall, A. 2000. Technical Report: Plant remains from excavations at Flixborough, N. Lincolnshire (site code: FLX89). Reports from the EAU, York 2000/56. 107pp.
3050	**Flixborough 89 EAU 93/21**	nr Scunthorpe	NLI	Dobney K, Hall A, Kenward H. and Milles A. 1993. Material assessment of sediment samples (GBA and BS) from Flixborough. 12 pp. plus appendix 31 pp. Unpub. report prep. for Humberside Archaeol. Unit. [93/21]
*3053	**Flixborough 89 EAU 94/09**	nr Scunthorpe	NLI	Dobney K, Hall A, Kenward H. and Milles A. 1994. Integrated assessment of biological remains from excavations at Flixborough, S. Humberside. Reports from the EAU, York 94/9. 15 pp.
*3069	**Forcegate Pasture North 72-4**	nr Middleton-in-Teesdale	DUR	Donaldson A. 1980. Appendix 1: Plant remains. 37. In: Fairless K J and Coggins D. Excavations at the early settlement site of Forcegate Pasture North 1972-4. Trans. Archit. and Archaeol. Soc. Durham and Northumberland 5. 31-8.
3078	**Foredyke EAU 98/07**	Hull	KUH	Carrott J, Hall A, Hughes P, Jaques D, Johnstone C, Kenward H and Worthy D. 1998. An assessment of biological remains from excavations at land north of the junction of Foredyke and River Hull, Kingswood, Kingston upon Hull (site code: FOR97). Reports from the Environmental Archaeology Unit, York 98/7, 23 pp.

Site no.	Site	Location	Cty	Reference
*3086	**Former Female Prison EAU 98/21**	York	YOR	Carrott J, Fryer K, Hall A, Hughes P, Jaques D, Johnstone C and Worthy D. 1998. Report on the biological remains from the Former Female Prison, York (site code 1998.32). Reports from the EAU, York 98/21. 12 pp.
*3109	**Foxtons Garage EAU 2000/30**	York	YOR	Hall A, Jaques D, Kenward H, Carrott J and Rowland S. 2000. Assessment of biological remains from excavations at Foxton's Garage, York (site code: 2000.452). Reports from the EAU, York 2000/30. 5pp.
3120	**Frenchgate 64-9**	Doncaster	SYD	Williams D. 1986. Seeds from a second century pit (Site DG, Pit 5), in Frenchgate, Doncaster. 198-9. In: Buckland P C and Magilton J R. The archaeology of Doncaster. 1. The Roman Civil settlement BAR BS 148.
3137	**Friary Fields DEAR 8/98**	Richmond	NYR	Huntley, J.P. 1998. Richmond: Friary Fields: FFR97. An assessment of the environmental samples from medieval features. Durham Environmental Archaeology Report 8/98.
3158	**Furness Abbey 88 AML 66/89**	nr Barrow-in-Furness	CUM	Huntley J P. 1989. Plant remains from Furness Abbey, Cumbria: an initial sample. AML Report New Series 66/89.
*3165	**Gadbrook Park EAU 96/45**	nr Northwich	CHE	Carrott J, Hall A and Kenward H. 1996. Evaluation of plant and invertebrate remains from two ditch fills at Gadbrook Park, near Northwich, Cheshire (site code GAD96). Reports from the EAU, York 96/45.
*#3185	**Ganstead (S of) EAU 2000/74**	Hull	EYR	Jaques D, Hall A, Rowland S, Kenward H and Carrott J. 2000. Evaluation of biological remains from excavations south of Ganstead (site code: TSEP 901). Reports from the Environmental Archaeology Unit, York 2000/74, 8 pp.

Site no.	Site	Location	Cty	Reference
3186	**Ganstead (S of) EAU 2002/09**	Hull	EYR	Jaques D, Hall A, Rowland S, Kenward H and Carrott J. 2002. Technical Report: Biological remains for a site south of Ganstead, East Riding of Yorkshire (site code: TSEP901). Reports from the Environmental Archaeology Unit, York 2002/09, 21pp. + Appendix 18pp.
3188	**Garden Pl EAU 90/08**	York	YOR	Carrott J, Hall A R, Kenward H K and O'Connor T P. 1990. Report on investigations of biological samples from boreholes and trenches at Garden Place, York (YAT/Yorkshire Museum code 1989.6). Prep. for York Archaeol. Trust. [90/8]
*3189	**Gardham ASUD 724**	Beverley/Market Weighton	EYR	[Cotton J.] 2000. Gardham, Cherry Burton, East Yorkshire, GCB00: plant macrofossil evaluation. ASUD Report 724. 5pp.
*3195	**Garrowby Wold (J&H)**	York/Driffield	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
3215	**Tanner Row (24-30) 83-4**	York (General Accident Ext)	YOR	Hall A R and Kenward H K. 1990. Environmental evidence from the Colonia: General Accident and Rougier Street. The Archaeology of York 14(6). London: CBA. 289-434 and fiche 1-9.
3242	**Gibraltar Farm EAU 97/17**	Hull	KUH	Carrott J, Hall A, Holt M, Issitt M, Jaques D, Kenward H and Large F. 1997. An evaluation of biological remains from further excavations at Kingswood, Hull (site code: KWH97). Reports from the EAU, York 97/17.
3243	**Gibraltar Farm EAU 98/06**	Hull	KUH	Carrott J, Hall A, Hughes P, Jaques D, Johnstone C, Kenward H, Large F, Usai R and Worthy D. 1998. An assessment of biological remains from excavations at land adjacent to the former Gibraltar Farm, Kingswood, Kingston upon Hull (site code: GIB97). Reports from the Environmental Archaeology Unit, York 98/6, 13 pp.

Site no.	Site	Location	Cty	Reference
*3247	**Gilling (J&H)**	Gilling E, nr Helmsley	NYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
3248	**Gillygate (45-57) 92 EAU 92/22**	York	YOR	Dobney K, Hall A R and Kenward H K. 1992. An evaluation of biological remains from excavations at Ankers Garage, 45-57 Gillygate, York (YAT/Yorkshire Museum site code 1992.8). Unpub. report prep. for York Archaeol. Trust. [92/22]
*3256	**Glasson Moss 96-7**	Solway	CUM	Cox M, Chandler J, Cox C, Jones J and Tinsley H. 2001. The archaeological significance of patterns of anomalous vegetation on a raised mire in the Solway Estuary and the processes involved in their formation. J. Archaeol. Sci. 28. 1-18.
*3266	**Glebe Farm 92 EAU 92/15**	Barton-upon-Humber	NLI	Dainton M, Dobney K, Hall A, Kenward H and Milles A. 1992. An evaluation of the bioarchaeological value of deposits from excavations at Glebe Farm, Barton-upon-Humber, S. Humberside, 1992. Unpub. report prep. for Humberside Archaeol. Unit. [92/15]
3267	**Glebe Farm 92 EAU 93/13**	Barton-upon-Humber	NLI	Carrott J, Hall A, Kenward H, Large F and Milles A 1993. Plant and invertebrate remains from two fill contexts from a Romano-British pit at Glebe Farm, Barton-upon-Humber, S. Humberside (site code GFA92). Unpub. report prep. for Humberside Archaeol. Unit. [93/13]
*3271	**Glen Garth ASUD 883**	Hayton	EYR	[Cotton J.] 2002. Glen Garth, Town Street, Hayton, East Riding of Yorkshire (HAY01): plant macrofossil assessment. ASUD Report 883.
*3313	**Goodmanham (J&H)**	nr Market Weighton	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.

Site no.	Site	Location	Cty	Reference
#3314	**Goodmanham (NE of) EAU 2000/73**	nr Market Weighton	EYR	Hall A, Rowland S, Jaques D and Carrott J. 2000. Evaluation of biological remains from excavations north-east of Goodmanham (site code: TSEP 907). Reports from the Environmental Archaeology Unit, York 2000/73, 13 pp.
*3315	**Goodmanham Wold EAU 2000/69**	nr Market Weighton	EYR	Jaques D, Hall A, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at Goodmanham Wold (site code: TSEP 904). Reports from the Environmental Archaeology Unit, York 2000/69, 3 pp.
3333	**Goss St 72**	Chester, Goldsmiths House	CHE	Wilson D G. 1975. Plant foods and poisons from medieval Chester. 55-67. In: Ward T and Wilson D G. Goldsmith House site, Goss Street, Chester, 1972. J. Chester Archaeol. Soc. 58 (for 1972-3). 53-67.
3338	**Gowthorpe (16)**	Selby	NYR	Daniell J R G and Huntley J P. 1999. Selby, 16 Gowthorpe St (16GOW) and Abbey Walk. Unpublished report, Department of Archaeology, University of Durham.
3352	**Grange Farm (Norton) 93 DEAR 24/94**	Norton, Teesside	CVS	Huntley J P and Stokes P R G. 1994. Environmental material from Grange Farm Norton, Teesside: GFN93. Durham Environmental Archaeology Report 24/94.
3359	**Grape Ln (8) (York) EAU 94/13**	York	YOR	Carrott J, Dobney K, Hall A, Jaques D, Kenward H, Lancaster S & Milles A. 1994. Assment of biol. remains from excns at 12-18 Swinegate, 8 Grape Lane, and 14, 18, 20 and 22 Back Swinegate/Little Stonegate, York (YAT/Yorks Mus codes 89-90.28 & 90.1). Reports from the EAU, York 94/13. 16 pp. + 53 pp. appendix.
3422	**Greta Bridge DEAR 34/96**	nr Barnard Castle	DUR	Huntley J P. 1996. Greta Bridge, Co. Durham: GRB96. The charred plant remains from context 304. Durham Environmental Archaeology Report 34/96.

Site no.	Site	Location	Cty	Reference
3451	**Grims Ditch South (A1-M1) 92-8**	nr Swillington, nr Leeds	WYL	Holden T. 2001. The waterlogged plant remains. 226 and 229. In: Roberts I, Burgess A and Berg D. (eds). 2001. A new link to the past: the archaeological landscape of the M1-A1 link road. Yorkshire Archaeology 7. Leeds: West Yorkshire Archaeology Service on behalf of West Yorkshire Joint Services.
3470	**Highcliff Nab DEAR 39/97**	Guisborough	CVR	Huntley, J.P. 1997. Guisborough High Nab: GHN96. Charcoal from context 04. Durham Environmental Archaeology Report 39/97.
3471	**Highcliff Nab DEAR 9/96**	Guisborough	CVR	Huntley J P. 1996. Guisborough High Nab: GHN96. An assessment of the environmental samples Durham Environmental Archaeology Report 9/96.
*#3516	**Hall Garth 80 EAU 94/18**	Beverley	EYR	Dobney K, Hall A, Jaques D and Milles A. 1994. Assessment of biological remains from the medieval moat at Hall Garth, Beverley (site code BHG80). Reports from the EAU, York 94/18. 7 pp.
3517	**Hall Garth 80 EAU 94/60**	Beverley	EYR	Dobney K, Fitter R, Hall A, Irving B, Jaques D, Johnstone C, Kenward H, Milles A and Shaw T. 1994. Technical report: Biological remains from the medieval moat at Hall Garth, Beverley, North Humberside. Reports from the EAU, York 94/60. 46 pp. + 11 pp. appendices.
*3519	**Hallgarth Hall DEAR 15/98**	Pittington, nr Durham City	DUR	Huntley, J.P. 1998. Hallgarth, Pittington: HG97. An assessment of environmental samples from medieval and post-medieval deposits. Durham Environmental Archaeology Report 15/98.
3520	**Hallgarth Hall DEAR 45/97**	Pittington, nr Durham City	DUR	Huntley, J.P. 1997. Hallgarth Hall, Pittington, County Durham: HHP97. Assessment of the environmental samples. Durham Environmental Archaeology Report 45/97.
3524	**Hallshill 81-6**	nr East Woodburn	NHU	van der Veen, M. 1992. Crop Husbandry Regimes. An archaeobotanical study of farming in northern England 1000 BC - AD 500. Sheffield Archaeol. Monographs 3. Sheffield.

Site no.	Site	Location	Cty	Reference
*#3525	**Hallshill AML 48/87**	nr East Woodburn	NHU	van der Veen M. 1987. The carbonised plant remains from Hallshill, Northumberland (grid ref. NY 906 886). AML Report New Series 48/87.
*#3526	**Hallshill Farm 81**	nr East Woodburn	NHU	van der Veen M. 1985. Evidence for crop plants from north-east England. 197-219. In: In: Fieller N R J, Gilbertson D D and Ralph N G A. Palaeobiological Investigations: Research design, methods and data analysis. BAR IS 266. Symposai of the AEA *. Oxford.
*#3527	**Hallshill Farm AML 3745**	nr East Woodburn	NHU	van der Veen M. 1982. Botanical remains from Hallshill. AML Report OS 3745.
*3531	**Haltwhistle by-pass DEAR 31/96**	Haltwhistle	NHU	Huntley J P. 1996. A69 Haltwhistle bypass: HALT96. An assessment of the environmental material. Durham Environmental Archaeology Report 31/96.
*3572	**Hardendale Nab AML 61/88**	Shap	CUM	Huntley J P. 1988. Carbonised plant remains from Hardendale Nab, Cumbria. AML Report New Series 61/88.
*3579	**Hare and Hounds EAU 99/48**	Staxton	NYR	Carrott J. 1999. Hare and Hounds, Staxton - environmental sample. Reports from the Environmental Archaeology Unit, York 99/48, 1 p.
*3594	**Hart 96 DEAR 6/96**	nr Hartlepool	CVH	Huntley J P and Gidney L J. 1996. Hart, Cleveland: HNA96. An assessment of the environmental sample and animal bone from context 47. Durham Environmental Archaeology Report 6/96.
3601	**Hartlepool Headland sites ASUD 644**	Hartlepool	CVH	[Cotton J.] 2000. Hartlepool - HJG99 and HDC99: plant macrofossil assessment. ASUD Report 644. 7pp.
*3625	**Haugh Hill ASUD 651**	Wolviston, nr Billingham	CVS	[Cotton J.] 2000. Plant macrofossil evaluations for Wolviston, Haugh Hill: WHH99 and Elton, Sandy Lees Farm: ESL99. ASUD Report 651. 8pp.

Site no.	Site	Location	Cty	Reference
*3638	**Hawling Rd 89**	nr Market Weighton	EYR	Huntley, J. 1999. Carbonized seeds. 188. In: Halkon, P. and Millett, M. (eds.) Rural settlement and industry: studies in the Iron Age and Roman archaeology of lowland East Yorkshire. Yorkshire Archaeol Rep. 4.
3643	**Hayton 95 DEAR 17/96**	Pocklington	EYR	Huntley J P. 1996. Hayton, Humberside - 1995. An assessment of the palaeoenvironmental samples. Durham Environmental Archaeology Report 17/96.
*3662	**Healam Bridge BUFAU 306**	Bedale/Thirsk	NYR	Moffett L. 1994. The charred plant remains. 19-20. In: Jones A. 1994. Healam Bridge, North Yorkshire. An archaeological evaluation 1994. BUFAU Report 306.
3663	**Healing 95 EAU 95/45**	nr Grimsby	NEL	Carrott J, Hall A, Jaques D and Large F. 1995. An evaluation of biological remains from excavations at Healing, S. Humberside (site code: HEA95). Reports from the EAU, York 95/45. 5 pp.
3664	**Healing 98 EAU 98/18**	nr Grimsby	NEL	Carrott J, Hughes P, Jaques D, Johnstone C and Worthy D. 1998. Evaluation of biological remains from Healing, nr. Grimsby (site code HEA98). Reports from the EAU, York 98/18. 6 pp.
3672	**Hellaby Hall 96 HA**	Maltby	SYR	Holden T G. 1996. Evaluation of environmental samples from Hellaby Hall, Maltby (HEL96). [Report from Headland Archaeology] 3pp.
*3676	**Garton Slack (J&H)**	nr Driffield, Yorkshire Wolds	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*3681	**Hemlington Larchfield AML 4371**	nr Middlesbrough	CVM	van der Veen M. 1984. The plant remains from Hemlington Larchfield, Cleveland (first interim report). AML Report OS 4371.
3693	**Hengate EAU 96/57**	Beverley	EYR	Carrott J, Hall A, Issitt M, Jaques D and Large F. 1996. Evaluation of biological remains from excavations in Hengate, Beverley, East Riding of Yorkshire (site code HGB96). Reports from the EAU, York 96/57.

Site no.	Site	Location	Cty	Reference
*#3738	**High Catton (E of) EAU 2000/71**	nr Stamford Bridge	EYR	Jaques D, Hall A, Kenward H, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations east of High Catton, East Riding of Yorkshire (site code: TSEP 222). Reports from the Environmental Archaeology Unit, York 2000/71. 7pp.
3739	**High Catton (E of) EAU 2002/12**	nr Stamford Bridge	EYR	Kenward H, Hall A, Jaques D, Rowland S and Carrott J. 2002. Technical report: biological remains from a site east of High Catton, East Riding of Yorkshire (site code: TSEP 222). Reports from the Environmental Archaeology Unit, York 2002/12. 33pp. + Appendix 19pp.
*#3740	**High Catton (NE of) EAU 2000/70**	nr Stamford Bridge	EYR	Jaques D, Hall A, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations north-east of High Catton, East Riding of Yorkshire (site code: TSEP 218). Reports from the Environmental Archaeology Unit, York 2000/70, 6 pp.
3766	**High St (36A-40) (Hull) EAU 94/01**	Hull	KUH	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H, Large F and Milles A. 1994. An evaluation of biological remains from excavations at 34A-40 High Street, Hull (site code HHS93). Reports from the EAU, York 94/1. 6 pp.
3767	**High St (37) (Hull) EAU 94/49**	Hull	KUH	Carrott J, Hall A, Irving B, Issitt M, Jaques D, Kenward H, Large F and Milles A. 1994. Assessment of biological remains from excavations at 37 High Street, Hull (sitecode: HHS94). Reports from the EAU, York 94/49. 7 pp.
*#3779	**High St (Hull) EAU 84/19**	Hull	KUH	McKenna, W. J. B. 1984. Excavations in High Street and Blackfriargate, Hull. The environmental evidence. Unpub. report [84/19]
3785	**High St (Shafton) WYAS 860**	Shafton, nr Barnsley	SYB	Young R. 2001. The botanical remains. In: Burgess A. 2001. High Street, Shafton, South Yorkshire. Archaeological Excavation. West Yorkshire Archaeological Service Report 860.

Site no.	Site	Location	Cty	Reference
3789	**High St/Blackfriargate (Hull) 73-6**	Hull	KUH	McKenna W J B. 1987. The environmental evidence. 255-61 and 298. In: Armstrong P and Ayers B. 1987. Excavations in High Street and Blackfriargate. East Riding Archaeol. 8. Hull Old Town Rep. Ser. 5.
*3790	**High St/Long St (Rudston) PRS 2002/24**	Bridlington/Driffield	EYR	Carrott J, Jaques D and Hall A. 2002. Assessment of biological remains from a watching brief at land at the junction of High Street and Long Street, Rudston, East Riding of Yorkshire (site code: RU02). Palaeoecology Research Services Report 2002/24.
3799	**Highcliff Nab 95**	Guisborough	CVR	Huntley J P. 1996. Environmental evidence. 11-12. In: Waughman M. Excavation of a mesolithic site at Highcliff Nab, Guisborough. Durham Archaeol. J. 12. 1-15.
3801	**Higher Land 77-81**	Gargrave, nr Skipton	NYR	Hall A R. 1983. Soil samples and charcoal. 49. In: Williams D. Excavations at Gargrave (1977-1981). Craven District Council.
*#3802	**Higher Ln (Fazakerley) 94 EAU 95/22**	Fazakerley, nr Liverpool	MEL	Dobney K, Hall A, Issitt M, Jaques D, Kenward H and Shaw T. 1995. Assessment of plant and animal remains from deposits at Higher Lane, Fazakerley, Merseyside (site code FAZ94). Reports from the EAU, York 95/22. 10 pp.
3803	**Higher Ln (Fazakerley) 94 EAU 96/05**	Fazakerley, nr Liverpool	MEL	Hall A, Kenward H and Large F. 1996. Biological remains from a medieval 'pond' at Higher Lane, Fazakerley, Merseyside (site code FAZ94). Reports from the EAU, York 96/5. 30 pp.
3806	**Highgate 77**	Beverley	EYR	Hall A R and Kenward H K. 1980. An interpretation of biological remains from Highgate, Beverley. J. Archaeol. Sci. 7. 33-51.
*3819	**Hindon Edge DEAR 9/98**	Arngill, nr Barnard Castle	DUR	Huntley, J.P. 1998. Arngill (Hindon Edge), Co. Durham: ARN97. Evaluation of environmental samples from a Bronze Age beaker burial cist. Durham Environmental Archaeology Report 9/98.
3842	**Holbeck Park Ave OAN**	Barrow-in-Furness	CUM	[Huckerby E.] 2002. Macrobotanical samples. 28-9. In: Heawood R. 2002. Holbeck Park Avenue, Barrow-in-Furness, Cumbria. Evaluation report. Oxford Archaeology (North) Report.

Site no.	Site	Location	Cty	Reference
*3848	**Holgate Cattle Dock EAU 92/41**	York	YOR	Milles A, Hill M and Hall A. 1992. An examination of deposits from excavations at Holgate Cattle Dock, York (YAT/Yorkshire Museum site code 1992.16). Unpub. report prep. for York Archaeol. Trust. [92/41]
*3849	**Holgate Rd (39) EAU 98/33**	York	YOR	Carrott J, Hall A, Jaques D and Worthy D. 1998. Evaluation of biological remains from 39 Holgate Road, York (site code: 1998.332). Reports from the EAU, York 98/33. 5pp + 2 pp appendix.
*3852	**Holliday Moss**	Rainford, nr St Helens	MEH	Innes J B, Tooley M J and Tomlinson P R. 1989. A comparison of the age and palaeoecology of some sub-Shirdley Hill Sand peat deposits from Merseyside and South-West Lancashire. Naturalist 114. 65-9.
*3854	**Hollow Banks ASUD 717**	Scorton, nr Catterick	NYR	[Cotton J.] 2000. Hollow Banks, Scorton, HBS98, HBS99 and HBS00: plant macrofossil evaluation. ASUD Report 717. 7pp.
3856	**Holme Church Ln EAU 96/43**	Beverley	EYR	Carrott J, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. Assessment of biological remains from excavations at Holmechurch Lane, Beverley (site code: HLB96). Reports from the EAU, York 96/43.
3865	**Holy Island Village 77**	Lindisfarne	NHU	Donaldson A M and Rackham D J. 1985. Biological evidence - analysis of soil samples. 80-3. In: O'Sullivan D M. The excavation in Holy Island Village 1977. Archaeol. Aeliana 5th Ser. 13. 27-116.
3904	**Housesteads 84**	Birkshaw (Hadrians Wall)	NHU	Whittaker K M. 1988. The identification of waterlogged wood. 110-2. In: Crow J G. An excavation of the north curtain wall at Housesteads 1984. Archaeol. Aeliana 5th Ser. 16. **
3906	**Housesteads AML 3746**	Birkshaw (Hadrians Wall)	NHU	van der Veen M. 1982. Housesteads - botanical remains. AML Report OS 3746.

Site no.	Site	Location	Cty	Reference
3907	**Housesteads AML 4546**	Birkshaw (Hadrians Wall)	NHU	Watson J. 1985. Identification of mineral preserved wood associated with iron objects from Housesteads, Hadrian's Wall. AML Report OS 4546.
*3909	**Housesteads Farm 87 AML 189/88**	Birkshaw (Hadrians Wall)	NHU	Clapham A. 1988. Housesteads Farm, Hadrian's Wall, Northumberland, 1987, Trenches C, D & E. AML Report New Series 189/88.
3910	**Housesteads Fort 84 AML 188/88**	Birkshaw (Hadrians Wall)	NHU	Clapham A. 1988. Housesteads Fort 1984 - the wooden artifacts from Contexts H20/10/42 and H20/10/48. AML Report New Series 188/88.
3911	**Housesteads Fort AML 186/88**	Birkshaw (Hadrians Wall)	NHU	Clapham A. 1988. Housesteads Fort, Hadrians Wall, Northumberland: Interim Report. AML Report New Series 186/88.
3918	**Howden ASUD 839**	Howden	EYR	[Cotton J.] 2001. Howden, HBL01: plant macrofossil evaluation. ASUD Report 839. 5pp.
3930	**Citadel Moat (South Barracks) EAU 97/22**	Hull	KUH	Carrott J, Hall A, Issitt M, Johnstone C, Kenward H and Large F. 1997. An evaluation of biological remains from excavations at Hull Citadel Moat (Shafts 10 and 11), Hull (site code: SBH97). Reports from the EAU, York 97/22. 6 pp.
*3947	**Hatfield Moors (site 1)**	nr centre of Hatfield Moors	SYD	Smith B M. 2002. A palaeoecological study of raised mires in the Humberhead Levels. British Archaeological Reports Brit. Ser. 336. Oxford.
3949	**Hungate 50-1**	York	YOR	Godwin H and Bachem K. 1961. Appendix III. Plant materials. 109-13. In: Richardson K M. Excavations in Hungate, York. Archaeol. J. 116 (for 1959). 51-114.
3950	**Hungate area EAU 2000/29**	York	YOR	Jaques D, Carrott J, Hall A, Kenward H and Rowland S. 2000. Evaluation of biological remains from excavations in the Hungate area, York (site codes YORYM2000.1-14). Reports from the EAU, York 2000/29.22pp.

Site no.	Site	Location	Cty	Reference
3955	**Hunter St School 79-81**	Chester	CHE	Macphail R I and Macphail G. 1994. Plant remains. 68. In: Ward S. Excavations at Chester. Saxon occupation within the Roman fortress: sites excavated 1971-1981. Chester City Council Archaeological Service Excavation and Survey Reports 7.
3961	**Huntington South Moor EAU 2000/48**	nr York	YOR	Hall A, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at Huntington South Moor, York (site code: YORYM 2000.574). Reports from the Environmental Archaeology Unit, York 2000/48, 3 pp.
3968	**Hutton Common 68-71**	Hutton-le-Hole, nr Pickering	NYR	Merton L F H. 1972. Appendix 1. Samples of wood and charcoal. 158. In: Crossley D W and Aberg F A. Sixteenth-century glass-making in Yorkshire: excavations at furnaces at Hutton and Rosedale, North Riding, 1968-1971. Post-Medieval Archaeol. 6. 107-59.
3983	**Ideal Laundry EAU 91/03**	Trinity Ln, York	YOR	Alldritt D M, Carrott J B, Hall A R, Kenward H K and Nicholson R A. 1991. Environmental evidence from excavations at the Ideal Laundry site, Trinity Lane, York (YAT/Yorkshire Museum sitecode 1991.5). Unpub. report prep. for York Archaeol. Trust. [91/3]
4002	**Ingleby Barwick**	Egglescliffe, nr Stockton on Tees	CVS	Huntley J P and Gidney L J. 1995. An assessment of the palaeoenvironmental samples and animal bones. 31-2. In: Adams M and Carne P. Excavations at site P, village 3, Ingleby Barwick, Cleveland. Durham Archaeol. J. 11. 19-33.
*#4003	**Ingleby Barwick 94 DEAR 36/94**	Egglescliffe, nr Stockton on Tees	CVS	Huntley J P and Gidney L J. 1994. Ingleby Barwick, Cleveland: IBP94. An assessment of the palaeoenvironmental samples and animal bones. Durham Environmental Archaeology Report 36/94.
*4004	**Ingleby Barwick DEAR 15/97**	Egglescliffe, nr Stockton on Tees	CVS	Huntley J P. 1997. Ingleby Barwick, Durham: IWF96. Assessment of the environmental samples. Durham Environmental Archaeology Report 15/97.

Site no.	Site	Location	Cty	Reference
4007	**Ingram DEAR 22/96**	Wooler/Alnwick	NHU	Huntley J P. 1996. Ingram: BIF96-1. The charred plant remains from selected contexts. Durham Environmental Archaeology Report 22/96.
4043	**Irby CfA 31/2002**	nr Heswall, Wirral	MEW	Huntley J P. 2002. Irby, The Wirral (Site 30): the charred plant remains from prehistoric to 4th century AD samples. Centre for Archaeology Report 31/2002. 27pp plus Appendix 20 pp.
#4044	**Irby DEAR 27/96**	nr Birkenhead, Wirral	MEW	Huntley J P. 1996. Irby, The Wirral. An assessment of the environmental samples. Durham Environmental Archaeology Report 27/96.
4082	**Jack Taylor Ln EAU 98/10**	Beverley	EYR	Carrott J, Hall A, Hughes P, Jaques D, Johnstone C, Kenward H and Worthy D. 1998. Evaluation of biological remains from excavations at Jack Taylor Lane, Beverley, East Yorkshire (site code BJT98). Reports from the EAU, York. 98/10.
*4092	**Jarrow 65-76 AML 2156**	Jarrow	TWS	Donaldson A. 1976. [Charcoal and seed identifications from Jarrow 1965-76.] AML Report OS 2156.
4102	**Jewbury 82-3**	York	YOR	Hall A R, Carrott J B, Kenward H K, and Richardson J E. 1994. Biological analyses of deposits. 562-4. In: Lilley J M, Stroud G, Brothwell D R and Williamson M H. The Jewish burial ground at Jewbury. The Archaeology of York 12(3). York: CBA.
*#4104	**Jewbury 82-3 EAU 91/24**	York	YOR	Hall A R, Carrott J, Kenward H K and Richardson J. 1991. Report on biological analyses of deposits from excavations in Jewbury, York (YAT/Yorkshire Museum sitecode 1982-3.5). Unpub. report prep. for J. Lilley, York Archaeol. Trust. [91/24]
4127	**Keldgate (by 52) EAU 2001/35**	Beverley	EYR	Jaques D, Hall A, Kenward H and Carrott J. 2001. Evaluation of biological remains from excavations on land behind and adjacent to 52 Keldgate, Beverley, East Riding of Yorkshire (site code: KGB2001). Reports from the Environmental Archaeology Unit, York 2001/35, 11 pp.

Site no.	Site	Location	Cty	Reference
4128	**Keldgate 94 EAU 95/03**	Beverley	EYR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Johnstone C, Kenward H and Large F. 1995. An evaluation of biological remains from excavations at Keldgate, Beverley (site code: KEL94). Reports from the EAU, York 95/3. 11 pp. + 1 p. appendix.
*4129	**Kellah Burn ASUD 743**	nr Lambley, River S. Tyne valley	NHU	[Cotton J.] 2001. Kellah Burn, Northumberland, KB96, KB97 and KB98: plant macrofossil evaluation. ASUD Report 743. 9pp.
*4154	**Kildale Hall 2**	Leven Valley, N York Moors	NYR	Keen D H, Jones R L, and Robinson E. 1984. A Late Devensian and Early Flandrian fauna and flora from Kildale, North-East Yorkshire. Proc. Yorkshire Geol. Soc. 44. 385-97.
4171	**Kilnsea Boat 96**	Spurn, nr Easington	EYR	Van de Noort R, Middleton R, Foxon A and Bayliss A. 1999. The 'Kilnsea-boat', and some implications from the discovery of England's oldest plank boat remains. Antiquity 73, 131-5.
*4174	**Kilton Thorpe Ln 2000 ASUD 726**	Loftus	CVR	[Cotton J.] 2000. Kilton Thorpe Lane, near Loftus, KTL00: plant macrofossil evaluation. ASUD Report 726. 7pp.
*#4175	**Kilton Thorpe Ln 2001 ASUD 841**	Loftus	CVR	[Cotton J]. 2001. Kilton Thorpe Lane, Loftus, Boulby potash pipeline, East Cleveland KTL00. Plant macrofossil assessment. ASUD Report 841.
4176	**Kilton Thorpe Ln 2001 ASUD 846**	Loftus	CVR	[Cotton J]. 2001. Kilton Thorpe Lane, near Loftus, KTL00: plant macrofossil analysis. ASUD Report 846.
4177	**Kilton Thorpe Ln 2001 ASUD 847**	Loftus	CVR	[Cotton J]. 2001. Kilton Thorpe Lane (KTL01), Loftus, Boulby potash pipeline, East Cleveland. Plant macrofossil analysis, September 2001. ASUD Report 847.
4232	**Kingswood EAU 96/55**	Hull	KUH	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. An evaluation of biological remains from excavations at Kingswood, Hull (site code: KWH96). Reports from the EAU, York 96/55.

Site no.	Site	Location	Cty	Reference
4246	**Kirkby Thore 83**	Penrith/Appleby	CUM	van der Veen M. 1989. The plant remains. Fiche 11-18. In: Gibbons P. Excavations and observations at Kirkby Thore, Cumbria. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 89. 93-130.
*#4248	**Kirkby Thore AML 4470**	Penrith/Appleby	CUM	van der Veen M. 1985. The plant remains from Kirkby Thore. AML Report OS 4470.
4249	**Kirkby Thore LUAU**	Penrith/Appleby	CUM	Huckerby E.] 2001. Macrofossils. 36. [and passim: Statement of Potential] In: Anon. 2001. Land as OS 8866, Kirkby Thore, Cumbria. Archaeological excavation report. Lancaster University Archaeological Unit Report.
4257	**Kirklington DEAR 13/92**	Masham/Thirsk	NYR	Huntley J P. 1992. An assessment of the plant remains from excavation at Kirklington, North Yorkshire. Durham Environmental Archaeology Report 13/92.
*4267	**Kirmington 1**	Kirmington, Grimsby/Scunthorpe	NLI	Reid C. 1905. []. In: Stather J W. 1905. Committee for investigation of fossiliferous deposits at Kirmington, Lincs., and at various localities in the East Riding of Yorkshire. Rep British Assoc. 272-4.
*4269	**Kirmington 3**	Kirmington, Grimsby/Scunthorpe	NLI	Reid C. 1885. The geology of Holderness, and adjoining parts of Yorkshire and Lincolnshire. Memoir of the British Geological Survey.
*4273	**Kirmington Runway 91 EAU 91/27**	Brigg/Immingham	NLI	Hall, A. R. and Nicholson, R. A. 1991. Report on soil samples and bones from excavations at Kirmington Runway, 1991 (site code KRU 91). Unpub. report prep. for Humberside Archaeol. Unit. [91/27]
4277	**Knaresborough Bus Station WYAS 892**	off High Street, Knaresborough	NYR	Richardson J. 2001. 6.4 Botanical assessment. In: O'Neill R. 2001. Knaresborough Bus Station, Knaresborough, North Yorkshire. West Yorkshire Archaeological Service Report 892.

Site no.	Site	Location	Cty	Reference
*4287	**Knights Hospitallers EAU 92/21**	Beverley	EYR	Dobney K, Hall A R and Kent P. 1992. Biological remains from excavations on the site of the Preceptory of the Knights Hospitallers, Beverley, N. Humberside (site code BKH91-2). Unpub. report prep. for Humberside Archaeol. Unit. [92/21]
4309	**Lakeland Crescent DEAR 12/94**	Alwoodley, Leeds	WYL	Huntley J P. 1994. Lakeland Crescent, Alwoodley, nr Leeds: LC93. The carbonised plant remains. Durham Environmental Archaeology Report 12/94.
4326	**Landress Ln EAU 96/25**	Beverley	EYR	Carrott J, Hall A, Issitt M, Jaques D, Kenward H, Large F and Usai R. 1996. Evaluation of biological remains from Landress Lane, Beverley (site code: LAB96). Reports from the EAU, York 96/25. 7 pp.
4338	**Langton Villa**	nr Malton	NYR	Blackburn K B. 1932. The well. Report on vegetable remains from well. 55. In: Corder P and Kirk J L. A Roman villa at Langton, near Malton E. Yorkshire. Roman Malton and District Rep. 4. Leeds: Yorkshire Archaeol. Soc. [ ] [wheat grains]. Passim. In Corder P and Kirk J L. A Roman villa at Langton, near Malton E. Yorkshire. Roman Malton and District Rep. 4. Leeds: Yorkshire Archaeol. Soc.
*4343	**Larpool Hall ASUD 676**	Whitby	NYR	[Cotton J.] 2000. Larpool Hall, Whitby, North Yorkshire (LPW99): plant macrofossil and charcoal assessment. ASUD Report 676. 9pp.
*#4367	**Lawns Farm EAU 2000/62**	Cottingham/Beverley	EYR	Jaques D, Hall A, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at Lawns Farm, Dunswell (site code: TSEP420). Reports from the Environmental Archaeology Unit, York 2000/62, 5 pp.

Site no.	Site	Location	Cty	Reference
4368	**Lawns Farm EAU 2002/06**	Cottingham/Beverley	EYR	Jaques D, Hall A, Rowland S and Carrott J. 2002. Technical Report: Biological remains from a site at Lawns Farm, Dunswell East Riding of Yorkshire (site code: TSEP 420). Reports from the Environmental Archaeology Unit, York 2002/06. 5 pp.
4370	**Lawrence St (148) 93 EAU 94/25**	York	YOR	Carrott J, Dobney K, Hall A, Irving B, Issitt M, Jaques D, Kenward H, Large F and Milles A. 1994. Assessment of biological remains from excavations at 148 Lawrence Street, York (site code 1993.11). Reports from the EAU, York 94/25. 13 pp.
4372	**Lawrence St (D C Cook) EAU 2001/40**	York	YOR	Hall A, Jaques D and Carrott J. 2001. Evaluation of biological remains from excavations at the former D. C. Cook site, Lawrence Street, York (site code: YORYM 2001.9444). Reports from the Environmental Archaeology Unit, York 2001/40, 5 pp.
4378	**Layerthorpe Bridge EAU 2000/64**	York	YOR	Hall A, Kenward H, Jaques D and Carrott J. 2000. Technical Report: Environment and industry at Layerthorpe Bridge, York (site code YORYM 1996.345). Reports from the EAU, York 2000/64. 117pp.
*#4379	**Layerthorpe Bridge EAU 97/25**	York	YOR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H, Large F and McKenna B. 1997. Archaeological excavations at Layerthorpe Bridge and in Peasholme Green, York (96-7.345): assessment of the interpretative potential of biological remains. Reports from the EAU, York 97/25. 66 pp.
4384	**Leazes Bowl 96**	Market Place, Durham City	DUR	Huntley J P and Daniell J R G. 2001. The charred and waterlogged plant remains. 75-80 and Appendix 5. The environmental data 105-7. In: Carne P. 2001. Durham City Leazes Bowl: archaeological excavations 1996. Durham Archaeol J. 16. 35-118.
#4385	**Leazes Bowl DEAR 11/95**	Market Pl, Durham City	DUR	Huntley J P and Gidney L J. 1995. Durham, Leazes Bowl: DLB95. An assessment of the environmental samples. Durham Environmental Archaeology Report 11/95.

Site no.	Site	Location	Cty	Reference
*#4388	**Leazes Bowl DEAR 30/98**	Market Pl, Durham City	DUR	Huntley, J.P. and Daniell, J.R.G. 1998. Durham Leazes Bowl: DLB96. The charred and waterlogged plant remains from medieval deposits. Durham Environmental Archaeology Report 30/98.
*#4411	**Leven-Brandesburton EAU 93/20**	Leven/Brandesburton	EYR	Dobney K, Hall A, Kenward H and Milles A. 1993. An assessment of `environmental' samples and bone from excavations on the route of the Leven-Brandesburton by-pass (site code LEV92). Unpub. report prep. for Humberside Archaeol. Unit. [93/20]
4412	**Leven-Brandesburton EAU 94/15**	Leven/Brandesburton	EYR	Hall A, Kenward H, Hill M, Large F, Jaques D, Dobney K, Issitt M and Lancaster S. 1994. Technical report: Biological remains from excavations on the Leven-Brandesburton by-pass, N. Humberside. Reports from the EAU, York 94/15. 34 pp. + 24 pp. appendix.
*4413	**Leven-Brandesburton garage EAU 95/06**	Leven/Brandesburton	EYR	Carrott J, Hall A, Issitt M, Large F and McKenna B. 1995. An evaluation of biological remains from excavations at a proposed site for a garage on the Leven-Brandesburton by-pass, North Humberside (site code: LV94). Reports from the EAU, York 95/6. 3 pp.
4427	**Liberty Ln 99 EAU 99/57**	Hull	KUH	Large F, Hall A, Johnstone C, Carrott J and Kenward H. 1999. Assessment of biological remains from Liberty Lane, Hull, East Yorkshire (Site code: LLH99). Reports from the Environmental Archaeology Unit, York 99/57, 11 pp.
4435	**Lime Tree Ln 93 EAU 96/29**	Bilton, nr Hull	EYR	Hall A, Jaques D, Kenward H and Large F. 1996. Assessment of biological remains from Lime Tree Lane, Bilton, Hull (sitecode BIL93). Reports from the EAU, York 96/29.
*#4469	**Lindisfarne AML 4370**	Lindisfarne, Holy Island	NHU	van der Veen M. 1984. The plant remains from Lindesfarne [sic] midden 1984. AML Report OS 4370.

Site no.	Site	Location	Cty	Reference
4472	**Lindisfarne Midden 84**	Lindisfarne, Holy Island	NHU	van der Veen M. 1985. The plant remains from Lindisfarne midden 1984. 26-9. In: Beavitt P, O'Sullivan D and Young R (eds). Recent fieldwork on Lindisfarne. University of Leicester Dept. of Archaeol. Occasional Paper 1.
*4473	**Lindley Moor ASUD 671**	nr Huddersfield	WYK	[Cotton J.] 2000. LMH00 evaluation at Lindley Moor, Huddersfield: plant macrofossil assessment. ASUD Report 671. 6pp.
4477	**Lindow Moss (body)**	nr Wilmslow	CHE	Hillman G. 1986. Plant foods in the ancient diet: the archaeological role of palaeofaeces in general and Lindow Man's gut contents in particular. 99-115. In: Stead I M, Bourke, J B and Brothwell D. Lindow Man: the body in the bog. London: British Museum. Holden T G [and Hillman G C]. 1986. Preliminary report on the detailed analyses of the macroscopic remains from the gut of Lindow Man. 116-25. In: Stead I M, Bourke, J B and Brothwell D. Lindow Man: the body in the bog. London: British Museum.
*4478	**Lindow Moss 87-88 AML 111/88**	nr Wilmslow	CHE	Branch N. 1988. Pollen and preliminary plant macrofossil analysis of peat columns from Lindow Moss, Cheshire. AML Report New Series 111/88.
4488	**Lingcroft Farm 80-91**	nr York	YOR	[Chapman L] Botanical evidence] In: Jones R, Clarke S and Rush P. nd. [Late Iron Age and early Roman landscapes at Lingcroft Farm, Naburn, North Yorkshire]. Unpublished typescript
*4493	**Linhope Burn 89**	nr Wooler	NHU	Anon. [Plant macrofossils]. 8. Topping P. 1993. The excavation of an unenclosed settlement, field system and cord rig cultivation at Linhope Burn, Northumberland, 1989. Northern Archaeol. 11 (for 1990-1). 1-11 + 17 figures and 23 plates.
4494	**Link Building DEAR 7/98**	Wallsend, Newcastle	TWT	Huntley, J.P. 1998. The Link Building, Wallsend, Tyne and Wear: WV97. Evaluation of the environmental samples. Durham Environmental Archaeology Report 7/98.

Site no.	Site	Location	Cty	Reference
4520	**Little Maltby Farm DEAR 47/97**	Ingleby Barwick	CVS	Huntley, J.P. 1997. Little Maltby Farm - Ingleby Barwick, Durham: LMF97. An assessment of the environmental samples. Durham Environmental Archaeology Report 47/97.
4538	**Little Stonegate (3) EAU 99/46**	York	YOR	Large F, Hall A, Johnstone C, Worthy D and Carrott J. 1999. Assessment of biological remains from The Primitive Methodist Chapel, 3 Little Stonegate, York (sitecode: 1999.95). Reports from the EAU, York 99/46. 9 pp.
4539	**Little Stonegate (9) EAU 98/27**	York	YOR	Carrott J, Hall A, Hughes P, Jaques D, Johnstone C and Worthy D. 1998. Assessment of biological remains from 9 Little Stonegate, York (site code YORYM1997.102). Reports from the EAU, York 98/27. 12 pp.
4540	**Little Stonegate (rear 3) EAU 99/21**	York	YOR	Johnstone C, Carrott J, Hall A, Large F and Worthy D. 1999. Assessment of biological remains from Rear, 3 Little Stonegate, York (site code 1998.705). Reports from the EAU, York 99/21. 11 pp.
*4604	**Lodge Moor Hospital EAC**	Sheffield	SYS	Rackham J. 2000. Lodge Moor Hospital, Sheffield. Environmental archaeology assessment. Environmental Archaeology Consultancy report.
*4645	**Long Ln (Beverley)**	Beverley	EYR	Hall A R. 1983. Note on the Long Lane peat. 54-5. In: Sanders G B and Armstrong P. A watching brief on the Beverley High Level drainage scheme. East Riding Archaeol. 7. 52-70.
4657	**Lord Roberts Rd EAU 99/07**	Beverley	EYR	Carrott J, Hall A, Johnstone C, Kenward H, Large F, Panter I, Speight H and Worthy D. 1999. Evaluation of bioarchaeological remains from Lord Robert's Road, Beverley, East Yorkshire (site code: LRB98). Reports from the EAU, York 99/7. 16pp. + 2pp. appendix.

Site no.	Site	Location	Cty	Reference
4669	**Low Borrowbridge 92 DEAR 6/92**	nr Tebay	CUM	Huntley J P. 1992. Low Borrowbridge - LBB92. A botanical assessment of the samples. [Durham Environmental Archaeology Report 6/92]
*#4672	**Low Farm ASUD 689**	Thornton, nr Middlesbrough	CVM	[Cotton J.] 2000. Low Farm, Thornton, Cleveland, LFT00: plant macrofossil evaluation. ASUD Report 689. 5pp.
4673	**Low Farm ASUD 696**	Thornton, nr Middlesbrough	CVM	[Cotton J.] 2002. Low Farm, Thornton, Cleveland, LFT00: plant macrofossil full analysis. ASUD Report 696. 9pp.
*#4674	**Low Farm EAU 2000/61**	Dunswell, Beverley/Cottingham	EYR	Jaques D, Hall A, Kenward H, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at Low Farm, north of Cottingham (site code: TSEP 418). Reports from the Environmental Archaeology Unit, York 2000/61, 6 pp.
4675	**Low Farm EAU 2002/08**	Dunswell, Beverley/Cottingham	EYR	Jaques D, Hall A, Rowland S, Kenward H and Carrott J. 2002. Technical Report: Biological remains from a site at Low Farm, near Cottingham, East Riding of Yorkshire (site code: TSEP 418). Reports from the Environmental Archaeology Unit, York 2002/8, 15pp.
4679	**Low Hauxley DEAR 6/95**	Druridge Bay	NHU	Huntley J P. 1995. Low Hauxley, Northumberland: LH94. An assessment of the plant remains. Durham Environmental Archaeology Report 6/95.
*4684	**Low Throston House 96 DEAR 18/96**	Low Throston, nr Hartlepool	CVH	Huntley J P and Gidney L J. 1996. Low Throston House, Low Throston, Hartlepool: HTH96. An evaluation of the environmental material. Durham Environmental Archaeology Report 18/96.
4691	**Lower Bridge St 74-6**	Chester	CHE	Wilson D G. 1985. The plant remains. 68. In: Mason D J P. Excavations at Chester. 26-42 Lower Bridge Street 1974-6. The Dark Age and Saxon periods. Chester City Council and Grosvenor Museum Archaeol. Excavation and Survey Reports 3.
4692	**Lower Bridge St EAU 89/32**	Chester	CHE	Tomlinson, P. R. 1989. Investigations of organic material from Lower Bridge Street, Chester. Prep. for Liverpool Museum. [89/32]

Site no.	Site	Location	Cty	Reference
*4722	**Lumley St ASUD 657**	Hartlepool	CVH	[Cotton J.] 2000. Lumley Street, Hartlepool - HLS99: plant macrofossil assessment, March 2000. ASUD Report 657. 3pp.
4727	**Lurk Ln 79-82**	Beverley	EYR	McKenna W J B. 1991. The plant, molluscan, insect and parasite remains. 209-215. In: Armstrong P, Tomlinson D and Evans D H. Excavations at Lurk Lane Beverley 1979-82. Sheffield Excavation Reports 1. Sheffield.
4777	**Magdalen Ln DEAR 26/98**	Hedon	EYR	Huntley, J.P. 1998. 'Wychcroft', Magdalen Lane, Hedon, East Yorkshire: HED98. An assessment of the palaeoenvironmental samples from 12th-14th century deposits. Durham Environmental Archaeology Report 26/98.
4785	**Magistrates Court (Beverley) EAU 2001/06**	Beverley	EYR	Hall A, Jaques D, Kenward H and Carrott J. 2001. Evaluation of biological remains from excavations at Magistrates' Court, Beverley, East Yorkshire (site code: BMC2000). Reports from the Environmental Archaeology Unit, York 2001/06, 7 pp.
4786	**Magistrates Court (Brough) EAU 2001/38**	Brough	EYR	Hall A, Kenward H, Rowland S and Carrott J. 2001. Evaluation of biological remains from excavations at Magistrates' Court, Brough, East Riding of Yorkshire (site code: BRO2001). Reports from the Environmental Archaeology Unit, York 2001/38, 5pp.
4790	**Magistrates Courts (Hull) 94 & 99 EAU 2000/25**	Hull	KUH	Hall A, Carrott J, Jaques D, Johnstone C, Kenward H, Large F and Usai R. 2000. Technical report: Studies on biological remains and sediments from Periods 1 and 2 at the Magistrates' Courts site, Kingston-upon-Hull (site codes HMC 94 and MCH99). 1. Reports from the Environmental Archaeology Unit, York 2000/25, 78 pp.
4791	**Magistrates Courts (Hull) 94 & 99 EAU 2000/33**	Hull	KUH	Hall A, Carrott J, Jaques D, Johnstone C, Kenward H, Large F and Usai R. 2000. Technical report: Studies on biological remains and sediments from Periods 1 and 2 at the Magistrates' Courts site, Kingston-upon-Hull (site codes HMC 94 and MCH99). 2. Reports from the Environmental Archaeology Unit, York 2000/33, 133pp.

Site no.	Site	Location	Cty	Reference
*#4793	**Magistrates Courts (Hull) 94 EAU 95/17**	Hull	KUH	Carrott J, Dobney K, Hall A, Irving B, Issitt M, Jaques D, Kenward H, Large F, McKenna B, Milles A, Shaw T and Usai R. 1995. Assessment of biological remains and sediments from excavations at the Magistrates' Court site, Hull (site code HMC94). Reports from the EAU, York 95/17. 17 pp. + 23 pp. appendix.
#4794	**Magistrates Courts (Hull) 99 EAU 2000/19**	Hull	KUH	Hall A, Carrott J, Jaques D, Kenward H and Rowland S. 2000. Assessment of biological remains [from] further excavations at Magistrates' Court, Hull (site code: MCH99). Reports from the EAU, York 2000/19. 8 pp.
4812	**Main St (Long Riston) PRS 2002/07**	Long Riston, Beverley/Hornsea	EYR	Jaques D, Hall A, Kenward H and Carrott J. 2002. Evaluation of biological remains from excavations at Main Street, Long Riston, East Riding of Yorkshire (site code: MSR2001). Palaeoecology Research Services Report 2002/07.
4814	**Main St (Spaunton) EAU 97/50**	nr Pickering, NYM	NYR	Carrott J, Hughes P, Johnstone C and Large F. 1997. An evaluation of biological remains from excavations at Main Street, Spaunton, North Yorkshire (site code: 1997.93). Reports from the EAU, York 97/50. 5 pp.
4827	**Malmo Rd EAU 92/01**	Hull	KUH	Carrott J B, Dainton M, Dobney K M, Hall A R, Kenward H K and Milles A. 1992. Biological evidence from excavations at Malmo Road, Kingston-upon-Hull. Unpub. report prep. for Humberside Archaeol. Unit. [92/1]
4828	**Malmo Rd EAU 97/38**	Hull	KUH	Carrott J, Johnstone C and Large F. 1997. Evaluation of biological remains from excavations at Malmo Road, Hull (1997 evaluation, site code: MAL97). Reports from the EAU, York 97/38. 6 pp.
4830	**Malton 30 (J&H)**	Malton	NYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in Prehistoric and Early Historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.

Site no.	Site	Location	Cty	Reference
4831	**Malton 30 (reconsidered)**	Malton	NYR	Buckland P C. 1982. The Malton Burnt grain: a cautionary tale. Yorkshire Archaeol. J. 54. 53-61.
4836	**Manchester 1899**	Manchester (Deansgate & Hunts Bank)	GMM	[plant remains]. 149-50. In: Roeder C. 1900. Recent Roman discoveries in Deansgate and on Hunt's Bank, and Roman Manchester re-studied (1897-1900). Trans. Lancashire Cheshire Antiq. Soc. 17 (for 1899). 87-212.
4838	**Manor Cottage ASUD 792**	East Rounton, nr Northallerton	NYR	[Cotton J.] 2001. BP Chemicals Teesside to Saltend Ethylene Pipeline (TSEP) Site 713: Manor Cottage, East Rounton, North Yorkshire (MC99): plant macrofossil full analysis. ASUD Report 792. 9pp.
4839	**Manor Farm (A1-M1) 92-8**	Garforth/Leeds	WYL	Holden T and Hastie M. 2001. Manor Farm. The charred plant remains. 221-2. In: Roberts I, Burgess A and Berg D. (eds). 2001. A new link to the past: the archaeological landscape of the M1-A1 link road. Yorkshire Archaeology 7. Leeds: West Yorkshire Archaeology Service on behalf of West Yorkshire Joint Services.
*4840	**Manor Farm (Borwick)**	nr Carnforth	LAN	van der Veen M. 1987. The plant remains. Fiche 33-6. In: Olivier A C H. Excavation of a Bronze Age funerary cairn at Manor Farm, near Borwick, North Lancashire. Proc. Prehist. Soc. 53. 129-86.
*#4842	**Manor Farm (Borwick) AML 3977**	nr Carnforth	LAN	van der Veen M. 1983. Plant remains from Manor Farm , Borwick. AML Report OS 3977.
4850	**Manor Farm (Thorner) WYAS 835**	nr Leeds	WYL	Richardson J and Young R. 2000. The biological remains. Section 6.6 and Appendix X. In: Martin L. 2000. Manor Fam, Thorner, West Yorkshire. I. Archaeological excavation. West Yorkshire Archaeological Service Report 835.
4854	**Manor Ln EAU 97/27**	nr York	YOR	Large F. 1997. Evaluation of biological remains from excavations at Manor Lane, Rawcliffe, York (site code: 1997.43). Reports from the EAU, York 97/27. 2 pp.

Site no.	Site	Location	Cty	Reference
4856	**Mansion House 90**	Newcastle	TWN	Huntley J P. 1995. The plant remains. 197-200, 201. In: Fraser R, Jamfrey C and Vaughan J. Excavation on the site of the Mansion House, Newcastle, 1990. Archaeol. Aeliana 5th Ser. 23. 145-213.
4872	**Market Pl (Darlington) DEAR 14/95**	Darlington	DUR	Huntley J P. 1995. Darlington Market Place: DMP94. An assessment of the environmental samples. Durham Environmental Archaeology Report 14/95.
*#4874	**Market Pl (Darlington) DEAR 18/94**	Darlington	DUR	Huntley J P. 1994. Darlington Market Place: DMP94. The plant remains. Durham Environmental Archaeology Report 18/94.
4877	**Market Pl (Richmond) DEAR 13/94**	Richmond	NYR	Huntley J P. 1994. Plant remains from Richmond Market Place: RMP93. Durham Environmental Archaeology Report 13/94.
4880	**Market Pl (Ripon) ASUD 793**	Ripon	NYR	[Cotton J.] 2001. Ripon Market Place, RNP01: plant macrofossil evaluation. ASUD Report 793. 8pp.
*4881	**Market Pl (Ripon) EAU 2001/02**	Ripon	NYR	Jaques D, Hall A, Rowland S and Carrott J. 2001. Evaluation of biological remains from excavations at Market Place, Ripon, North Yorkshire (site code: HARGM 10427). Reports from the Environmental Archaeology Unit, York 2001/02, 5 pp.
4882	**Market Pl (Selby) 97**	Selby	NYR	Daniell J R G and Huntley J P. nd. Selby District Council: SDC97. The charred and waterlogged plant remains. Unpublished report. Department of Archaeology, University of Durham.
4890	**Marne Barracks ASUD**	Catterick (former RAF Catterick)	NYR	[Cotton J]. 2002. Marne Barracks, Catterick, MBC01: plant macrofossil analysis. ASUD Report.
*#4891	**Marne Barracks ASUD 911**	Catterick (former RAF Catterick)	NYR	[Cotton J.] 2001. Marne Barracks, Catterick, North Yorkshire (MBC01): [assessment]. ASUD Report 911. 12pp.
*4908	**Marygate (104-6) (Berwick) ASUD 721**	Berwick-upon-Tweed	NHU	[Cotton J.] 2000. Berwick upon Tweed, Marygate, BMG00: plant macrofossil evaluation. ASUD Report 721. 6pp.

Site no.	Site	Location	Cty	Reference
4909	**Marygate (26-8) EAU 92/10**	York	YOR	Carrott J B, Dobney K M, Hall A R, Kenward H K and Milles A. 1992. Biological evidence from excavations at 26-28 Marygate, York (YAT/Yorkshire Museum site code 1992.11). Unpub. report prep. for York Archaeol. Trust. [92/10]
4910	**Marygate (Berwick) LUAU**	Berwick-upon-Tweed	NHU	[Huckerby E.] 2000. Palaeoenvironmental evidence. 24-5. In: Anon. 2000. Marygate, Berwick-upon-Tweed. Assessment and updated project design. Lancaster University Archaeological Unit Report.
*4911	**Marygate (Lindisfarne) ASUD 908**	Lindisfarne	NHU	[Cotton J.] 2002. Marygate, Lindisfarne, Northumberland, LMG98: plant macrofossil assessment. ASUD Report 908. 5pp.
4912	**Marygate (Lindisfarne) ASUD 926**	Lindisfarne	NHU	[Cotton J.] 2002. Marygate, Lindisfarne, Northumberland, LMG98: plant macrofossil analysis. ASUD Report 926. 8pp.
4913	**Marygate 96 DEAR 23/96**	Lindisfarne	NHU	Huntley J P. 1996. Lindisfarne - Marygate: LMG96. The plant remains. Durham Environmental Archaeology Report 23/96.
4914	**Masham 96 DEAR 34/97**	Masham	NYR	Huntley, J.P. 1997. Masham '96. The environmental samples. Durham Environmental Archaeology Report 34/97.
*4915	**Masonic Ln (off) PRS 2001/04**	Thirsk	NYR	Carrott J, Hall A, Jaques D and Kenward H. 2001. Evaluation of biological remains from excavations at land off Masonic Lane, Thirsk, North Yorkshire (site code: YORYM2000.2401) Palaeoecology Research Services Report 2001/04.
*4926	**Maxway Foods DEAR 20/97**	Milfield Basin	NHU	Huntley, J.P. 1997. Maxway Foods site, Northumberland: MAX97 (part II). The environmental samples. Durham Environmental Archaeology Report 20/97.
*4927	**Maxway Foods DEAR 8/97**	Milfield Basin	NHU	Huntley, J.P. 1997. Maxway Foods site, Northumberland: MAX97. Assessment of the environmental samples. Durham Environmental Archaeology Report 8/97.

Site no.	Site	Location	Cty	Reference
4966	**Melsonby 92-5**	Low Langdale Farm, Melsonby,nr Catterick	NYR	van der Veen, M. 1999. The plant remains. 28-33. In: Fitts R L, Haselgrove C C, Lowther P C and Willis S H. 1999. Melsonby revisited: survey and excavation 1992-95 at the site of discovery of the "Stanwick", North Yorkshire, hoard of 1843. Durham Archaeol J 14-15. 1-52.
4967	**Melton (South Lawn) 94**	nr Brough on Humber	EYR	Huntley J P. 1999. The charred plant remains. 50-3. In: Bishop M C. 1999. An Iron Age and Romano-British 'ladder' settlement at Melton, East Yorkshire. Yorkshire Archaeol. J. 71. 23-63.
*#4968	**Melton DEAR 31/94**	nr Brough on Humber	EYR	Huntley J P and Milles A. 1994. Melton, Humberside: MEL94. An assessment and evaluation of the environmental samples. Durham Environmental Archaeology Report 31/94.
4974	**Meols boat EAU 89/31**	Wirral	MEW	Tomlinson, P. R. 1989. Preliminary investigations of macrofossil plant remains from beneath the possible Meols logboat. Prep. for Liverpool Museum. [89/31]
4977	**Merchant Adventurers Hall EAU 96/01**	York	YOR	Carrott J, Dobney K, Issitt M, Jaques D and Large F. 1996. An evaluation of biological remains from excavations at Merchant Adventurers' Hall, York (site code: 1995.1). Reports from the EAU, York 96/1. 5 pp.
4978	**Merchant Adventurers Hall EAU 96/44**	York	YOR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. An assessment of biological remains from further excavations at Merchant Adventurers' Hall, York (site code: 1995.1). Reports from the EAU, York 96/44.
*4985	**Merseyside Wetlands**	Merseyside	XXX	Cowell R W and Innes J B. 1994. The wetlands of Merseyside. North West Wetlands Survey 1. Lancaster Imprints 2.
4991	**Messingham 1**	nr Scunthorpe	NLI	Buckland P C. 1982. The cover sands of north Lincolnshire and the Vale of York, 143-78. In: Adlam B H, Fenn C R and Morris L. (eds). Papers in Earth Studies. Norwich: Geobooks.

Site no.	Site	Location	Cty	Reference
4992	**Messingham 2**	nr Scunthorpe	NLI	Buckland P C. 1984. North-West Lincolnshire 10,000 years ago. 11-17. In: Field N and White A (eds). A prospect of Lincolnshire [being collected articles on the history and traditions of Lincolnshire in honour of Ethel H. Rudkin]. Lincoln: Newland.
4993	**Messingham EAU 97/48**	nr Scunthorpe	NLI	Carrott J, Hughes P, Kenward H and Large F. 1997. An evaluation of biological remains from excavations at Messingham, North Lincolnshire (site code: BFM97). Reports from the EAU, York 97/48. 5 pp.
*4994	**Metcalfe Ln PRS 2002/18**	Osbaldwick, nr York	NYR	Carrott J, Hall A and Kenward H. 2002. Evaluation of biological remains from excavations at Metcalfe Lane, Osbaldwick, York (site code: YORYM2002.451). Palaeoecology Research Services Report 2002/18.
*4995	**Methley 51**	Castleford/Leeds	WYL	Pierce-Price R P. 1973. Moss samples from N. moat. 95. In: Le Patourel H E J. The moated sites of Yorkshire. Medieval Archaeol. Monograph Series 5.
*4997	**Methodist Church EAU 91/19**	York	YOR	Carrott J B, Hall A R, Kenward H K and Nicholson R A. 1991. An assessment of biological remains from excavations at the Methodist Church, St Saviourgate, York. Unpub. report prep. for MAP. [91/19]
*5007	**Micklegate (63-7) EAU 2001/30**	York	YOR	Hall A, Jaques D, Rowland S and Carrott J. 2001. Evaluation of biological remains from excavations at 63-67 Micklegate, York (site code: YMK01). Reports from the Environmental Archaeology Unit, York 2001/30, 6 pp.
5015	**Middlegate 87 AML 86/88**	Hartlepool	CVH	Huntley J P. 1988. PLANT REMAINS FROM MIDDLEGATE, HARTLEPOOL, CLEVELAND 1987. AML Report New Series 86/88.

Site no.	Site	Location	Cty	Reference
*5017	**Middleham DEAR 2/97**	Middleham, Leyburn/Masham	NYR	Huntley J P. 1997. Middleham, North Yorkshire: MH96. An environmental sample. Durham Environmental Archaeology Report 2/97.
5020	**Middlewich EHy**	Middlewich	CHE	Huckerby E. 2001. Rapid assessment of a bulk sample for plant macrofossils from site 531 at Middlewich, Cheshire. [Freelance Report]
5028	**Midtodhill Kiln DEAR 2/92**	Bewcastle, NE of Longtown	CUM	Huntley J P. 1992. Midtodhill Kiln, Bewcastle, Cumbria. [Durham Environmental Archaeology Report 2/92]
5031	**Milburngate 83**	Durham City	DUR	van der Veen M. 1993. Evidence for Bronze Age woodland from Durham. 73-6. In: Lowther P, Ebbatson L, Ellison M and Millett M. The City of Durham: an archaeological survey. Durham Archaeol. J. 9. 27-120.
*#5032	**Milburngate AML 4009**	Durham City	DUR	van der Veen M. 1983. Plant remains from the Milburngate excavation, Durham City. AML Report OS 4009.
*#5034	**Milburngate AML 4674**	Durham City	DUR	van der Veen M. 1985. The plant remains from Milburngate, Durham City. AML Report OS 4674.
*#5043	**Milfield AML 4156**	nr Wooler	NHU	van der Veen M. 1984. Plant remains from the Milfield Cemeteries. AML Report OS 4156.
5045	**Milfield Basin ASUD 678**	nr Wooler	NHU	[Cotton J.] 2000. The Milfield Basin Archaeology Project, Northumberland: plant macrofossil, waterlogged wood and charcoal assessment. ASUD Report 678. 16pp. [incl. evaluation report by J P Huntley as Appendix]
5046	**Milfield sites**	nr Wooler	NHU	Donaldson A M. 1981. Appendix 3. Grain impressions. 133. In: Harding A F. Excavations near Milfield, Northumberland. Proc. Prehist. Soc. 47. 87-135.
*5053	**Mill House Farm EAU 97/31**	Kexby, nr York	YOR	Carrott J, Hall A and Large F. 1997. Assessment of biological remains from excavations at Mill House Farm, Kexby, near York (site code: 1997.61). Reports from the EAU, York 97/31.

Site no.	Site	Location	Cty	Reference
*5054	**Mill Ln 95 DEAR 20/95**	Tadcaster	NYR	Huntley J P. 1995. Tadcaster, Mill Lane: TML95. An assessment of the environmental samples. Durham Environmental Archaeology Report 20/95.
5093	**Mitchells Brewery DEAR 12/93**	Lancaster	LAN	Huntley J P. 1993. Lancaster Brewery: LB88 An assessment of the botanical material. Durham Environmental Archaeology Report 12/93.
5109	**Monkgate (50-2) (York) 95 EAU 95/20**	York	YOR	Carrott J, Hall A, Issitt M, Large F, McKenna B and Milles A. 1995. Evaluation of biological remains from excavations at 50-52 Monkgate, York (site code: 1995.4). Reports from the EAU, York 95/20. 4 pp.
5110	**Monkgate (Hull) 76-7**	Hull	KUH	McKenna W J B. 1987. The environmental evidence. 255-61 and 298. In: Armstrong P and Ayers B. 1987. Excavations in High Street and Blackfriargate. East Riding Archaeol. 8. Hull Old Town Rep. Ser. 5.
5118	**Monkwearmouth 64-70**	Sunderland	TWU	Turner J and Hewetson V P. 1971. Appendix 1. A report on the wood and pollen samples from pit 1. 59. In: Cramp R. Excavations at the Saxon monastic sites of Wearmouth and Jarrow, Co. Durham: an interim report. Medieval Archaeol. 13. 21-66.
5135	**Morrison Hall 87 AML 52/90**	Hartlepool	CVH	Huntley J P. 1990. Carbonised plant remains from the Saxon site at Morrison Hall, Hartlepool, Cleveland. AML Report New Series 52/90.
5141	**Morton Ln EAU 2002/02**	Beverley	EYR	Hall A, Kenward H and Carrott J. 2002. Assessment of biological remains from excavations at Morton Lane, Beverley, East Riding of Yorkshire (site code: MLA01). Reports from the Environmental Archaeology Unit, York 2002/02. 4pp.

Site no.	Site	Location	Cty	Reference
5157	**Mount Grace Priory 89-92 EAU 94/10**	Osmotherley, nr Northallerton	NYR	Bailey S, Carrott J, Dobney K, Hall A, Jaques D, Jones A, Milles A and Turner E. 1994. Assessment of biological remains from excavations at Mount Grace Priory, N. Yorkshire (MG89-92). Reports from the EAU, York 94/10. 17 pp.
5168	**Mourie Farm ASUD 783**	Low Worsall, Yarm/Darlington	NYR	[Cotton J.] 2001. Mourie Farm, Low Worsall, [North Yorkshire] MF99: plant macrofossil full analysis. ASUD Report 783. 9pp.
*5196	**Murton**	nr Berwick-upon-Tweed	NHU	van der Veen, M. 1992. Crop Husbandry Regimes. An archaeobotanical study of farming in northern England 1000 BC - AD 500. Sheffield Archaeol. Monographs 3. Sheffield.
5197	**Murton High Crags**	nr Berwick-upon-Tweed	NHU	van der Veen M. 1987. Plant remains. 192-6. In: Jobey I and Jobey J G. III Prehistoric, Romano-British and later remains on Murton High Crags, Northumberland. Archaeol. Aeliana 5th Ser. 15. 155-198.
*#5198	**Murton High Crags AML 4720**	nr Berwick-upon-Tweed	NHU	van der Veen M. 1985. The plant remains from Murton High Crags, Northumberland. AML Report OS 4720.
5208	**Mytongate 75**	Hull	KUH	Miller N, Williams D and Kenward H K. 1993. Plant macrofossils and insect remains from Mytongate. 195-8 and Fiche M2/A7-B5. In: Evans D H (ed). Excavations in Hull 1975-76. East Riding Archaeol. 4. Hull Old Town Rep. Ser. 2.
5211	**Skeldergate (64-74) EAU 2000/53**	NCP Car Park, York	YOR	Jaques D, Hall A, Kenward H, Rowland S, Wang T and Carrott J. 2000. Evaluation of biological remains from excavations at NCP car park site, Skeldergate, York (site code: YORYM 1999.844). Reports from the Environmental Archaeology Unit, York 2000/53. 17pp.

Site no.	Site	Location	Cty	Reference
*5214	**Naburn Hospital OAU**	Naburn, nr York	YOR	Pelling R. 1998. Environmental data: plant remains. 9-10. In: Laws G. 1998. Naburn Hospital, Fulford, York: Archaeological watching brief report. Oxford Archaeological Unit Report March 1998.
*5215	**Naburn Sewage Works EAU 97/46**	Naburn, nr York	YOR	Carrott J, Hughes P and Large F. 1997. An evaluation of biological remains from excavations at Naburn Sewage Treatment Works, York (site code: 1997.81) Reports from the EAU, York 97/46. 4pp.
*5216	**Naburn-Moreby Park WYAS 962**	nr Naburn	YOR	[Richardson J]. 5. Environmental record. In: McNaught R B. 2002. Naburn to Moreby Park Flood Defence Works, Naburn, North Yorkshire. West Yorkshire Archaeological Service Report 962.
*5225	**National Trust Estate AML 24/89**	Hadrian's Wall	NHU	Watson J. 1989. Organic material associated with ironwork from the National Trust Estate, Hadrian's Wall. AML Report New Series 24/89.
*5230	**Neasham (dating)**	nr Darlington	DUR	[Blackburn K B and Lobley E M] [Plant macrofossils]. passim. In: Blackburn K. 1952. The dating of a deposit containing an elk skeleton found at Neasham, County Durham. New Phytol. 51. 364-77.
5231	**Neasham Abbey DEAR 14/97**	nr Darlington	DUR	Huntley J P. 1997. Neasham Abbey: NA96. The charred plant remains. Durham Environmental Archaeology Report 14/97.
5257	**New Crane St PRS 2002/08**	Chester	CHE	Hall A, Wagner P, Jaques D and Carrott J. 2002. Evaluation of biological remains from excavations at New Crane Street car park, Chester (site code: B3811C). Palaeoecology Research Services Report 2002/08.
5258	**New Elvet (19-20) 92**	Durham City	DUR	Huntley J P. 1995. The plant remains. 74-5. In: Fraser R, Speed G and Costley S. Excavations at 19/20 New Elvet, Durham. Durham Archaeol. J. 11. 67-76.
5269	**New Quay 96**	Berwick-upon-Tweed	NHU	Huntley J. 1999. Environmental samples. 103-5. In: Griffiths W B. 1999. Excavations at New Quay, Berwick-upon-Tweed, 1996. Archaeol. Aeliana 5th Ser. 27. 75-108.

Site no.	Site	Location	Cty	Reference
5270	**New Quay DEAR 34/98**	Berwick-upon-Tweed	NHU	Huntley, J.P. 1998. New Quay, Berwick upon Tweed: BQW98. Assessment of the plant remains from medieval deposits. Durham Environmental Archaeology Report 34/98.
*#5271	**New Quay DEAR 44/98**	Berwick-upon-Tweed	NHU	Huntley, J.P. 1998. New Quay, Berwick upon Tweed: BK96. Evaluation of the environmental samples from medieval waterfront deposits. Durham Environmental Archaeology Report 44/98.
*5274	**New School EAU 2001/03**	Priest Ln, Ripon	NYR	Jaques D, Hall A and Carrott J. 2001. Evaluation of biological remains from excavations at New School, Priest Lane, Ripon, North Yorkshire (site code: HARGM 10330). Reports from the Environmental Archaeology Unit, York 2001/03, 7 pp.
5283	**Newbridge Quarry EAU 2000/27**	nr Pickering	NYR	Hall A, Carrott J and Rowland S. 2000. Assessment of biological remains from excavations at Newbridge Quarry, Pickering, North Yorkshire (site code NBQ99). Reports from the Environmental Archaeology Unit, York 2000/27, 5 pp.
5285	**Nunthorpe-Newby 2000 EAC 65/01**	nr Middlesbrough	NYR	Snelling A and Rackham D J. 2001. Nunthorpe, Newby Underground Cable, Site 2 - NNC00. Environmental archaeology assessment. Environmental Archaeology Consultancy Report EAC 65/01.
5286	**Newcastle Bastion 76-81**	Newcastle	TWN	Donaldson A M. 1983. Botanical report. 256-8. In: Ellison M and Harbottle B. The excavation of a 17th century bastion in the castle of Newcastle upon Tyne, 1976-81. Archaeol. Aeliana 5th Ser. 11. 135-263.
5288	**Newcastle Packet EAU 2000/38**	13 Sandside, Scarborough	NYR	Hall A, Kenward H, Rowland S, Jaques D and Carrott J. 2000. Evaluation of biological remains from excavations at Newcastle Packet, 13 Sandside, Scarborough (site code: NP00). Reports from the Environmental Archaeology Unit, York 2000/38, 3pp.
*#5301	**Newton Bewley 98 ASUD 650**	Hartlepool	CVH	[Cotton J.] 2000. Newton Bewley, Hartlepool - HNB98: plant macrofossil assessment, February 2000. ASUD Report 650. 15pp.

Site no.	Site	Location	Cty	Reference
5302	**Newton Bewley 98 ASUD 729**	Hartlepool	CVH	Cotton J. 2000. Hartlepool, Newton Bewley, HNB98: plant macrofossil analysis. ASUD Report 729.18pp.
*5318	**Nook Farm NWWS 2**	Urmston/Leigh, nr Manchester	GML	Hall D, Wells C E and Huckerby E. 1995. The wetlands of Greater Manchester. North West Wetlands Survey 2. Lancaster Imprints 3.
5326	**Norman Court 95 EAU 95/21**	York	YOR	Carrott J, Hall A, Irving B, Issitt M, Jaques D, Kenward H, Large F, McKenna B and Milles A. 1995. Evaluation of biological remains from excavations at Norman Court, Grape Lane, York (site code: 1995.5). Reports from the EAU, York 95/21. 4 pp.
5328	**Normanby Park Steelworks EAU 2001/10**	nr Scunthorpe	NLI	Hall A, Kenward H, Jaques D and Carrott J. 2001. Evaluation of biological remains from the former Normanby Park Steelworks, North Lincolnshire (site code: NPQ2000). Reports from the Environmental Archaeology Unit, York 2001/10, 8 pp.
5329	**Normanton Golf Course 98 HA**	Wakefield/Pontefract	WYW	Hastie M and Holden T G. 1999. The carbonised remains from Normanton Golf Course, West Yorkshire. [Report from Headland Archaeology] 4pp.
5344	**North Back Ln EAU 2001/52**	Bridlington	EYR	Jaques D and Carrott J. 2001. Evaluation of biological remains from excavations at land to the south of North Back Lane, Bridlington, East Riding of Yorkshire (site code: NBL2001). Reports from the Environmental Archaeology Unit, York 2001/52, 6pp.
*5346	**North Bailey (gas main)**	Durham City	DUR	Huntley J P. 1992. North Bailey gas main, Durham City. Botanical assessment. [Durham Environmental Archaeology Report 7/92]
5348	**North Bar Within 95 EAU 95/54**	Beverley	EYR	Carrott J, Dobney K, Issitt M, Jaques D and Large F. 1995. Evaluation of biological remains from excavations at 37 North Bar Within, Beverley, Humberside (site code: NBW95). Reports from the EAU, York 95/54. 9 pp.

Site no.	Site	Location	Cty	Reference
5350	**North Beckside 93 EAU 93/05**	Beverley	EYR	Carrott J, Dobney K, Hall A, Jaques D, Manser I and Kenward H. 1993. An evaluation of biological remains from excavations of medieval deposits at North Beckside (site code NBS93) and Beckview Tilery (1827.1986 BLY). Unpub. report prep. for Humberside Archaeol. Unit. [93/5]
*#5352	**North Bridge 93 EAU 94/05**	Doncaster	SYD	Carrott J, Hall A, Kenward H, Lancaster S, Large F and Nicholson C. 1994. A preliminary assessment of biological remains from excavations at North Bridge, Doncaster (site code DNB93). Reports from the EAU, York 94/5. 12 pp.
5353	**North Bridge 93-4 EAU 97/16**	Doncaster	SYD	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Johnstone C, Kenward H, Large F and Skidmore P 1997. Technical Report: Environment, land use and activity at a medieval and post-medieval site at North Bridge, Doncaster, South Yorkshire. Reports from the EAU, York 97/16.
*#5355	**North Cave AML 105/90**	Beverley/Goole	EYR	Allison E P, Hall A R, Kenward, H K, McKenna B, and Robertson A. 1990. Biological remains from excavations at North Cave, N. Humberside. AML Report New Series 105/90.
*#5356	**North Cave EAU 96/42**	Beverley/Goole	EYR	Carrott J, Hall A, Kenward H and Large F. 1996. Plant and invertebrate remains from the Iron Age and Roman site at North Cave, East Riding of Yorkshire (site code NC95): data archive. Reports from the EAU, York 96/42.
5357	**North Cave EAU 97/37**	Beverley/Howden	EYR	Allison E, Carrott J, Hall A, Kenward H, Large F, McKenna B and Robertson A. 1997. Publication draft: Plant and invertebrate remains from Iron Age and Romano-British deposits at North Cave, East Yorkshire. Reports from the EAU, York 97/37. 43 pp.
5358	**North Duffield EAU 94/34**	Selby/York	NYR	Carrott J, Hall A, Hill M and Kenward H. 1994. Assessment of biological remains from Bronze Age deposits at North Duffield, North Yorkshire. Reports from the EAU, York 94/34. 13 pp.

Site no.	Site	Location	Cty	Reference
5362	**North Farm EAU 93/11**	Stamford Bridge, nr York	NYR	Carrott J, Hall A, Kent P and Kenward H. 1993. The bioarchaeological value of deposits from excavations near Stamford Bridge, North Yorkshire. Unpub. report prep. for Ian Lawton. [93/11]
5363	**North Ferriby Boats Nos 1 and 2 47**	Hull	EYR	Allison J and Godwin H. 1947. Appendix B. Report on plant material associated with the Ferriby prehistoric boats. 138 In: Wright E V and Wright C W. Prehistoric boats from North Ferriby, East Yorkshire. Proc. Prehist. Soc. 13. 114-38.
5369	**North Ferriby Boats (artefacts)**	Hull	EYR	Wright E V. 1978. Artefacts from the boat-site at North Ferriby, Humberside, England. Proc. Prehist. Soc. 44. 187-202.
*5407	**North St (York) (b/holes) EAU 92/17**	York (Rose Garden site)	YOR	Dainton M, Hall A R. and Kenward H K. 1992. An evaluation of biological remains from boreholes at North Street, York (YAT site code 1992.1). Unpub. report prep. for York Archaeol. Trust. [92/17]
5409	**North St (York) 93 EAU 93/14**	York	YOR	Carrott J, Hall A R, Issitt M, Kenward H and Lancaster S. 1993. Assessment of biological remains from Roman to medieval riverside deposits at North Street, York (YAT/Yorkshire Museum code 93.1). 24 pp. Unpub. report prep. for York Archaeol. Trust. [93/14]
5431	**Northgate (7) EAU 99/59**	Cottingham, nr Hull	EYR	Hall A, Carrott J, Large F and Kenward H. 1999. 7 Northgate, Cottingham (COT99): brief notes on biological remains from three samples. Reports from the EAU, York 99/59, 2 pp.
5440	**Northumberland St DEAR 14/96**	Newcastle	TWN	Huntley J P. 1996. 111-117 Northumberland St., Newcastle upon Tyne: NNS96. The plant remains. Durham Environmental Archaeology Report 14/96.
5442	**Norton (Cheshire) 74-6**	nr Runcorn	CHE	Richardson I. 1977. Appendix 1. The botanical remains in the lower part of the well. 83. In: Greene J P and Hough P R [with Davey P J and Noake B]. Excavation in the medieval village of Norton 1974-1976. J. Chester Archaeol. Soc. 60. 61-93.

Site no.	Site	Location	Cty	Reference
*5447	**Norton Mill AML 2931**	Norton, Middlesbrough	CVS	Donaldson A and Rackham D J. 1979. Norton Mill, Cleveland: botanical report. AML Report OS 2931.
5451	**Norton Priory AML 1833**	Runcorn	CHE	Jodrell Laboratory. 1975. General botanical report on Norton Priory. AML Report OS 1833.
5466	**Nosterfield 95 DEAR 13/96**	nr Ripon	NYR	Huntley J P. 1996. Nosterfield, nr. Ripon: NON95. The charred plant remains. Durham Environmental Archaeology Report 13/96.
5467	**Nosterfield 97 HA (I)**	nr Ripon	NYR	Holden T. 1997. Assessment of bulk samples from Nosterfield, North Yorkshire (NOS97). [Report from Headland Archaeology]. 5pp.
5468	**Nosterfield 97 HA (II)**	nr Ripon	NYR	Holden T G. 1997. Assessment of bulk samples from Nosterfield, North Yorkshire - NOS97 (NON97): Part II. [Report from Headland Archaeology]. 2pp.
5502	**Oakwell Hall EAU 88/03**	Birstall, nr Batley	WYK	Allison E P, Hall A R. and Kenward H K. 1988. Biological remains from Oakwell Hall, Birstall, West Yorkshire. Prep. for J. Gilks, Tolson Memorial Museum. [88/3]
5504	**Oakwood Quarry 78-80**	Chelford, nr Alderley Edge	CHE	Worsley P, Coope G R, Good T R, Holyoak D T and Robinson J E. 1983. A Pleistocene succession from beneath Chelford Sands at Oakwood Quarry, Chelford, Cheshire. Geol. J. 18. 307-24.
*#5509	**Ochre Brook DEAR 3/98**	Tarbock, nr Liverpool	MEK	Huntley, J.P. [with Daniell, J.R.G.] 1998. M57-A562 Tarbock-Widnes link road. Assessment of the envirtonmental samples from OB35 and BHF. Durham Environmental Archaeology Report 3/98.
5513	**Ochre Brook 93**	Tarbock, nr Liverpool	MEK	Darrah R. 2000. Worked wood. 103. In: Philpott R A. 2000. Ochre Brook, Tarbock. 67-116. In: Cowell R W and Philpott R A. Prehistoric, Romano-British and medieval settlement in lowland North West England: archaeological excavations along the A5300 road corridor in Merseyside. Liverpool: National Museums and Galleries on Merseyside.

Site no.	Site	Location	Cty	Reference
				Huntley J P. 2000. Macro-botanic assessment. 104-7. In: Philpott R A. 2000. Ochre Brook, Tarbock. 67-116. In: Cowell R W and Philpott R A. Prehistoric, Romano-British and medieval settlement in lowland North West England: archaeological excavations along the A5300 road corridor in Merseyside. Liverpool: National Museums and Galleries on Merseyside.
5523	**Oil Mill Ln**	Berwick-upon-Tweed	NHU	Donaldson A M. 1982. Appendix III. Botanical remains. 90-1. In: Hunter J R. Medieval Berwick-upon-Tweed. Archaeol. Aeliana 5th Ser. 10. 67-124.
#5529	**Old Abbey Farm EAU 96/13**	Risley, nr Warrington	CHE	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. Assessment of biological remains from excavations at Old Abbey Farm, Risley, Cheshire (site code: OAF 95). Reports from the EAU, York 96/13. 12 pp.
#5530	**Old Abbey Farm EAU 98/23**	Risley, nr Warrington	CHE	Kenward H, Hughes P and Hall A. 1998. Technical report: Plant and invertebrate remains from fills of the moat at Old Abbey Farm, Risley, Cheshire (site code: OAF95). Reports from the Environmental Archaeology Unit, York 98/23, 35 pp. + 4 pp. appendix.
*5531	**Crossgate (rear) 95**	Durham City	DUR	Huntley J. 1999. Palaeoenvironmental analysis. 72-3. In: Williams A and Wood P. 1999. Excavations in Durham's Old Borough, 1995. Archaeol. Aeliana 5th Ser. 27. 45-74.
5544	**Old Durham 51**	Durham City	DUR	Chalkin K M. 1953. Appendix 1. Report on an organic deposit from the rubbish-pit. 124. In: Wright R P and Gillam J P. Third report on the Roman site at Old Durham. 116-26. Archaeol. Aeliana 4th Ser. 31. 116-26.
5545	**Old Durham Gardens 89-92**	Durham City	DUR	Huntley J P. 1994. Botanical report. 89. In: Allen A and Roberts M. Excavations at Old Durham Gardens, Durham City, 1989-92. Durham Archaeol. J. 10. 69-92.

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*5547	**Old Elvet (16-20) (Police Hostel)**	Durham City	DUR	Huntley J P. 1993. Durham Police Hostel - DPH92. The plant remains. Archive report.
*5552	**Old Gardham Field ASUD 725**	Cherry Burton, nr Beverley	EYR	[Cotton J.] 2000. Old Gardham Field, Cherry Burton, East Yorkshire, OGF00: plant macrofossil evaluation. ASUD Report 725. 5pp.
5554	**Old Hall (Hedon) EAU 96/22**	Fletchergate/Baxtergate, Hedon	EYR	Carrott J, Hall A, Issitt M, Jaques D and Large F. 1996. Evaluation of biological remains from Old Hall, Baxtergate, Hedon (sitecode HBX96). Reports from the EAU, York 96/22. 6 pp.
*5560	**Old Manor House 95 EAU 95/34**	Cottingham, nr Hull	EYR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Large F and Milles A. 1995. An evaluation of biological remains from excavations at the Old Manor House, Baynard Castle, Cottingham (site code COM95). Reports from the EAU, York 95/34. 8 pp.
5563	**Old Penrith 77 & 9**	nr Penrith	CUM	Alvey R C. 1982. Appendix 1. Carbonised grain from Feature 5, Area 3. 61-4. In: Poulter A. Old Penrith: excavations 1977-1979. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 82. 51-65.
*#5566	**Old Rectory Gardens ASUD 854**	Ingram, Breamish Valley	NHU	[Cotton J]. Old Rectory Gardens, Ingram, Northumberland (ORG01): plant macrofossil evaluation. ASUD Report 854.
*5567	**Old Rectory Gardens ASUD 875**	Ingram, Breamish Valley	NHU	[Cotton J]. 2001. Old Rectory Gardens, Ingram, Northumberland (ORG01): plant macrofossil analysis. ASUD Report 875.
5588	**Orchard Fields 92 EAU 93/19**	Malton	NYR	Dobney K, Hall A, Kenward H and Milles A. 1993. Biological remains from excavations at the Orchard Fields site, Malton (site code OF92). 1. Samples for biological analysis and an infant burial. Unpub. report prep. for Malton Archaeological Projects. [93/19]
*5620	**Osgodby Ln EAU 98/20**	Osgodby, Scarborough	NYR	Carrott J. 1998. Evaluation of biological remains from Osgodby Lane, Scarborough, North Yorkshire. Reports from the Environmental Archaeology Unit, York 98/20, 4 pp.

Site no.	Site	Location	Cty	Reference
5627	**The Outgang 96 EAU 96/37**	Driffield	EYR	Carrott J, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. Assessment of biological remains from The Outgang, Driffield (sitecode OGD96). Reports from the EAU, York 96/37.
*5647	**Oxbow**	Castleford/Leeds	WYL	Gaunt G D, Coope G R and Franks J W. 1970. Quaternary deposits at Oxbow opencast coal site in the Aire Valley, Yorkshire. Proc. Yorkshire Geol. Soc. 38, 175-200.
5656	**Paddock Hill (Octon) AML 14/93**	Thwing, nr Driffield	EYR	Carruthers W. 1993. Charred and mineralised plant macrofossils from Paddock Hill, Octon, Thwing, Yorkshire AML Report New Series 14/93.
*5657	**Painsthorpe Wold (J&H)**	Kirby Underdale, Malton/Pickering	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*5662	**Palace Green ASUD 758**	Berwick-upon-Tweed	NHU	[Cotton J.] 2001. Palace Green, Berwick, PGB01: plant macrofossil evaluation. ASUD Report 758. 8pp.
5665	**Palmer Ln 92 EAU 92/05**	York	YOR	Carrott J B, Dobney K M, Hall A R, Kenward H K, Milles A and Nicholson R. 1992. Evaluation of biological remains from boreholes at Palmer Lane, York (YAT/Yorkshire Museum code 1992.3). Unpub. report prep. for York Archaeol. Trust. [92/5]
5676	**Papcastle AML 76/88**	nr Cockermouth	CUM	Huntley J P. 1988. Plant remains from Papacastle Cumbria. AML Report New Series 76/88.
*5684	**Park Grange Farm EAU 91/35**	Beverley	EYR	Alldritt D M, Carrott J B, Hall A R and Kenward H K. 1991. Plant and invertebrate animal remains from Park Grange Farm, Long Lane, Beverley, N. Humberside. Unpub. report prep. for Humberside Archaeol. Unit [91/35]
5685	**Park House DEAR 8/95**	Garforth, nr Leeds	WYL	Huntley J P. 1995. M1-A1 Link Road at Park House, nr. Garforth: PH95. An assessment of the plant remains. Durham Environmental Archaeology Report 8/95.

Site no.	Site	Location	Cty	Reference
5695	**Park View DEAR 20/94**	Chester-le-Street	DUR	Huntley J P. 1994. Chester-le-Street: Park View. The plant remains. Durham Environmental Archaeology Report 20/94.
*#5696	**Park View School ASUD 734**	Church Chare, Chester-le-Street	DUR	[Cotton J.] 2000. Park View School, Chester-le-Street, PV00: plant macrofossil evaluation. ASUD Report 734. 5pp.
5697	**Park View School ASUD 794**	Church Chare, Chester-le-Street	DUR	[Cotton J.] 2001. Park View School, Chester-le-Street, PV00: plant macrofossil analysis. ASUD Report 794. 7pp.
5701	**Parliament St (4-7) EAU 2000/22**	York (Littlewoods Store)	YOR	Hall, A. and Kenward, H. 2000. Technical Report: Plant and invertebrate remains from Anglo-Scandinavian deposits at 4-7 Parliament Street (Littlewoods Store), York (site code 99.946). Reports from the EAU, York 2000/22. 31pp.
5702	**Parliament St (44-5) 94 EAU 95/08**	York	YOR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Johnstone C, Kenward H and Milles A. 1995. An evaluation of biological remains from excavations at 44-45 Parliament Street, York (site code: 1994.3210). Reports from the EAU, York 95/8. 11 pp.
5705	**Parlington Hollins (A1-M1) 92-8**	nr Garforth	WYL	Young R and Richardson J (with Huntley J). 2001. The charred plant remains. 221 and 223. In: Roberts I, Burgess A and Berg D. (eds). 2001. A new link to the past: the archaeological landscape of the M1-A1 link road. Yorkshire Archaeology 7. Leeds: West Yorkshire Archaeology Service on behalf of West Yorkshire Joint Services.
5715	**Pavement (6-8) 72**	York (Lloyds Bank site)	YOR	Hall A R, Kenward H K, Williams D and Greig J R A. 1983. Environment and living conditions at two Anglo-Scandinavian sites. The Archaeology of York 14(4). London: CBA. 157-240 and fiche 1.
#5716	**Pavement (6-8) 72 (preliminary)**	York (Lloyds Bank site)	YOR	Buckland P C, Greig, J R A and Kenward H K. 1974. York: an early medieval site. Antiquity 48, 25-33.
*#5728	**Peel 92**	Lytham	LAN	Huckerby E and Wells C. 1993. A summary of palaeoecological work at Peel, Lytham, Lancashire. North West Wetlands Survey Annual Report 1993. 23-7.

Site no.	Site	Location	Cty	Reference
5735	**Peel Gap AML 114/89**	nr Vindolanda (Hadrian's Wall)	NHU	Huntley J P. 1989. Plant remains from Peel Gap, Northumberland. AML Report New Series 114/89.
*5736	**Peel NWWS 3**	Lytham Moss, nr Lytham St Anne's	LAN	Middleton R, Wells C E and Huckerby E. 1995. The wetlands of North Lancashire. North West Wetlands Survey 3. Lancaster Imprints 4.
*5738	**Pegswood Moor Farm ASUD 686**	nr Morpeth	NHU	[Cotton J.] 2000. Pegswood Moor Farm, Morpeth, Northumberland (PMF 00): plant macrofossil and charcoal assessment. ASUD Report 686. 5pp.
*5739	**Pegswood Village ASUD 925**	nr Morpeth	NHU	[Cotton J.] 2002. Pegswood Village, Northumberland, PBE02: plant macrofossil assessment. ASUD Report 925. 3pp.
*5758	**Penrith EAU 96/46**	Penrith	CUM	Hall A and Large F. 1996. Assessment of biological remains from excavations at a site at Penrith (site code: SIS96). Reports from the EAU, York 96/46.
5786	**Piccadilly (17-21) EAU 91/01**	York (Reynard's Garage site)	YOR	Alldritt D M, Carrott J B, Hall A R and Kenward H K. 1991. Environmental evidence from 17-21 Piccadilly (Reynard's Garage) (YAT/Yorkshire Museum sitecode 1990-1.29). Unpub. report prep. for York Archaeol. Trust. [91/1]
5787	**Piccadilly (22) 87 EAU 95/53**	York	YOR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H, Large F, Milles A and Shaw T. 1995. Assessment of biological remains from excavations at 22 Piccadilly (ABC Cinema), York (YAT/Yorkshire Museum sitecode 1987.21). Reports from the EAU, York 95/53. 65 pp.
5788	**Piccadilly (38) EAU 92/09**	York	YOR	Carrott J B, Dobney K M, Hall A R, Kenward H K and Milles A. 1992. An evaluation of environmental evidence from excavations at 38 Piccadilly, York (YAT/Yorkshire Museum site code: 1992.4). Unpub. report prep. for York Archaeol. Trust. [92/9]

Site no.	Site	Location	Cty	Reference
5789	**Piccadilly (41) EAU 92/20**	York (Jewson's site)	YOR	Dobney, K. and Hall, A. 1992. An evaluation of biological remains from excavations at 41 Piccadilly, York (YAT/Yorkshire Museum site code 1992.18). Unpub. report prep. for York Archaeol. Trust. [92/20]
5790	**Piccadilly (41) EAU 99/45**	York	YOR	Large F, Hall A, Johnstone C, Worthy D and Carrott J. 1999. Assessment of biological remains from 41 Piccadilly, York (sitecode: 1998.15). Reports from the Environmental Archaeology Unit, York 99/45, 11 pp.
5791	**Piccadilly (50) EAU 92/08**	York	YOR	Carrott J B, Dobney K M, Hall A R, Kenward H K and Milles A. 1992. An evaluation of environmental evidence from excavations at 50 Piccadilly, York (YAT/Yorkshire Museum site code: 1992.10). Unpub. report prep. for York Archaeol. Trust. [92/8]
5792	**Piccadilly (58-60) EAU 2000/23**	York	YOR	Carrott J, Hall A, Jaques D, Kenward H and Rowland S. 2000. Evaluation of biological remains from an excavation at The Ryedale Building, 58-60 Piccadilly, York (site code: YORYM2000.252). Reprots from the EAU, York 2000/23, 9 pp.
5793	**Piccadilly (84) EAU 91/16**	York (Fiat Garage site)	YOR	Carrott J B, Hall A R, Kenward H K and Milles A. 1991. An evaluation of biological evidence from excavations at the Fiat Garage site, 84 Piccadilly, York (YAT site code 1991.16). Unpub. report prep. for York Archaeol. Trust. [91/16]
*5794	**Piccadilly (90) EAU 98/40**	York	YOR	Large F, Hall A, Kenward H, Worthy D and Carrott J. 1998. Evaluation of biological remains from 90 Piccadilly, York (sitecode: 1998.706). Reports from the EAU, York 98/40. 3 pp.
5814	**Pipewellgate ASUD 735**	Gateshead	TWG	[Cotton J.] 2000. Gateshead Sewer Scheme, GSS98: plant macrofossil analysis. ASUD Report 735. 12pp.
*#5815	**Pipewellgate DEAR 2/99**	Gateshead	TWG	Huntley J P. 1999. Gateshead Sewer Scheme: GSS98 evaluation of environmental samples from medieval and post-medieval deposits. Durham Environmental Archaeology Report 2/99.

Site no.	Site	Location	Cty	Reference
*5821	**Pits Plantation DEAR 3/96**	Rudston, nr Bridlington	EYR	Huntley J P. 1996. Pits Plantation, Rudston: PPR965. An assessment of the environmental samples. Durham Environmental Archaeology Report 3/96.
5839	**Pontefract Castle 82-6**	Pontefract	WYW	Bastow M. 2002. The botanical remains. 394-6. In: Roberts I. 2002. Pontefract Castle. Archaeological excavations 1982-86. Yorkshire Archaeology 8. West Yorkshire Archaeology Service. Wakefield. Morris C A [and Tyers I]. 2002. Objects of wood. 320-3. In: Roberts I. 2002. Pontefract Castle. Archaeological excavations 1982-86. Yorkshire Archaeology 8. West Yorkshire Archaeology Service. Wakefield.
*#5854	**Poplar Farm EAU 2000/63**	Beverley/Cottingham	EYR	Jaques D, Hall A, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at Poplar Farm, Dunswell (site code: TSEP 905). Reports from the Environmental Archaeology Unit, York 2000/63, 5 pp.
*5855	**Poplar Farm EAU 2002/07**	Beverley/Cottingham	EYR	Jaques D, Hall A, Rowland S and Carrott J. 2002. Technical Report: Biological remains from a site at Poplar Farm, Dunswell, East Riding of Yorkshire (site code: TSEP 905). Reports from the Environmental Archaeology Unit, York 2002/07. 10pp.
*5893	**Post Office (Hull) ASUD 828**	Hull	KUH	[Cotton J.] 2001. The former Post Office, Alfred Gelder Street, Hull, POH01: plant macrofossil evaluation. ASUD Report 828. 5pp.
*5897	**Pottergate (Alnwick) ASUD 868**	Alnwick	NHU	[Cotton J.] 2001. Pottergate, Alnwick, Northumberland (POT01): plant macrofossil assessment. ASUD Report 868. 5pp.
5898	**Pottergate (Alnwick) ASUD 922**	Alnwick	NHU	[Cotton J.] 2002. Pottergate, Alnwick, Northumberland, POT02: plant macrofossil assessment. ASUD Report 922. 8pp.
5933	**Presto Supermarket EAU 2001/13**	George Hudson St, York	YOR	Hall A, Rowland S, Kenward H, Jaques D and Carrott J. 2001. Evaluation of biological remains from excavations at the site of the former Presto supermarket, York (site code: 2000.624). Reports from the Environmental Archaeology Unit, York 2001/13, 9 pp.

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*5941	**Princess St 81 AML 3980**	Chester	CHE	Macphail R I and Macphail G M. 1983. Botanical report on 'Dark Earth' from Princess Street, Chester. AML Report OS 3980.
5950	**Prudhoe Castle AML 3924**	Prudhoe, nr Newcastle	NHU	Vaughan D. 1983. Plant remains from Prudhoe Castle. AML Report OS 3924.
*5957	**Pudding Chare 2000 ASUD 744**	Newcastle	TWN	[Cotton J]. 2001. Pudding Chare, Newcastle upon Tyne (PC00) plant macrofossil assessment. ASUD Report 744.
5973	**Quarry Farm 2000 ASUD 660**	Ingleby Barwick, nr Middlesbrough	CVM	[Cotton J]. Quarry Farm - QF00: plant macrofossil evaluation. ASUD Report 660.
5974	**Quay St (22A) EAU 96/35**	Scarborough	NYR	Hall A, Issitt M, Jaques D and Large F. 1996. Evaluation of biological remains from 22A Quay Street, Scarborough (sitecode QS96). Reports from the EAU, York 96/35.
*5975	**Quayside (Newcastle) AML 4155**	Newcastle	TWN	van der Veen M. 1984. Plant remains from Newcastle Quayside. AML Report OS 4155.
5982	**Queen St (Hull) 76**	Hull	KUH	McKenna W J B. 1993. The plant macrofossils from Queen Street. 198-201 and Fiche M2/B9-C1, C4 [Prunus stone measurements]. In: Evans D H (ed). Excavations in Hull 1975-76. East Riding Archaeol. 4. Hull Old Town Rep. Ser. 2.
*#5983	**Queen St (Hull) EAU 84/17**	Hull	KUH	McKenna, W. J. B. 1984. Excavations in Hull 1975-6: Queen Street. The plant macrofossils. Prep. for Humberside Archaeol. Unit. [84/17]
5986	**Queen St (Newcastle) 84-5**	Newcastle	TWN	Nicholson R and Hall A R. 1988. The plant remains. 112-19. In: O'Brien C, Brown L, Dixon S and Nicholson R. The origins of the Newcastle Quayside. Excavations at Queen Street and Dog Bank. Society of Antiquaries of Newcastle upon Tyne Monograph Series 3.
*#5987	**Queen St (Newcastle) 84-5 AML 45/86**	Newcastle	TWN	Hall A R and Nicholson R. 1986. The plant remains from excavations at Queen Street, Newcastle upon Tyne, 1984-85. AML Report New Series 45/86.

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5991	**Queen St (Scarborough)**	Scarborough	NYR	Hall A, Issitt, M and Large F. 1996. App. 1. Evaluation of biological remains from excavations at The Former Convent School, Queen Street, Scarborough (site code: STS96). 12-13. In: Pearson T. An archaeological excavation at the former Convent School, Queen Street, Scarborough. Scarborough Arch. Hist. Soc. Interim Rep. 24. 1-13.
*#5992	**Queen St (Scarborough) EAU 96/54**	Scarborough	NYR	Hall A, Issitt M and Large F. 1996. Evaluation of biological remains from excavations at the former Convent School, Queen Street, Scarborough (site code: STS96). Reports from the EAU, York 96/54.
6000	**Micklegate (1-9) 88-9 EAU 93/22**	York (Queen's Hotel site)	YOR	Dobney K, Hall A, Kenward H and O'Connor T. 1993. Assessment of samples for biological analysis and of bone from excavations at the Queen's Hotel site, York (sitecode 1988-9.17). Unpub. report prep. for York Archaeol. Trust. [93/22]
6001	**Micklegate (1-9) 88-9 EAU 2000/14**	York (Queen's Hotel site)	YOR	Kenward H and Hall A. 2000. Technical Report: Plant and invertebrate remains from Anglo-Scandinavian deposits at the Queen's Hotel site, 1-9 Micklegate, York (site code 88-9.17). Reports from the EAU, York 2000/14, 80 pp.
*6003	**Micklegate (1-9) 88-9 EAU 90/21**	York (Queen's Hotel site)	YOR	O'Connor T P. 1990. An assessment of residues of bulk-sieved samples from the Queen's Hotel site (1988-9.17). Unpub. report prep. for York Archaeol. Trust. [90/21]
6013	**RAF Catterick 94 EAU 94/41**	Catterick	NYR	Carrott J, Dobney K, Hall A, Issitt M, Kenward H and Large F. 1994. Assessment of biological remains from excavations at RAF Catterick, North Yorkshire (sitecode: CAT94). Reports from the EAU, York 94/41. 9 pp.

Site no.	Site	Location	Cty	Reference
*6024	**Railway Station (York) EAU 99/29**	York	YOR	Carrott J, Jaques D, Large F and Worthy D. 1999. Evaluation of biological remains from York Railway Station (sitecode: YRS). Reports from the Environmental Archaeology Unit, York 99/29, 5 pp.
*6048	**Ravenglass 76 AML 2269**	Whitehaven/Millom	CUM	Donaldson A. 1977. Ravenglass 1976. Botanical report on a Roman rubbish pit. AML Report OS 2269.
6050	**Ravensdowne Barracks ASUD 682**	Berwick-upon-Tweed	NHU	[Cotton J]. 2000. Berwick-upon-Tweed untreated discharges 1998-1999 (BUT98): plant macrofossil and pollen assessment and analysis. ASUD Report 682.
6056	**Rawcliffe Manor 92 EAU 92/11**	nr York	YOR	Carrott J B, Dobney K M, Hall A R, Kenward H K and Milles A. 1992. Environmental evidence from a second trial excavation at Rawcliffe Manor, Manor Lane, Rawcliffe, York (Y.A.T./Yorkshire Museum sitecode: 1992.5007). Unpub. report prep. for York Archaeol. Trust. [92/11]
6057	**Rawcliffe Manor 92 EAU 92/16**	nr York	YOR	Dainton M, Frost J, Hall A R and Kenward H K. 1992. Environmental evidence from Rawcliffe Manor, Manor Lane, Rawcliffe, York (YAT/Yorkshire Museum sitecode: 1992.5007). Unpub. report prep. for York Archaeol. Trust. [92/16]
6058	**Rawcliffe Manor EAU 94/08**	nr York	YOR	Dobney K, Hall A, Issitt M, Kenward H, Large F, Lancaster S and Milles A. 1994. Assessment of biological remains from excavations at Rawcliffe Manor, near York (Phase 6, YAT/Yorkshire Museum sitecode 93.5007). Reports from the EAU, York 94/8. 5 pp.
6059	**Rawcliffe Moor EAU 96/27**	nr York	YOR	Carrott J, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. Assessment of biological remains from excavations at Stockton West Moor and Rawcliffe Moor, York (site codes: YORYM 96.390 and 96.391). Reports from the EAU, York 96/27.

Site no.	Site	Location	Cty	Reference
*6060	**Rawcliffe Moss NWWS 3**	Over Wyre, Fylde	LAN	Middleton R, Wells C E and Huckerby E. 1995. The wetlands of North Lancashire. North West Wetlands Survey 3. Lancaster Imprints 4.
*6074	**Rectory Ln EAU 96/50**	Beeford, Driffield/Skipsea	EYR	Carrott J, Hall A, Issitt M, Jaques D and Large F. 1996. An evaluation of biological remains from excavations at Rectory Lane, Beeford (site code: RLB96). Reports from the EAU, York 96/50. 4pp. + 1p Appendix.
*6083	**Red House Park Sewer Requisition ASUD 796**	Adwick-le-Street, nr Doncaster	SYD	[Cotton J.] 2001. Red House Park Sewer Requisition, Adwick-le-Street near Doncaster, RSS01: plant macrofossil evaluation. ASUD Report 796. 4pp.
*6097	**Redmires EAU 2000/05**	nr Sheffield	SYS	Carrott, J. 2000. Redmires abandonment: brief notes on biological remains from one sample. Reports from the Environmental Archaeology Unit, York 2000/05, 1 p.
6102	**Rest Park 63**	Sherburn in Elmet/Selby	NYR	Holliday R. 1973. Basket with contents [Linum usitatissimum] from S. arm of inner moat. 95. In: Le Patourel H E J. The moated sites of Yorkshire. Medieval Archaeol. Monograph Series 5.
6109	**Ribblehead AML 2398**	nr Chapel le Dale	NYR	Donaldson A. 1977. Charcoal from the kitchen of a C9 farmstead at Ribblehead, N Yorks. AML Report OS 2398.
6111	**Ribchester 80, 89-90**	Preston/Clitheroe	LAN	Huntley, J. 2000. Plant remains. 349-59. In: Buxton, K. and Howard-Davis, C. 2000. Bremetanacum. Excavations at Roman Ribchester 1980, 1989-1990. Lancaster Imprints Series 9. Lancaster.
6119	**Ribchester Museum Extn/Granaries OAN**	Preston/Clitheroe	LAN	Huckerby E and Howard-Davis C. 2002. Ribchester Museum Extension and Granary. Palaeoenvironmental and finds assessment. Oxford Archaeology (North) Report.
6122	**Richardsons Depot DEAR 10/97**	Catterick	NYR	Huntley J P. 1997. Richardson's Depot, Catterick: RD97. The charred plant remains. Durham Environmental Archaeology Report 10/97.

Site no.	Site	Location	Cty	Reference
6125	**Richmond Castle ASUD 663**	Richmond	NYR	[Cotton J.] 2002. Richmond Castle environmental samples RCB99: plant macrofossil assessment. ASUD Report 663.
6128	**Rickerby House HA**	Rickerby, nr Carlisle	CUM	Hastie M. 5. Environmental samples. 11-14 [and Appendix 5, 64-5]. In: Masser P. 2002. Archaeological excavations at Rickerby House, Carlisle. Post-excavation assessment report. [Report from Headland Archaeology] 65pp.
6142	**Ripon Quarry 98**	Ripon Race Course	NYR	Howard A J, Keen D H, Mighall T M, Field M H, Coope G R, Griffiths H I and Macklin M G. 2000. Early Holocene environments of the River Ure near Ripon, North Yorkshire, UK. Proc. Yorkshire Geol. Soc. 53(1), 31-42.
*6159	**River Skerne DEAR 7/95**	Darlington	DUR	Huntley J P and Gidney L J. 1995. River Skerne Restoration Project, Darlington: HLS95. The plant and animal remains. Durham Environmental Archaeology Report 7/95.
6171	**Rock Castle 87**	Gilling West, nr Richmond	NYR	van der Veen, M. 1994. The plant remains. 31-9. In: Fitts R L, Haselgrove C C, Lowther P C and Turnbull P. An Iron Age farmstead at Rock Castle, Gilling West, North Yorkshire. Durham Archaeol. J. 10. 13-42.
*#6172	**Rock Castle 87 (CHR)**	Gilling West, nr Richmond	NYR	van der Veen, M. 1992. Crop Husbandry Regimes. An archaeobotanical study of farming in northern England 1000 BC - AD 500. Sheffield Archaeol. Monographs 3. Sheffield.
6187	**Roman Ridge Rd 98 HA**	Micklefield/Aberford	WYL	Holden T. 1998. Assessment of the samples from Roman Ridge Road, Yorkshire (RRR98). [Report from Headland Archaeology] 1p.
6209	**Rosedale 68-71**	Rosedale, NYM	NYR	Merton L F H. 1972. Appendix 1. Samples of wood and charcoal. 158. In: Crossley D W and Aberg F A. Sixteenth-century glass-making in Yorkshire: excavations at furnaces at Hutton and Rosedale, North Riding, 1968-1971. Post-Medieval Archaeol. 6. 107-59.

Site no.	Site	Location	Cty	Reference
6210	**Rosedale West 74-7**	Rosedale, NYM	NYR	Hillam J. 1988. Appendix 8. Identification of charcoal from Rosedale, North Yorkshire. 134-5. In: Hayes R H. North-East Yorkshire Studies: Archaeological Papers by Raymond H Hayes, MBE, FSA. (ed. P R Wilson). Leeds: Yorkshire Archaeol. Society, Roman Antiquities Section.
6211	**Rosemary Pl 94 EAU 94/47**	York	YOR	Carrott J, Hall A, Issitt M, Kenward H and Large F. 1994. An evaluation of biological remains from a trial borehole at Rosemary Place, York (sitecode RP94). Reports from the EAU, York 94/47. 3 pp.
6224	**Rougier St (5) 81**	York	YOR	Hall A R and Kenward H K. 1990. Environmental evidence from the Colonia: General Accident and Rougier Street. The Archaeology of York 14(6). London: CBA. 289-434 and fiche 1-9.
*#6228	**Rougier St (5) AML 57/89**	York	YOR	Tomlinson P R. 1989. Plant remains from excavations at 5 Rougier Street, York. AML Report New Series 57/89.
*6248	**Royal Chase EAU 98/04**	Dringhouses, York	YOR	Carrott J, Hall A, Hughes P, Jaques D, Johnstone C and Worthy D. 1998. An evaluation of biological remains from excavations at Royal Chase, Tadcaster Road, Dringhouses, York (site code: 1997.186). Reports from the EAU, York 98/4. 5pp.
*6256	**Rudston (J&H)**	nr Bridlington	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
6260	**Rudston Villa**	nr Bridlington	EYR	Greig J R A. 1980. Seeds from the well. 169-71]. In: Stead I M. 1980. Rudston Roman Villa. Yorkshire Archaeol. Soc. (Leeds)
*6262	**Rudston Villa AML 1769**	nr Bridlington	EYR	[Paradine P J and Arthur J R B. 1975. Identification of seeds from Rudston Villa.] AML Report OS 1769.
*6264	**Rudston Well AML 1882**	nr Bridlington	EYR	Keepax C A. 1975. [Identification of wood from Rudston Well.] AML Report OS 1882.

Site no.	Site	Location	Cty	Reference
*#6265	**Rudston Well AML 2221**	nr Bridlington	EYR	Greig J R A. 1977. Rudston Well seed report. AML Report OS 2221.
6272	**Runner End DEAR 54/98**	Holme-on-Spalding-Moor	EYR	Huntley, J.P. 1998. Runner End, Holme upon Spalding Moor, East Yorkshire: RND98. An evaluation of the environmental samples. Durham Environmental Archaeology Report 54/98.
6301	**Sadberge DEAR 14/93**	Darlington/Stockton on Tees	CVS	Huntley J P. 1993. An assessment of environmental samples from Sadberge, Cleveland: SAD93. Durham Environmental Archaeology Report 14/93.
6302	**Saddler St (61-3) 74**	Durham City	DUR	Donaldson A. 1979. Plant life and plant use. 55-60. In: Carver M. Three Saxo-Norman tenements in Durham City. Medieval Archaeol. 23. 1-80.
*6309	**Saltburn DEAR 1/95**	Saltburn-by-the-Sea	CVR	Huntley J P. 1995. Saltburn Bathing Waters Project: An assessment of the environmental samples. Durham Environmental Archaeology Report 1/95.
6316	**Saltshouse Rd 91 EAU 91/26**	Hull	KUH	Hall, A. R. and Kenward, H. K. 1991. Report on a sample of peat from excavations at Saltshouse Road, Hull, 1991. Unpub. report prep. for Humberside Archaeol. Unit. [91/26]
6317	**Saltwick EAU 92/25**	nr Whitby	NYR	Hall, A. R. and Kenward, H. K. 1992. Plant and invertebrate remains from a cistern on the foreshore at Saltwick, N. Yorkshire. Unpub. report prep. for Gary Marshall, National Trust. [92/25]
6319	**Sammys Point EAU 97/21**	Hull	KUH	Carrott J, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1997. Evaluation of biological remains from Sammy's Point, Hull (site code: SPH97). Reports from the EAU, York 97/21. 7 pp.
6320	**Sammys Point EAU 98/25**	Hull	KUH	Carrott J, Hall A, Hughes P, Jaques D, Johnstone C, Kenward H and Worthy D. 1998. Assessment of biological remains from Sammy's Point, Hull (site code SPH98). Reports from the EAU, York 98/25. 20 pp.

Site no.	Site	Location	Cty	Reference
6325	**Sancton (Saxon Cemetery) 76-80**	nr Market Weighton	EYR	Green F J. 1994. Plant impressions in the Saxon pottery. 268-9. In: Timby J. Sancton 1 Anglo-Saxon cemetery. Excavations carried out between 1976 and 1980. Archaeol. J. 150 (for 1993). 243-365.
6329	**Sandal Castle 64-73**	Wakefield	WYW	Rees A and Bartley D. 1983. Plant remains in peat in the outer moat. 350-2. In: Mayes P and Butler L. Sandal Castle Excavations 1964-73. Wakefield Historical Publications. Smith M J, Hooper A P and Bartley D. 1983. An investigation of the garderobe deposits. 354-5. In: Mayes P and Butler L. Sandal Castle Excavations 1964-73. Wakefield Historical Publications.
*6336	**Sandy Lees Farm ASUD 651**	Elton, nr Stockton-on-Tees	CVS	[Cotton J.] 2000. Plant macrofossil evaluations for Wolviston, Haugh Hill: WHH99 and Elton, Sandy Lees Farm: ESL99. ASUD Report 651. 8pp.
*6338	**Sankey Brook OAN**	nr Warrington	CHE	Elsworth D and Huckerby E. 2002. M62 new junction 8 and Junctions 8 to 9 widening, Cheshire. Oxford Archaeology (North) Report.
6348	**Scale Ln/Lowgate 74**	Hull	KUH	Underdown S. 1980. The plant remains. 86-90. In: Armstrong P. 1980. Excavations in Scale Lane/Lowgate 1974. East Riding Archaeol. 6. Hull Old Town Rep. Ser. 4.
6368	**Scollands Hall (Richmond Castle) ASUD 829**	Richmond	NYR	[Cotton J.] 2001. Scolland's Hall, Richmond Castle, Richmond, North Yorkshire, CRC01 (b): plant macrofossil evaluation. ASUD Report 829. 3pp.
6370	**Scorton Quarry 96 HA**	nr Catterick	NYR	Hastie M. 2001. Carbonised plant remains from Scorton Quarry, near Catterick, North Yorkshire. [Report from Headland Archaeology]
6371	**Scorton Quarry DEAR 32/96**	nr Catterick	NYR	Huntley J P. 1996. Scorton Quarry, near Catterick: SC96. Assessment of the environmental samples. Durham Environmental Archaeology Report 32/96.

Site no.	Site	Location	Cty	Reference
6372	**Scotch Corner 95**	nr Richmond	NYR	Huntley J P. 1995. The carbonised plant remains. 16-18. In: Abramson P. A late Iron Age settlement at Scotch Corner, North Yorkshire. Durham Archaeol. J. 11. 7-18.
*#6373	**Scotch Corner 95 DEAR 12/95**	nr Richmond	NYR	Huntley J P. 1995. Scotch Corner: SC95. An evaluation and assessment of the environmental samples. Durham Environmental Archaeology Report 12/95.
6375	**Scotch St (Carlisle) AML 2387**	Carlisle	CUM	Donaldson A. 1977. Botanical report on material from Carlisle, Vasey's excavations 1976. AML Report OS 2387.
*6396	**Seaham Headland DEAR 24/95**	Seaham	DUR	Huntley J P. 1995. Seaham Headland: SHP95: an evaluation of the environmental samples. Durham Environmental Archaeology Report 24/95.
*6407	**Seathwaite Valley 93**	Upper Borrowdale, Lake District	CUM	Panter I. 2001. Artefacts and ecofacts. 61. In: Wild C, Wells C, Anderson D, Boardman J and Parker A. 2001. Evidence for medieval clearance in the Seathwaite Valley, Cumbria. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 1 (3rd ser). 53-68.
6416	**Selby (town centre) 93 EAU 93/08**	Selby	NYR	Carrott J, Dobney K, Hall A, Jaques D, Kenward H, Large F and Milles A. 1993. An evaluation of biological remains from excavations on land to the rear of Gowthorpe, Finkle Street and Micklegate in Selby town centre (site code Selby 1993) Unpub. report prep. for MAP Archaeological Consultancy Ltd. [93/8]
6419	**Selby boreholes 92 EAU 92/07**	Selby	NYR	Carrott J B, Hall A R, Kenward H K and Milles A. 1992. An evaluation of the bioarchaeological value of some deposits from borehole investigations in Selby, North Yorkshire (YAT/Yorkshire Museum site code 92.5003). Unpub. report prep. for York Archaeol. Trust. [92/7]
6420	**Selby watermain DEAR 33/97**	Selby	NYR	Huntley, J.P. 1997. Selby, N. Yorkshire: 1995-6 watermain. Assessment of the plant remains. Durham Environmental Archaeology Report 33/97.

Site no.	Site	Location	Cty	Reference
6429	**Sewer Ln 74**	Hull	KUH	Williams D. 1977. The plant macrofossil contents of medieval pits at Sewer Lane, Hull. 18-32. In: Armstrong P. 1977. Excavations in Sewer Lane, Hull 1974. East Riding Archaeol. 3. Hull Old Town Rep. Ser. 1. [Armstrong P.]. 1977. Wood. 68-70. In: Armstrong P. 1977. Excavations in Sewer Lane, Hull 1974. East Riding Archaeol. 3. Hull Old Town Rep. Ser. 1.
*6433	**Sewerby AML 2601**	nr Bridlington	EYR	Keepax C A. 1978. Organic materials preserved by proximity to metal artifacts: Sewerby. AML Report OS 2601.
*6434	**Sewerby AML 2866**	nr Bridlington	EYR	Keepax C A. 1979. Sewerby replaced organic. AML Report OS 2866.
*6435	**Sewerby AML 3648**	nr Bridlington	EYR	Watson J. 1982. Organic material/metal finds from Sewerby. AML Report OS 3648.
6437	**Sewingshields AML 4545**	Hadrian's Wall	NHU	Watson J. 1985. Identification of mineral preserved wood asssociated with metal objects from Sewing Shields, Northumberland. AML Report OS 4545.
6445	**Shafton by-pass/Engine Ln WYAS 903**	Shafton, nr Barnsley	SYB	[Richardson J]. 2001. 6. Environmental record. In: Martin L. 2001. Shafton by-pass/Engine Lane improvement, Shafton, South Yorkshire. West Yorkshire Archaeological Service Report 903.
6487	**Sherburn 99 EAU 2000/06**	Malton/Scarborough	NYR	Johnstone C, Carrott J, Hall A and Kenward H. 2000. Notes on the biological remains from Sherburn, North Yorkshire (site code 99EV08). Reports from the Environmental Archaeology Unit, York 2000/06, 2 pp.
6492	**Shields Rd 2001 ASUD 786**	Byker, Newcastle	TWN	[Cotton J]. 2001. Shields Road, Byker, SR01: plant macrofossil and microfossil evaluation. ASUD Report 786.

Site no.	Site	Location	Cty	Reference
*6493	**Ship Inn (rear) EAU 97/40**	73 High St; West Cowick, nr Snaith	EYR	Hall A, Issitt M and Large F. 1997. Evaluation of biological remains from excavations at West Cowick, East Yorkshire (site code: 1997.48). Reports from the EAU, York 97/40. 3 pp.
6494	**Ship Inn (rear) EAU 99/18**	West Cowick, nr Snaith	EYR	Johnstone C, Hall A, Worthy D and Carrott J. 1999. Evaluation of biological remains from West Cowick, East Riding of Yorkshire (sitecode: 1998.88). Reports from the EAU, York 99/18. 9pp. + 1p. appendix.
*6522	**Sike Spa ASUD 710**	nr Crayke	NYR	[Cotton J.] 2000. Sike Spa, Crayke, North Yorkshire, SSC00: plant macrofossil evaluation. ASUD Report 710. 7pp.
*#6523	**Sike Spa ASUD 754**	nr Crayke	NYR	[Cotton J.] 2001. BP Chemicals Teesside to Saltend Ethylene Pipeline (TSEP) Site 718: Sike Spa, Crayke, Easingwold, North Yorkshire (SSC00): plant macrofossil assessment. ASUD Report 754. 3pp.
6560	**Simy Folds AML 2397**	Holwick, nr Middleton-in-Teesdale	DUR	Donaldson A. 1977. Botanical report on material from Simy Folds, Upper Teesdale. AML Report OS 2397.
6576	**Skeldergate (14) EAU 91/06**	York	YOR	Allison E P, Carrott J B, Hall A R and Kenward H K. 1991. Environmental evidence from 14 Skeldergate (YAT/Yorkshire Museum sitecode: 1991.14). Unpub. report prep. for York Archaeol. Trust. [91/6]
*6577	**Skeldergate (17-19) ASUD 718**	York	YOR	[Cotton J.] 2000. Skeldergate, York, SY00: plant macrofossil evaluation. ASUD Report 718. 6pp.
6578	**Skeldergate (26-34) EAU 91/10**	York	YOR	Carrott J, Hall A R and Kenward H K. 1991. Environmental evidence from 26-34 Skeldergate (YAT/Yorkshire Museum sitecode 1991.1). Unpub. report prep. for York Archaeol. Trust. [91/10]

Site no.	Site	Location	Cty	Reference
6579	**Skeldergate (47-51) EAU 96/18**	York	YOR	Carrott J, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. Evaluation of biological remains from excavations at 47-51 Skeldergate, York (site codes: 1995.3017 and 1995.435). Reports from the EAU, York 96/18. 6 pp.
6581	**Skeldergate (58-9) 73-5 AML 61/89**	York	YOR	Tomlinson P R. 1989. Plant remains from excavations at 58-9 Skeldergate (Bishophill I), York. AML Report New Series 61/89.
*#6583	**Skeldergate (58-9) 73-5 EAU 89/20**	York	YOR	Tomlinson, P. R. 1989. Plant remains from excavations at 58-9 Skeldergate (Bishophill I), York. Prep. for York Archaeol. Trust and Ancient Monuments Laboratory. [89/20]
6585	**Skeldergate (58-9) 73-5 (bucket)**	York	YOR	Williams D. 1978. A note on the silver fir, Abies alba Mill., bucket from Skeldergate. 48-50. In: MacGregor A. 1978. Finds from three sites in the Roman Colonia. The Archaeology of York 17(2). London: CBA.
6587	**Skeldergate (58-9) 73-5 (buried soil)**	York	YOR	Hall A R, Kenward H K and Williams D. 1980. Environmental evidence from Roman deposits in Skeldergate. The Archaeology of York 14(3). London: CBA. 101-56.
6588	**Skeldergate (58-9) 73-5 (well fills)**	York	YOR	Hall A R, Kenward H K and Williams D. 1980. Environmental evidence from Roman deposits in Skeldergate. The Archaeology of York 14(3). London: CBA. 101-56.
6594	**Skellgarths EAU 2001/24**	Ripon	NYR	Rowland S, Kenward H, Jaques D, Hall A and Carrott J. 2001. Evaluation of biological remains from excavations at Skellgarths, Ripon, North Yorkshire (site code: HARGM 10426). Reports from the Environmental Archaeology Unit, York 2001/24, 8pp.
*6596	**Skerne Bridge DEAR 25/95**	Darlington (railway bridge over river)	DUR	Huntley J P. 1995. Skerne Bridge Restoration: an evaluation of the environmental sample. Durham Environmental Archaeology Report 25/95.

Site no.	Site	Location	Cty	Reference
*6599	**Skeugh Farm ASUD 711**	Mill Ln, Stillington	NYR	[Cotton J.] 2000. Skeugh Farm, Stillington, North Yorkshire, SFS00: plant macrofossil, faunal and charcoal evaluation. ASUD Report 711. 7pp.
6604	**Skipsea Withow Mere (a)**	nr Skipsea, nr Hornsea	EYR	Gilbertson D D. 1984. Early Neolithic utilisation and management of alder carr at Skipsea Witthow [sic] Mere, Holderness. Yorkshire Archaeol. J. 56. 17-22.
6605	**Skipsea Withow Mere (b)**	nr Skipsea, nr Hornsea	EYR	Hall A R. 1984. Flandrian plant macrofossils from Skipsea Withow Mere. 164-5. In: Gilbertson D D. Late Quaternary environments and man in Holderness. BAR BS 134.
*6611	**Slingsby EAU 98/08**	nr Malton	NYR	Carrott J, Jaques D and Worthy D. 1998. An evaluation of biological remains from excavations at Slingsby, North Yorkshire (site code S97). Reports from the EAU, York 98/8.
*6619	**Smaws Quarry ASUD 727**	nr Tadcaster	NYR	[Cotton J.] 2000. Smaw's Quarry, SQ00: plant macrofossil evaluation. ASUD Report 727. 5pp.
*6620	**Smaws Quarry EAU 97/14**	nr Tadcaster	NYR	Carrott J, Hall A, Issitt M, Jaques D, Johnstone C and Large F. 1997. An evaluation of biological remains from excavations at Smaws Quarry (near Tadcaster), North Yorkshire (site code: SMAWS97). Reports from the EAU, York 97/14.
6635	**Snowdrift Laundry DEAR 39/94**	Scarborough	NYR	Huntley J P. 1994. Snowdrift Laundry site, Scarborough. The palaeoenvironmental samples. Durham Environmental Archaeology Report 39/94.
6676	**South Beckside 2000 EAU 2000/15**	Beverley	EYR	Hall A, Carrott J, Jaques D, Kenward H and Rowland S. 2000. Evaluation of biological remains from South Beckside, Beverley, East Riding of Yorkshire (site code: SBS2000). Reports from the EAU, York 2000/15, 7 pp.

Site no.	Site	Location	Cty	Reference
6677	**South Beckside PRS 2002/10**	Beverley	EYR	Hall A, Kenward H and Carrott J. 2002. Short note: Biological remains from excavations at South Beckside, Beverley, East Riding of Yorkshire (site code: BSB00). Palaeoecology Research Services Report 2002/10.
6684	**South Dyke (A1-M1) 92-8**	nr Aberford	WYL	Holden T. 2001. The waterlogged plant remains. 240-1. In: Roberts I, Burgess A and Berg D. (eds). 2001. A new link to the past: the archaeological landscape of the M1-A1 link road. Yorkshire Archaeology 7. Leeds: West Yorkshire Archaeology Service on behalf of West Yorkshire Joint Services.
*#6700	**South Shields 84**	South Shields	TWS	van der Veen M. 1988. Carbonised grain from a Roman Granary at South Shields, north-east England. 353-65. In: Küster, H.-J. (ed.), Der prähistorische Mensch und seine Umwelt (Festschrift Körber-Grohne). Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemberg 31. Stuttgart.
*#6701	**South Shields 84 (CHR)**	South Shields	TWS	van der Veen, M. 1992. Crop Husbandry Regimes. An archaeobotanical study of farming in northern England 1000 BC - AD 500. Sheffield Archaeol. Monographs 3. Sheffield.
6703	**South Shields Fort**	South Shields	TWS	van der Veen M. 1994. Grain from the forecourt granary. 243-58. In: Bidwell, P and Speak, S. (eds.). Excavations at South Shields Roman fort. Society of Antiquaries of Newcastle upon Tyne (with Tyne and Wear Museums) Monograph Series 4. van der Veen M. 1994. Plant macrofossils. [in The biological remains from Pit 13229 (Hadrianic)]. 263-4. In: Bidwell, P and Speak, S. (eds.). Excavations at South Shields Roman fort. Society of Antiquaries of Newcastle upon Tyne (with Tyne and Wear Museums) Monograph Series 4.

Site no.	Site	Location	Cty	Reference
				van der Veen M. 1994. The charred grain from the Courtyard House. 259-60. In: Bidwell, P and Speak, S. (eds.). Excavations at South Shields Roman fort. Society of Antiquaries of Newcastle upon Tyne (with Tyne and Wear Museums) Monograph Series 4.
				van der Veen, M. 1994. Plant remains from a well in the Vicus. 260-6. In: Bidwell, P and Speak, S. (eds.). Excavations at South Shields Roman fort. Society of Antiquaries of Newcastle upon Tyne (with Tyne and Wear Museums) Monograph Series 4.
*6708	**South St (Durham) ASUD 889**	Durham City	DUR	[Cotton J.] 2002. South Street, Durham: archaeological evaluation. ASUD Report 889.
*#6735	**Southgate 81 AML 73/87**	Hartlepool	CVH	Huntley J P. 1987. Botanical remains from Hartlepool: Southgate 1981. AML Report New Series 73/87.
6736	**Southgate 81-2**	Hartlepool	CVH	Huntley J P. 1987. Summary report on the plant remains. 53-5 and Fiche 19-27. In: Young G A B. 1987. Excavations at Southgate, Hartlepool, Cleveland, 1981-2. Durham Archaeol. J. 3. 15-55 and fiche.
				[Jones J.]. 1987. Waterlogged timbers. 49-52. In: Young G A B. 1987. Excavations at Southgate, Hartlepool, Cleveland, 1981-2. Durham Archaeol. J. 3. 15-55 and fiche.
6756	**Sparrowmire Fam LUAU**	nr Kendal	CUM	[Huckerby E.] 2000. Palaeoenvironmental sampling and analysis. 7-8. and Macrofossil analysis results. 16. Anon. 2000. Sparrowmire Farm, Kendal, Cumbria. Archaeological excavation. Lancater University Archaeological Unit Report.
6759	**Speke Hall 81-2**	nr Liverpool	MEL	Kenward H K and Tomlinson P R. 1992. Environmental analysis. 75-8. In: Higgins D A. 1992. Speke Hall: Excavations in the West Range, 1981-82. J. Merseyside Archaeol. Soc. 8 (for 1988-89). 47-84.

Site no.	Site	Location	Cty	Reference
6804	**Spurriergate 7-15 (rear of) EAU 2000/80**	York	YOR	Hall A, Rowland S, Kenward H, Jaques D and Carrott J. 2000. Evaluation of biological remains from excavations on land to the rear of 7-15 Spurriergate, York (site code: 2000.584). Reports from the Environmental Archaeology Unit, York 2000/80, 13 pp.
6823	**St Andrewgate 93 EAU 93/02**	York	YOR	Carrott J, Dobney K, Hall A, Irving B, Jaques D and Kenward H. 1993. Evaluation of biological remains from excavations at St Andrewgate, York (YAT/Yorkshire Museum sitecode 1993.16). 8 pp. Unpub. report prep. for York Archaeol. Trust. [93/2]
6824	**St Andrewgate PRS 2002/12**	York	YOR	Jaques D, Hall A, Kenward H and Carrott J. 2002. Assessment of biological remains from excavations at St Andrewgate, York (site code: 1995.89). Palaeoecology Research Services Report 2002/12.
6829	**St Annes Ln (Nantwich) 85**	Nantwich	CHE	Tomlinson P. 1987. Plant remains. 291-5. In: McNeil R and Roberts A F. A plank tank from Nantwich. Britannia 18. 287-95.
6845	**St Augustines Gate (15-19) 93 EAU 93/04**	Hedon, nr Hull	EYR	Carrott J, Dobney K, Hall A, Jaques D, Kenward H and Manser I. 1993. Biological remains from two medieval ditches at 17-19 St Augustine's Gate, Hedon, N. Humberside (site code HAG93). Unpub. report prep. for Humberside Archaeol. Unit. [93/4]
6846	**St Augustines Gate (9-11, rear) 99 EAU 2000/02**	Hedon, nr Hull	EYR	Carrott J, Hall A and Jaques D. 2000. Evaluation of biological remains from excavations on the west side of St Augustine's Gate, Hedon, East Riding of Yorkshire (site code: SAH99). Reports from the Environmental Archaeology Unit, York 2000/02, 5pp.
6877	**St Cuthberts Square 2000 ASUD 665**	Lindisfarne	NHU	[Cotton J]. St Cuthbert's Square, Lindisfarne: LCS00 plant macrofossil evaluation. ASUD Report 665.

Site no.	Site	Location	Cty	Reference
6890	**St Georges School ARCUS 208**	York	YOR	Hajnalova M. and Charles M. 1995. St. George's School, Margaret St., Walmgate, York. The charred plant remains. Appendix 7. In: Foster P. (ed. J. Symonds). An archaeological evaluation at St. George's School, Margaret Street, Walmgate, York. ARCUS Report No. 208.
6901	**St Helens Rd 94 EAU 94/31**	York	YOR	Carrott J, Hall A, Issitt M, Kenward H and Large F. 1994. Evaluation of biological remains from excavations at St Helens Road, Dringhouses, York (site code SHR 94). Reports from the EAU, York 94/31. 4 pp.
6916	**St Johns Coach Park EAU 2001/15**	Clarence St, York	YOR	Hall A, Kenward H, Jaques D and Carrott J. 2001. Evaluation of biological remains from excavations at the St John's Coach Park, Clarence Street, York (site code: 2000.589). Reports from the Environmental Archaeology Unit, York 2001/15, 6pp.
*6931	**St Leonards Church EAU 91/14**	Malton	NYR	Carrott J B, Hall A R. and Kenward H K. 1991. Environmental evidence from St Leonard's Church, Malton (YAT/Yorkshire Museum sitecode: 1991.5006). Unpub. report prep. for York Archaeol. Trust. [91/14]
6985	**St Maurices Rd (2) 92 EAU 92/14**	York	YOR	Dainton M, Dobney K and Hall A. 1992. An evaluation of biological remains from excavations at 2 St Maurice's Road, York (YAT/Yorkshire Museum site code 1992.12). Unpub. report prep. for York Archaeol. Trust. [92/14]
7007	**St Nicholas Yard 96-7**	Carlisle	CUM	Huckerby E. 1999. The palaeoenvironmental evidence. 107-10. In: Howard-Davis C and Leah M. 1999. Excavations at St Nicholas Yard, Carlisle, 1996-7. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 99. 89-115.

Site no.	Site	Location	Cty	Reference
7033	**St Saviourgate (9) 95 EAU 95/51**	York	YOR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H, Large F and Shaw T. 1995. An evaluation of biological remains from excavations in St Saviourgate, York (site code: 1995.434). Reports from the EAU, York 95/51. 9 pp.
7034	**St Saviourgate (9) 95 EAU 98/14**	York	YOR	Carrott J, Hall A, Hughes P, Jaques D, Johnstone C, Kenward H and Worthy D. 1998. An assessment of biological remains from excavations at St Saviourgate, York (site code: 1995.434). Reports from the EAU, York 98/14. 41 pp.
7037	**St Sepulchre St EAU 97/26**	Scarborough	NYR	Hall A, Issitt M, Kenward H and Large F. 1997. Assessment of biological remains from excavations at St Sepulchre Street, Scarborough (site code: SP96). Reports from the EAU, York 97/26.
*7045	**St Thomas St (Scarborough) 99 EAU 2000/34**	Scarborough	NYR	Hall A, Kenward H, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at the former convent school, St Thomas Street, Scarborough (site code: STS99). Reports from the Environmental Archaeology Unit, York 2000/34. 4pp.
7071	**Stamford Bridge 98 HA**	Stamford Bridge	EYR	Holden T. 1999. Assessment of the environmental sample[s] from Stamford Bridge, East Riding of Yorkshire. [Report from Headland Archaeology] 1p.
7080	**Staniwells Farm EAU 90/05**	Hibaldstow, nr Brigg	NLI	Allison E P, Hall A R, Kenward H K and O'Connor T P. 1990. Environmental evidence from the Roman settlement, Staniwells Farm, Hibaldstow, Humberside 1988. Prep. for Humberside Archaeol. Unit. [90/5]
*7082	**Stanley Main 98 HA**	Skipwith, nr York	NYR	Holden T G. 1998. Assessment of environmental samples from Stanley Main, Skipworth [Skipwith?], Yorkshire. [Report from Headland Archaeology]. 2pp.
7103	**Stanwick**	nr Catterick	NYR	[Metcalfe C R.] 1954. Botany. 59-60. In: Wheeler M. The Stanwick Fortifications, North Riding of Yorkshire. Reports of the Research Committee of the Society of Antiquaries of London 17.

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7106	**Stanwick 84-9**	nr Catterick	NYR	van der Veen, M. 1992. Crop Husbandry Regimes. An archaeobotanical study of farming in northern England 1000 BC - AD 500. Sheffield Archaeol. Monographs 3. Sheffield.
7108	**Stanwix 94 EAU 94/57**	Carlisle	CUM	Hall A, Kenward H, Large F and Usai R. 1994. Assessment of biological remains and sediments from Roman deposits at Cumbria College of Art, Stanwix, Carlisle (site code ARC94). Reports from the EAU, York 94/57. 7 pp.
*7110	**Stanwix Fort (nr) ASUD 641**	nr Carlisle	CUM	[Cotton J.] 1999. Land near Stanwix Roman Fort, Cumbria: CCC99. Plant macrofossil assessment. ASUD Report 641. 9pp.
7115	**Staple Howe 51-6**	Knapton, nr Malton	NYR	[Metcalfe C R.] 1963. Carbonised grain from Phase II palisade trench. 138-9. In: Brewster T C M. The excavation of Staple Howe. The East Riding Archaeological Research Committee. Wintringham.
7116	**Williamsons Moss 1**	Esk estuary, W. Cumbria	CUM	[wood and bark]. passim. In: Bonsall C, Sutherland D G, Tipping R M and Cherry J. 1996. The Eskmeals Project: late Mesolithic settlement and environment in north-west England. 175-201. In: Bonsall, C. (ed.) The mesolithic in Europe. Edinburgh: John Donald.
7124	**Star Carr 85 & 89**	Seamer, nr Scarborough	NYR	Dark P. 1998. Chapter 11. Lake-edge Sequences: Results [pollen, plant macrofossils and micro-charcoal]. 125-46. In: Mellars P and Dark P. 1998. Star Carr in context: new archaeological and palaeoecological investigations at the Early Mesolithic site of Star Carr, North Yorkshire. Cambridge: McDonald Institute for Archaeological Research.

Site no.	Site	Location	Cty	Reference
				Dark P. 1998. Chapter 12. Comparison and correlation of Lake-edge Sequences [pollen, plant macrofossils and micro-charcoal]. 144-52. In: Mellars P and Dark P. 1998. Star Carr in context: new archaeological and palaeoecological investigations at the Early Mesolithic site of Star Carr, North Yorkshire. Cambridge: McDonald Institute for Archaeological Research.
				Dark P. 1998. Part III. Palaeoecological Investigations. Chapter 13. Interpretation of the Lake-edge Sequences [pollen, plant macrofossils and micro-charcoal]. 153-61. In: Mellars P and Dark P. 1998. Star Carr in context: new archaeological and palaeoecological investigations at the Early Mesolithic site of Star Carr, North Yorkshire. Cambridge: McDonald Institute for Archaeological Research.
				Dark P. 1998. Chapter 14. The Lake-centre Sequence: Results [pollen, plant macrofossils and micro-charcoal]. 163-72. In: Mellars P and Dark P. 1998. Star Carr in context: new archaeological and palaeoecological investigations at the Early Mesolithic site of Star Carr, North Yorkshire. Cambridge: McDonald Institute for Archaeological Research.
				Hather J G. 1998. Identification of macroscopic charcoal assemblages. 183-96. In: Mellars P and Dark P. 1998. Star Carr in context: new archaeological and palaeoecological investigations at the Early Mesolithic site of Star Carr, North Yorkshire. Cambridge: McDonald Institute for Archaeological Research.
#7128	**Star Carr (preliminary report)**	Seamer, nr Scarborough	NYR	Corner E J H. 1950. Report on the fungus-brackets from Star Carr, Seamer. 123-4. In: Clark J G D. 1950. A preliminary report on excavations at Star Carr, Seamer, Scarborough, Yorkshire (Second Season, 1950). Proc. Prehist. Soc. 16. 109-29.

Site no.	Site	Location	Cty	Reference
				[birch bark rolls] In: Clark J G D. 1950. A preliminary report on excavations at Star Carr, Seamer, Scarborough, Yorkshire (Second Season, 1950). Proc. Prehist. Soc. 16. 109-29.
7132	**Star Carr 49-50**	Seamer, nr Scarborough	NYR	Clark J D G. 1954. [Plant Food. 13-15. Vegetable raw materials. 17-18. Wood. 177-8.] In: Clark J G D. Excavations at Star Carr. An early Mesolithic site at Seamer near Scarborough, Yorkshire. Cambridge: University Press.
				[Allison J and Walker D]. Tables 1 and 2. Macroscopic determinations [from Flixton Sites 2, and DB1 and Star Carr]. 52 and 57-9. In: Walker D and Godwin H. 1954. Lake-stratigraphy, pollen-analysis and vegetational history. 25-69. In: Clark J G D. Excavations at Star Carr. An early Mesolithic site at Seamer near Scarborough, Yorkshire. Cambridge: University Press.
7139	**Star Carr Site VP D**	nr Flixton	NYR	Lane P. 1998. Archaeological and environmental investigations of the Early Mesolithic in the Vale of Pickering, North Yorkshire 1976-1997. Unpub. Assessment report, statement of potential and project design.
7140	**Star Carr Site VP E**	nr Flixton	NYR	Lane P. 1998. Archaeological and environmental investigations of the Early Mesolithic in the Vale of Pickering, North Yorkshire 1976-1997. Unpub. Assessment report, statement of potential and project design.
*7141	**Starting Gate EAU 96/34**	York (40 Tadcaster Rd)	YOR	Carrott J, Hall A, Issitt M, Jaques D and Large F. 1996. An evaluation of biological remains from excavations at Starting Gate, Tadcaster Road, York (site code: 1996.170). Reports from the EAU, York 96/34.
*7142	**Station Rd (Brompton) DEAR 10/95**	nr Catterick	NYR	Huntley J P. 1995. Station Road, Brompton, nr. Catterick. Durham Environmental Archaeology Report 10/95.

Site no.	Site	Location	Cty	Reference
*7145	**Station Rise EAU 2000/47**	York	YOR	Carrott J, Hall A and Jaques D. 2000. Evaluation of biological remains from excavations at York Railway HQ, Station Rise, York (site code: YORYM 2000.506). Reports from the Environmental Archaeology Unit, York 2000/47, 6 pp.
7147	**Station Yd (Beverley) EAU 91/17**	Beverley	EYR	Carrott J B, Hall A R, Kenward H K and O'Connor, T. P. 1991. Environmental evidence from Station Yard, Beverley (YAT/Yorkshire Museum sitecode 1991.5005). Unpub. report prep. for York Archaeol. Trust. [91/17]
*#7181	**Stockbridge 94 DEAR 30/94**	Newcastle	TWN	Huntley J P. 1994. Stockbridge, Newcastle: SB94. An evaluation of the environmental samples. Durham Environmental Archaeology Report 30/94.
7182	**Stockbridge 95**	Newcastle	TWN	Grinter P and Huntley J P. 2002. The plant remains. 210-17. In: Truman L. 2002. Excavations at Stockbridge, Newcastle upon Tyne, 1995. Archaeol. Aeliana 5th Ser. 29, 95-221.
7185	**Stockton West Moor EAU 96/27**	nr York	NYR	Carrott J, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. Assessment of biological remains from excavations at Stockton West Moor and Rawcliffe Moor, York (site codes: YORYM 96.390 and 96.391). Reports from the EAU, York 96/27.
*7221	**Storking Ln (land off) 99 EAU 99/50**	nr Wilberfoss	EYR	Large F, Hall A, Worthy D and Carrott J. 1999. Evaluation of biological remains from Storking Lane, Wilberfoss, East Yorkshire (Site code: ERYMS 1999.8). Reports from the Environmental Archaeology Unit, York 99/50, 7 pp.
7222	**Storrs Moss 65-7**	nr Carnforth	LAN	[Conolly A and Huckerby E.] [plant macrofossil identifications] passim 128-9. In: Powell T G E, Oldfield F and Corcoran J X W P. 1971. Excavations in Zone VII peat at Storrs Moss, Lancashire, England, 1965-67. Proc. Prehist. Soc. 37. 112-37.

Site no.	Site	Location	Cty	Reference
7244	**Stricklandgate 87-8 AML 65/89**	Kendal	CUM	Huntley J P. 1989. Plant remains from Stricklandgate, Kendal, Cumbria. AML Report New Series 65/89.
7271	**Sutton Common 87-93**	nr Askern	SYD	Boardman S. 1997. Waterlogged macrobotanical remains. 245-8. In: Parker Pearson M and Sydes R E. 1997. The Iron Age enclosures and prehistoric landscape of Sutton Common, South Yorkshire. Proc. Prehist. Soc. 63, 221-59. Boardman S and Charles M. 1997. Charred plant remains. 248-50. In: Parker Pearson M and Sydes R E. 1997. The Iron Age enclosures and prehistoric landscape of Sutton Common, South Yorkshire. Proc. Prehist. Soc. 63, 221-59.
*#7272	**Sutton Common 87**	nr Askern	SYD	Boardman S. 1987. Charred plant remains from a ditch at Sutton Common. 66-9 (and Pl. 18, p. 65). In: Sydes R E and Symonds J. Sutton Common 1987 Excavation Report, Investigation of a northern wetland site. South Yorkshire Archaeological Unit. Sheffield.
*7273	**Sutton Common ARCUS 181**	nr Askern	SYD	Anon. 1994. Waterlogged macrobotanical remains: minimum assessment. 7 pp. In: ARCUS. Sutton Common Environmental Analysis Assessment Report. ARCUS Report No. 181. Charles M. 1994. Sutton Common. Charred plant material: interim assessment. 6 pp. In: ARCUS. Sutton Common Environmental Analysis Assessment Report. ARCUS Report No. 181.
*7293	**Swan Hunter 2001 ASUD 842**	Wallsend	TWT	[Cotton J]. 2001. Swan Hunter, Wallsend, Tyne & Wear, SH01: plant macrofossil and microfossil assessment. ASUD Report 842.
*7332	**Swillington Brick Works 92 HA**	Leeds/Castleford	WYL	Holden T G. 1996. Evaluation of environmental samples from Swillington Brick Works (SBW92). [Report from Headland Archaeology] 2pp.

Site no.	Site	Location	Cty	Reference
7333	**Swillington Common (A1-M1) 92-8**	Leeds/Castleford	WYL	Holden, T. 2001. Swillington Common South. The charred plant remains. 220-1, In: Roberts I, Burgess A and Berg D. (eds). 2001. A new link to the past: the archaeological landscape of the M1-A1 link road. Yorkshire Archaeology 7. Leeds: West Yorkshire Archaeology Service on behalf of West Yorkshire Joint Services.
7334	**Swinegate (12-18) EAU 94/13**	York	YOR	Carrott J, Dobney K, Hall A, Jaques D, Kenward H, Lancaster S & Milles A. 1994. Assment of biol. remains from excns at 12-18 Swinegate, 8 Grape Lane, and 14, 18, 20 and 22 Back Swinegate/Little Stonegate, York (YAT/Yorks Mus codes 89-90.28 & 90.1). Reports from the EAU, York 94/13. 16 pp. + 53 pp. appendix.
7335	**Swinegate (20-4) EAU 91/23**	York	YOR	Hall A R, Carrott J, Kenward H K and Nicholson R A. 1991. Biological analyses of sample from 20-4 Swinegate (YAT/Yorkshire Museum sitecode 1990.25). Unpub. report prep. for York Archaeol. Trust.[91/23]
7342	**Tadcaster Rd (62) 95 EAU 95/44**	York	YOR	Carrott J, Issitt M, Jaques D and Large F. 1995. Assessment of biological remains from excavations at 62 Tadcaster Road, York (site code: 1995.55). Reports from the EAU, York 95/44. 4 pp.
*7355	**Tanner Row (47-55) EAU 97/24**	York	YOR	Carrott J, Hall A, Johnstone C and Large F. 1997. Evaluation of biological remains from excavations at 47-55 Tanner Row, York (site code: 1997.3). Reports from the EAU, York 97/24. 7 pp.
*#7360	**Tarraby (grass cuttings) AML 2264**	nr Carlisle, Hadrians Wall	CUM	Donaldson A. 1977. Tarraby. 'Roman grass cuttings'. AML Report OS 2264.
7366	**Tarraby Ln 76**	nr Carlisle, Hadrians Wall	CUM	Donaldson A M. 1978. The macroscopic botanical evidence. 56. In: Smith G H. Excavations near Hadrian's Wall at Tarraby Lane 1976. Britannia 9. 19-56.
*7410	**The Annums ASUD 737**	Bowes	DUR	[Cotton J.] 2001. Bowes Village, Co. Durham, BFF00: plant macrofossil evaluation. ASUD Report 737. 6pp.

Site no.	Site	Location	Cty	Reference
7411	**Market Pl (8/9 & 10) (The Arcade) EAU 2000/59**	Ripon	NYR	Jaques D, Hall A, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at The Arcade, Ripon, North Yorkshire (site code: HARGM 10214). Reports from the Environmental Archaeology Unit, York 2000/59, 9pp.
*7412	**The Avenue (12-13) EAU 2001/04**	Clifton, York	YOR	Jaques D, Hall A and Carrott J. 2001. Evaluation of biological remains from excavations at 12-13 The Avenue, Clifton, York (site code: YORYM 2000.4287). Reports from the Environmental Archaeology Unit, York 2001/04, 3 pp. + 1 p. Appendix.
7416	**The Bolts (24-6) EAU 90/11**	Scarborough	NYR	Hall, A. R. and Kenward, H. K. 1990. Report on the analysis of richly organic medieval occupation sediment from excavations at 24-6, The Bolts, Scarborough, N. Yorkshire. Unpub. report prep. for T. Pearson, York Archaeol. Trust. [90/11]
*7425	**The Cockpit (Richmond Castle) ASUD 749**	Richmond	NYR	[Cotton J.] 2001. The Cockpit, Richmond Castle, North Yorkshire (CRC00): plant macrofossil assessment. ASUD Report 749. 3pp.
7432	**The Fox EAU 97/41**	Tadcaster Rd, York	YOR	Carrott J, Jaques D, Johnstone C and Large F. 1997. An evaluation of biological remains from excavations at The Fox, Tadcaster Road, Dringhouses, York (site code: 1997.70). Reports from the EAU, York 97/41. 6 pp.
*7435	**The Gardens EAU 2001/22**	Sprotborough, nr Doncaster	SYD	Hall A and Jaques D. 2001. Notes on the biological remains from excavations at The Gardens, Sprotborough (site code: OSA01EV07). Reports from the Environmental Archaeology Unit, York 2001/22, 3 pp.
7436	**The Garth ASUD 803**	Longnewton, Darlington/Stockton	CVS	[Cotton J and Gidney L.] 2001. The Garth, Longnewton, Stockton-on-Tees (GLN01): plant macrofossil and faunal assessments. ASUD Report 803. 13pp.

Site no.	Site	Location	Cty	Reference
7445	**The Heugh DEAR 38/94**	Lindisfarne	NHU	Huntley J P. 1994. The Heugh, Lindisfarne. The carbonised plant remains. Durham Environmental Archaeology Report 38/94.
7456	**The Lanes AML 51/92**	Carlisle	CUM	Huntley J P. 1992. Plant remains from excavations at The Lanes, Carlisle, Cumbria: Part I - CAL, OGL, OBL, and LEL. AML Report New Series 51/92.
*7471	**The Mount (89) EAU 91/02**	York	YOR	Alldritt D, Carrott J B, Hall A R and Kenward H K. 1991. Environmental evidence from 89 The Mount (YAT/Yorkshire Museum sitecode: (1991.4). Unpub. report prep. for York Archaeol. Trust. [91/2]
*7472	**The Mount (90) EAU 2000/37**	York	YOR	Jaques D, Carrott J, Hall A and Rowland S. 2000. Evaluation of biological remains from excavations at 90 The Mount, York (site code YORYM 2000.507). Reports from the EAU, York 2000/37. 4pp.
7482	**The Palace 2000 EAC 17/01**	Lindisfarne	NHU	Rackham D J. 2001. The Palace, Lindisfarne, Northumberland - PL00. Environmental archaeology assessment. Environmental Archaeology Consultancy Report EAC 17/01.
*7496	**The Vivars EAU 95/38**	Selby	NYR	Carrott J, Hall A, Issitt M, Kenward H, Large F and Milles A. 1995. Evaluation of biological remains from excavations at [The] Vivars, Selby, North Yorkshire. Reports from the EAU, York 95/38. 4 pp.
7498	**The Winery 2000 EAC**	Lindisfarne	NHU	Rackham D J and Snelling A. 2001. The Winery, Lindisfarne - WL00. Environmental archaeology assessment. Unpublished report, Environmental Archaeology Consultancy.
7515	**Thirlings 73-81**	nr Wooler	NHU	van der Veen M. 1985. Evidence for crop plants from north-east England. 197-219 and unnumbered figs and tables. In: Fieller N R J, Gilbertson D D and Ralph N G A. (eds) Palaeobiological Investigations: Research design, methods and data analysis. BAR IS 266. Symposia of the AEA 5. Oxford.

Site no.	Site	Location	Cty	Reference
*7516	**Thirlings 75 AML 2159**	nr Wooler	NHU	Donaldson A. 1976. Identification of neolithic nuts from Thirlings 1975. AML Report OS 2159.
*#7520	**Thirlings AML 3831**	nr Wooler	NHU	van der Veen M. 1982. Carbonised plant remains from Neolithic Thirlings (Northumberland). AML Report OS 3831.
*7521	**Thirsk Castle 94 EAU 95/11**	Thirsk	NYR	Brothwell D, Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Johnstone C, Large F, Milles A and Roberts G. 1995. An evaluation of biological remains from excavations at Thirsk Castle, North Yorkshire (site code: TC94). Reports from the EAU, York 95/11. 10 pp.
7530	**Thornborough 99 HA**	nr West Tanfield	NYR	Hastie M. 2000. Assessment of soil samples from Thornborough monument complex. [Report from Headland Archaeology] 2pp.
*#7531	**Thornbrough Scar AML 4075**	nr Corbridge	NHU	van der Veen M. 1983. The plant remains from Thornbrough Scar, Northumberland. AML Report OS 4075.
7532	**Thornbrough 83-4**	nr Corbridge	NHU	van der Veen, M. 1992. Crop Husbandry Regimes. An archaeobotanical study of farming in northern England 1000 BC - AD 500. Sheffield Archaeol. Monographs 3. Sheffield.
*#7536	**Thornbrough Farm AML 105/97**	Catterick	NYR	Huntley J. 1997. Charred and waterlogged plant remains: Thornbrough Farm, Catterick, North Yorkshire. AML Report New Series 105/97.
*#7537	**Thornbrough Farm DEAR 1/93**	Catterick	NYR	Huntley J P. 1993. Thornbrough Farm, Catterick, N. Yorkshire: CAS sites 452 and 482. A botanical assessment of the environmental samples. [Durham Environmental Archaeology Report 1/93]
*#7538	**Thornbrough Farm DEAR 12/97**	Catterick	NYR	Huntley J P. 1997. Thornbrough Farm, context 500. The waterlogged plant remains. Durham Environmental Archaeology Report 12/97.

Site no.	Site	Location	Cty	Reference
7539	**Thornbrough Farm DEAR 21/96**	Catterick	NYR	Huntley J P. 1996. Thornbrough Farm, Catterick: CAS452 and 482. The charred and waterlogged plant remains. Durham Environmental Archaeology Report 21/96.
*7552	**Thorpe Park 98 HA**	Austhorpe, Leeds	WYL	Holden T G. 1998. Assessment of environmental samples from Thorpe Park (Grims Ditch), Austhorpe. [Report from Headland Archaeology] 2pp.
#7554	**Thorpe Thewles 80-2**	nr Stockton-on-Tees	CVS	van der Veen M. 1987. The plant remains. 93-9, Fiche 5:E2-4. In: Heslop D H. The excavation of an Iron Age settlement at Thorpe Thewles, Cleveland, 1980-82. CBA Res. Rep. 65. CBA and Cleveland County Archaeology.
*7555	**Thorpe Thewles 80-2 (CHR)**	nr Stockton-on-Tees	CVS	van der Veen M. 1992. Crop Husbandry Regimes. An archaeobotanical study of farming in northern England 1000 BC - AD 500. Sheffield Archaeol. Monographs 3. Sheffield.
*#7556	**Thorpe Thewles AML 4012**	nr Stockton-on-Tees	CVS	van der Veen M. 1983. Plant remains from Thorpe Thewles. AML Report OS 4012.
*#7557	**Thorpe Thewles AML 4154**	nr Stockton-on-Tees	CVS	van der Veen M. 1984. Plant remains from Thorpe Thewles - second interim report. AML Report OS 4154.
*#7558	**Thorpe Thewles AML 4277**	nr Stockton-on-Tees	CVS	van der Veen M. 1984. Thorpe Thewles - the plant remains. Final report. AML Report OS 4277.
#7559	**Thorpe Thewles AML 4372**	nr Stockton-on-Tees	CVS	van der Veen, M. 1984. Pottery impressions from Thorpe Thewles. AML Report OS 4372.
7568	**Thrislington 73-4**	Bishop Middleham, Sedgefield/Durham	DUR	Donaldson A. 1989. Botanical remains. 158 [and 188 passim]. In: Austin D. The deserted medieval village of Thrislington, County Durham: excavations 1973-74. Soc. Medieval Archaeol. Monograph Series 12. Lincoln.
*#7569	**Thrislington 74 AML 2160**	Bishop Middleham, nr Sedgefield	DUR	Donaldson A. 1976. Thrislington [village: botanical evidence.] AML Report OS 2160.

Site no.	Site	Location	Cty	Reference
*#7575	**Thwaite House Moss 89-90**	nr Carnforth	LAN	Wells C. 1990. Stratigraphical investigations in basin mire sites in North Lancashire. North West Wetlands Survey Annual Report 1990. 33-4.
*7576	**Thwaite House Moss NWWS 3**	nr Carnforth	LAN	Swain D and Swan J. 1995. Thwaite House Moss. 183-9. In: Middleton R, Wells C E and Huckerby E. 1995. The wetlands of North Lancashire. North West Wetlands Survey 3. Lancaster Imprints 4.
7578	**Thwing AML 116/93**	nr Driffield	EYR	Watson J. 1993. Carpentry details of mineral preserved wood on iron coffin fittings from Thwing, North Yorkshire. AML Report New Series 116/93.
*#7581	**Thwing AML 4833**	nr Driffield	EYR	Watson J. 1985. Examination of mineral preserved wood on iron coffin fittings from Thwing, N.Yorks. [N. Humberside] AML Report OS 4833.
7610	**Titlington Mount 92-3**	Hedgeley, nr Alnwick	NHU	Huntley J P. 1998. Appendix 2: The palaeobotanical samples from Titlington Mount. 9-10. In: Topping P. The excavation of burnt mounds at Titlington Mount, north Northumberland, 1992-3. Northern Archaeology 15/16. 3-25.
*#7611	**Titlington Mount DEAR 3/93**	nr Alnwick	NHU	Huntley J P. 1993. Palaeobotanical remains from Titlington Mount: TM92. [Durham Environmental Archaeology Report 3/93]
*7615	**Tocketts Farm ASUD 731**	nr Guisborough	CVR	[Cotton J.] 2000. Tockett's Farm, near Guisborough (TF00): plant macrofossil evaluation. ASUD Report 731. 5pp.
7658	**Tower St (1-2) (York) EAU 95/35**	York	YOR	Carrott J, Hall A, Issitt M and Kenward H. 1995. Assessment of biological remains from excavations at 1-2 Tower Street (Castle Garage), York (YAT/Yorkshire Museum sitecode 1981.3). Reports from the EAU, York 95/35. 25 pp.
7659	**Tower St (Hull) 95 EAU 95/37**	Hull	KUH	Carrott J, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1995. Evaluation of biological remains from excavations at Tower Street, Hull (site code HCT95). Reports from the EAU, York 95/37. 6 pp.

Site no.	Site	Location	Cty	Reference
7667	**Town Ditch (Newcastle) 86-7**	Newcastle	TWN	Nye S and Turner J. 1989. Botanical remains. 66-7 Fraser R. Excavation of the Town Ditrch. 51-71. In: Nolan J, Fraser R, Harbottle B and Burton F C. The medieval town defences of Newcastle upon Tyne: excavation and survey 1986-87.
*7671	**Town St 94 EAU 94/20**	Old Malton, Malton	NYR	Dobney K, Hall A, Issitt M, Jaques D, Kenward H, Large F and Milles A. 1994. An evaluation of biological remains from excavations at Town Street, Old Malton (site code OML94). Reports from the EAU, York 94/20. 5 pp.
*7682	**West Hull (Transco) Pipeline PRS 2001/05**	Wawne, nr Hull	EYR	Hall A, Kenward H and Carrott J. 2001. Evaluation of biological remains from excavations associated with the Transco West Hull pipeline (site code: OSA01EV05) Palaeoecology Research Services Report 2001/05.
7759	**Trentholme Dr 51-2**	York	YOR	Blackburn K and Metcalfe C R. 1968. Appendix I [to Part I]. Wood. 101. In: Wenham L P. The Romano-British cemetery at Trentholme Drive, York. Ministry of Public Building and Works Archaeol. Reports 5. HMSO.
*7779	**Trinity Ln EAU 2002/03**	Beverley	EYR	Hall A, Kenward H, Jaques D and Carrott J. 2002. Evaluation of biological remains from excavations at Trinity Lane, Beverley, East Riding of Yorkshire (site code: TRB2001). Reports from the Environmental Archaeology Unit, York 2002/03. 7pp.
7791	**Tullie House 79 AML 3218**	Carlisle	CUM	Donaldson A. 1980. Carlisle 1979.Plant remains from the Tullie House (Annetwell Street) excavations. AML Report OS 3218.
7793	**Tullie House AML 2389**	Carlisle	CUM	Donaldson A. 1977. Botanical report on material from Carlisle Tullie House. AML Report OS 2389.
7794	**Tullie House Extension & Basement DEAR 1/91**	Carlisle	CUM	Huntley J P. 1991. Botanical remains in samples from the Tullie House Extension (ANN D and ANN E) and Tullie House Basement (ABB B) sites (Carlisle). [Durham Environmental Archaeology Report 1/91]

Site no.	Site	Location	Cty	Reference
7830	**Union Terrace (6-28/21-7) EAU 89/21**	York	YOR	Tomlinson, P. R. (ed.) 1989. Environmental analysis of samples from excavations at 6-28 and 21-7 Union Terrace, York. Prep. for York Archaeol. Trust. [89/21]
*7832	**Union Terrace EAU 2001/42**	York	YOR	Hall A, Jaques D, Kenward H and Carrott J. 2001. Evaluation of biological remains from excavations at Union Terrace, York (site code: 2001.4434). Reports from the Environmental Archaeology Unit, York 2001/42, 3 pp.
7855	**Upper Redesdale 80-1 (Loaning Burn)**	nr Otterburn	NHU	Donaldson A M. 1982. Botanical report. 163. In: Charlton D B and Day J C. Excavation and field survey in Upper Redesdale: Part IV. Archaeol. Aeliana 5th Ser. 10. 149-70.
*7874	**Upton Recreation Centre DEAR 18/97**	Upton-by-Chester, nr Chester	CHE	Huntley, J.P. 1997. Upton Recreation Centre, Upton-by-Chester, Cheshire. An assessment of the environmental samples. Durham Environmental Archaeology Report 18/97.
7917	**Venn St (land off) WYAS 801**	Huddersfield	WYK	Bastow M. 2000. Macrobiological remains. 30-3. In: O'Neill R. 2000. Land off Venn Street, Huddersfield, West Yorkshire. Archaeological Excavation. West Yorkshire Archaeological Service Report 801. Bastow M and Berg D. 2000. Spot identification[s] . 33. In: O'Neill R. 2000. Land off Venn Street, Huddersfield, West Yorkshire. Archaeological Excavation. West Yorkshire Archaeological Service Report 801. Gearey B and Schofield J. 2000. Palaeoenvironmental analysis of pollen samples. 34-6. In: O'Neill R. 2000. Land off Venn Street, Huddersfield, West Yorkshire. Archaeological Excavation. West Yorkshire Archaeological Service Report 801.
7925	**Vicar Ln 75**	Hull	KUH	[Underdown S and McKenna W J B]. 1993. Vicar Lane: the plant macrofossils. Fiche M2/B6-8. In: Evans D H (ed). Excavations in Hull 1975-76. East Riding Archaeol. 4. Hull Old Town Rep. Ser. 2.

Site no.	Site	Location	Cty	Reference
*#7926	**Vicar Ln 75-6 EAU 84/18**	Hull	KUH	McKenna, W. J. B. 1984. Excavations in Hull 1975-6: Vicar Lane VL75. The plant macrofossils: archive. Unpub. report [84/18]
7933	**Victoria House EAU 2001/51**	North Street, York	YOR	Hall A, Kenward H, Rowland S, Jaques D and Carrott J. 2001. Evaluation of biological remains from borehole samples taken at the site of the former Victoria House, Micklegate, York (site code: 2001.10749). Reports from the Environmental Archaeology Unit, York 2001/51, 5 pp.
7941	**Vindolanda (bracken)**	Chesterholme	NHU	Seaward, M.R.D. 1976. Observations on the bracken component of the pre-Hadrianic deposits at Vindolanda, Northumberland, pp. 177-85 in Perring, F.H. and Gardiner, B.G. (eds.), The biology of bracken. Botanical Journal of the Linnaean Society 73(1-3).
7943	**Vindolanda 73-6 & 85-9**	Chesterholme	NHU	Wild J P. 1993. Vindolanda 1985-1988. The textiles. 76-90. In: van Driel-Murray C, Wild J P, Seaward M P and Hillam J. 1993. The early wooden forts: preliminary reports on leather, textiles, environmental evidence and dendrochronology. Vindolanda Research Reports New Series III. Bardon Mill: Vindolanda Trust/Roman Army Museum Publications. Seaward M R D. 1993. Environmental evidence. 91-119. In: van Driel-Murray C, Wild J P, Seaward M P and Hillam J. 1993. The early wooden forts: preliminary reports on leather, textiles, environmental evidence and dendrochronology. Vindolanda Research Reports New Series III. Bardon Mill: Vindolanda Trust/Roman Army Museum Publications.
7945	**Vindolanda (puff-balls)**	Chesterholme	NHU	Watling R and Seaward M R D. 1976. Some observations on puff-balls from British archaeological sites. J. Archaeol. Sci. 3. 165-72.
7947	**Vindolanda 67-9 [inc 33-5]**	Chesterholme	NHU	Blackburn K B. 1970. Report of wood samples from the well in the HQB, 1933. 145. In: Birley R. (ed.) Excavations at Chesterholm-Vindolanda 1967-1969. Archaeol. Aeliana 4th Ser. 48. 97-155.

Site no.	Site	Location	Cty	Reference
7949	**Vindolanda 71-6**	Chesterholme	NHU	Seaward M R D. 1976. The Vindolanda environment. Haltwhistle: Barcombe Publications.
7950	**Vindolanda 72**	Chesterholme	NHU	Seaward M R D and Williams D. 1976. An interpretation of mosses found in recent archaeological excavations. J. Archaeol. Sci. 3. 173-7.
*7953	**Vindolanda 97**	Chesterholme	NHU	Huntley J P. 1998. The environmental samples. In: Birley R, Blake J and Birley A. Vindolanda: 1997 excavations, Praetorium site, Interim report. 68-80. Greenhead: Roman Army Museum Publications.
*7955	**Vindolanda AML 3841**	Chesterholme	NHU	Watson J. 1982. Identification of mineral preserved wood associated with iron objects from Vindolanda, Northumberland. AML Report OS 3841.
7964	**Wakemans House EAU 2001/09**	Ripon	NYR	Jaques D, Hall A and Carrott J. 2001. Evaluation of biological remains from excavations at Wakeman's House, Ripon, North Yorkshire (site code: HARGM 10486). Reports from the Environmental Archaeology Unit, York 2001/09, 7 pp.
7975	**Walkergate 2000 EAC**	Durham City	DUR	Rackham D J. 2000. Walkergate, Durham City - DMP00. Environmental Archaeology Assessment. Unpublished report. Environmental Archaeology Consultancy.
*7976	**Walkers Heath NWWS 4**	Gawsworth, nr Cheadle	CHE	Leah M D, Wells C E, Appleby C and Huckerby E. 1997. The wetlands of Cheshire. North West Wetlands Survey 4. Lancaster Imprints 5.
7988	**Wallsend (Segedunum) DEAR 37/98**	Wallsend	TWT	Huntley, J.P. 1998. Excavations at Wallsend, Tyne and Wear: WV97. Evaluation of environmental samples from the Roman fort of Segedunum. Durham Environmental Archaeology Report 37/98.

Site no.	Site	Location	Cty	Reference
7995	**Walmgate (104-12) EAU 92/03**	York (St Margaret's Churchyard site)	YOR	Carrott J B, Dobney K M, Hall A R and Kenward H K. 1992. An evaluation of biological remains from excavations at 104-112 Walmgate, York (YAT site code 1991.21). Unpub. report prep. for York Archaeol. Trust. [92/3]
7998	**Walmgate (118-26) AML 60/89**	York	YOR	Tomlinson P R. 1989. Plant remains from 118-26 Walmgate, York. AML Report New Series 60/89.
7999	**Walmgate (118-26) EAU 2000/20**	York	YOR	Kenward H and Hall A. 2000. Technical report: Plant and invertebrate remains from Anglo-Scandinavian deposits at 118-26 Walmgate, York (site code 78-9.8). Reports from the Environmental Archaeology Unit, York 2000/20, 67 pp.
*#8000	**Walmgate (118-26) EAU 89/19**	York	YOR	Tomlinson, P. R. 1989. Plant remains from 118-26 Walmgate, York. Prep. for York Archaeol. Trust and Ancient Monuments Laboratory. [89/19]
#8001	**Walmgate (41-9) EAU 2000/04**	York	YOR	Johnstone C, Carrott J, Hall A, Kenward H and Worthy D. 2000. Assessment of biological remains from 41-49 Walmgate, York (site code 1999.941). Reports from the Environmental Archaeology Unit, York 2000/4, 46 pp.
#8002	**Walmgate (41-9) EAU 2001/26**	York	YOR	Jaques D, Hall A, Kenward H, Rowland S and Carrott J. 2001. Assessment of biological remains from excavations at 41-9 Walmgate, York (site code: 1999.941). Reports from the Environmental Archaeology Unit, York 2001/26, 17 pp.
8003	**Walmgate (41-9) PRS 2002/26**	York	YOR	Hall A, Kenward H, Jaques D, Carrott J and Rowland S. 2002. Technical report: Biological remains from excavations at 41-9 Walmgate, York (site code: 1999.941). Palaeoecology Research Services Report 2002/26.

Site no.	Site	Location	Cty	Reference
*8004	**Walmgate (41-9)/George St EAU 91/11**	York	YOR	Carrott J B, Hall A R. and Kenward H K. 1991. Environmental evidence from 41-49 Walmgate/George St. (YAT/Yorkshire Museum sitecode: 90.26). Unpub. report prep. for York Archaeol. Trust. [91/11]
*8028	**Walton Moss (d)**	NE Cumbria	CUM	Hughes P D M, Mauquoy D, Barber K E and Langdon P E. 2000. Mire-development pathways and palaeoclimate records from a full Holocene peat archive at Walton Moss, Cumbria, England. Holocene 10. 465-79.
8033	**Walton le Dale AML 4544**	Preston	LAN	van der Veen M. 1985. The plant remains from Walton-le-Dale, Lancashire. AML Report OS 4544.
8070	**Watergate St (12) 85**	Chester	CHE	Greig J R A. 1988. Plant remains. 59-69. In: Ward S. Excavations at Chester: 12 Watergate Street 1985. Roman Headquarters to medieval row. Grosvenor Museum Archaeol. Excavation and Survey Reports 5. Chester: City Council.
*#8072	**Watergate St AML 57/88**	Chester	CHE	Greig J R A. 1988. The medieval plant remains from rock-cut pits at Watergate Street, Chester, Cheshire: new information on food remains. AML Report New Series 57/88.
8077	**Waterside Rd EAU 2001/21**	Beverley	EYR	Hall A, Jaques D and Carrott J. 2001. Evaluation of biological remains from Waterside Road, Beverley, East Yorkshire (site code: BWA2000). Reports from the Environmental Archaeology Unit, York 2001/21, 7 pp.
8078	**Waterside Rd EAU 2001/39**	Beverley	EYR	Hall A, Kenward H, Jaques D, Rowland S and Carrott J. 2001. Evaluation of biological remains from excavations at Waterside Road, Beverley, East Riding of Yorkshire (site code: WAT2001). Reports from the Environmental Archaeology Unit, York 2001/39, 6 pp.

Site no.	Site	Location	Cty	Reference
8079	**Waterton EAU 96/40**	nr Scunthorpe	NLI	Carrott J, Hall A, Jaques D, Kenward H and Large F. 1996. An assessment of biological remains from excavations at Waterton, North Lincolnshire (site code: WGF96). Reports from the EAU, York 96/40.
8081	**Wath Quarry EAU 2001/34**	Hovingham	NYR	Jaques D, Carrott J, Hall A and Rowland S. 2001. Assessment of biological remains from excavations at Wath Quarry, Wath, North Yorkshire (site code 07-08-00). Reports from the Environmental Archaeology Unit, York, 2001/34, 6 pp.
*8112	**Welham Bridge 85**	nr Holme-on-Spalding-Moor	EYR	[Huntley, J.] 1999. The botanical remains. 81. In: Halkon, P. and Millett, M. (eds.) Rural settlement and industry: studies in the Iron Age and Roman archaeology of lowland East Yorkshire. Yorkshire Archaeol Rep. 4.
8114	**Well House Farm 80**	Newton, Corbridge/Prudhoe	NHU	Donaldson A M. 1981. [Identification]. passim 48. In: Gates T. A food vessel burial from Well House Farm Newton, Northumberland. Archaeol. Aeliana 5th Ser. 9. 45-50.
8115	**Well Ln (9-17) 98 EAU 99/04**	Beverley	EYR	Carrott J, Hall A, Jaques D, Kenward H, Large F, Speight H and Worthy D. 1999. Evaluation of bioarchaeological remains from 9-17 Well Lane, Beverley, East Yorkshire (site code: WLB98). Reports from the EAU, York 99/4. 13 pp.
8120	**Wellington Row 88-9 EAU 95/14**	York	YOR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Johnstone C, Kenward H, Large F, McKenna B and Milles A. 1995. Assessment of biological remains from excavations at Wellington Row, York (sitecode 1988-9.24). Reports from the EAU, York 95/14. 17 pp. + 43 pp. appendix.
8126	**Welsh Row (42)/Cheshire Cat LUAU**	Nantwich	CHE	Huckerby E. 2001. 42 Welsh Row and The Cheshire Cat, Nantwich, Cheshire. Palaeoenvironmental assessment report. Lancaster University Archaeological Unit Report.

Site no.	Site	Location	Cty	Reference
8129	**Welton Low Rd EAU 96/17**	Elloughton, nr Brough	EYR	Carrott J, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. Evaluation of biological remains from Welton Low Road, Elloughton, near Brough (sitecode WLE96). Reports from the EAU, York 96/17. 5 pp.
*8130	**Welton Low Rd EAU 97/29**	Elloughton, nr Brough	EYR	Carrott J and Large F. 1997. Evaluation of biological remains from excavations at Welton Low Road, Elloughton (site code: 1997.44). Reports from the EAU, York 97/29. 4 pp.
*8131	**Welton Rd (rear 40-52) 91 EAU 91/25**	Brough	EYR	Hall, A. R. and Dobney, K. 1991. Report on animal and plant remains from excavations at Welton Road, Brough, N. Humberside. [WRB91] Unpub. report prep. for Humberside Archaeol. Unit. [91/25]
*8132	**Welton Rd 94**	Brough	EYR	Hamshaw-Thomas J and Jaques D [with Carrott J, Dobney D, Hall A, Issitt M, Johnstone C and Large F]. 6.0 The Environmental Evidence. In: Hunter-Mann K (with Darling M J and Cool H E M). 2000. Excavations on a Roman extra-mural site at Brough-on-Humber, East Riding of Yorkshire, UK. Internet Archaeol. 9. [http://intarch.ac.uk/journal/issue9/brough/index.html]
8133	**Welton Rd 94 EAU 94/50**	Brough	EYR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Johnstone C, Large F and Milles A. 1994. Assessment of biological remains from excavations at Welton Road, Brough, North Humberside (site code: 1994.294). Reports from the EAU, York 94/50. 6 pp.
#8134	**Welton Rd 94 EAU 95/09**	Brough	EYR	Issitt M, Kenward H, Large F and Milles A. 1995. An evaluation of biological remains from excavations at Welton Road, Brough, Humberside (site code: BRO 94). Reports from the EAU, York 95/9. 3 pp.

Site no.	Site	Location	Cty	Reference
*#8135	**Welton Rd 94 EAU 98/24**	Brough	EYR	Hamshaw-Thomas J and Jaques D. [with contributions from Carrott J, Dobney K, Hall A, Issitt M, Johnstone C and Large F.] 1998. Technical report: Vertebrate and other biological remains from excavations at Welton Road, Brough, East Riding of Yorkshire Reports from the Environmental Archaeology Unit, York, 98/24. 22 pp. + 10 pp. appendices.
8136	**Welton Wold**	nr Brough	EYR	Robinson M and Straker V. 1991. Silica skeletons of macroscopic plant remains from ash. 3-13. In: Renfrew J. (ed.) New Light on ancient Farming. Edinburgh University Press.
*8137	**Welton Wold AML 35/86**	nr Hull	EYR	Watson J. 1986. The identification of mineral preserved organic material associated with ironwork from Walton [sic] Wold, West Yorkshire [sic]. AML Report New Series 35/86.
8160	**West Beck EAU 96/10**	Brigham, nr Driffield	EYR	Carrott J, Dobney K, Hall A, Issitt M, Jaques D, Kenward H and Large F. 1996. Palaeoecological potential of biological remains from Flandrian deposits by West Beck, Brigham, N. Humberside. Reports from the EAU, York 96/10. 12 pp.
*8161	**West Bitchfield 95 DEAR 26/95**	nr Belsay, Hexham/Morpeth	NHU	Huntley J P. 1995. West Bitchfield: WB95. An evaluation of the environmental samples. Durham Environmental Archaeology Report 26/95.
8173	**West End EAU 99/17**	Kilham, nr Gt Driffield	EYR	Evaluation of biological remains from excavations at West End, Kilham, East Riding of Yorkshire (site code KINCM1998.87). Reports from the EAU, York 99/17. 5 pp.
*8175	**West Hartford ASUD 742**	Cramlington	NHU	[Cotton J.] 2001. West Hartford, Cramlington, Northumberland (WHC00): plant macrofossil assessment. ASUD Report 742. 5pp.
8188	**West Heslerton (draft plant report)**	Malton/Scarborough	NYR	Carruthers W J and Hunter K. 2001. West Heslerton. The plant remains. Draft report, October 2001. [seen in electronic copy]

Site no.	Site	Location	Cty	Reference
8190	**West Heslerton 78-82**	Malton/Scarborough	NYR	Allen M. 1986. Plant remains. Fiche M2/51-2. In: Powlesland D. Excavations at Heslerton, North Yorkshire 1978-82. Archaeol. J. 143. 53-173.
*#8196	**West Heslerton AML 4255**	Malton/Scarborough	NYR	Watson J. 1984. Id of organic material assocd with metal objects from West Heslerton. AML Report OS 4255.
*8208	**West Hull (Transco) pipeline EAU 2001/16**	Elloughton, nr Hull	EYR	Hall A, Kenward H, Jaques D and Carrott J. 2001. Evaluation of biological remains from excavations at sites on the line of the Transco West Hull pipeline (site code: OSA01EV05). Reports from the Environmental Archaeology Unit, York 2001/16. 5pp.
*8209	**West Hull (Transco) pipeline EAU 2001/19**	nr Hull	EYR	Hall A. 2001. Notes on the examination of sediment from the sockets of five bronze axes collected along the course of the Transco W. Hull Gas Pipeline. Reports from the Environmental Archaeology Unit, York 2001/19, 2pp.
*#8210	**West Lilling EAU 2000/82**	Malton/York	NYR	Hall A, Jaques D, Rowland S, Kenward H and Carrott J. 2000. Evaluation of biological remains from excavations near West Lilling, North Yorkshire (site code: OSA99EX03). Reports from the Environmental Archaeology Unit, York 2000/82, 9 pp.
8211	**West Lilling EAU 2002/01**	Malton/York	NYR	Hall A, Jaques D, Rowland S, Kenward H and Carrott J. 2002. Technical Report: Biological remains from excavations at a site near West Lilling, North Yorkshire (site codes: OSA99EX03 and BPTSEP169). Reports from the EAU, York 2002/1. 34pp.
*#8212	**West Lilling EAU 99/19**	Malton/York	NYR	Johnstone C, Carrott J, Hall A, Kenward H, Large F and Worthy D. 1999. Assessment of biological remains from Site 169, West Lilling, North Yorkshire (site code BPTSEP169). Reports from the EAU, York 99/19. 6 pp.
*8220	**West Moor Farm ASUD 738**	Crathorne, nr Yarm	NYR	[Cotton J.] 2001. West Moor Farm, Crathorne, North Yorkshire, WMC99: plant macrofossil evaluation. ASUD Report 738. 8pp.

Site no.	Site	Location	Cty	Reference
*8221	**West Moor Park WYAS 942**	Armthorpe	SYD	Richardson J. 2001. Environmental record. Section 8. In: Richardson J,. 2001. West Moor Park, Armthorpe, SouthYorkshire. Archaeological evaluation and excavation. West Yorkshire Archaeological Service Report 942.
8243	**West St (Gargrave) EAU 97/36**	Gargrave, nr Skipton	NYR	Carrott J, Hall A and Large F. 1997. Assessment of plant and animal remains from excavations at West Street, Gargrave, N. Yorkshire (site code WS97). Reports from the EAU, York 97/36.
*8282	**West Whelpington AML 2542**	Kirkwhelpington, Otterburn/Newcastle	NHU	Greig J R A. 1978. A report on the seeds recovered from the site of the deserted medieval village at West Whelpington, Northumberland. AML Report OS 2542.
*8292	**Westgate Rd (67-75) 85**	Newcastle	TWN	Huntley J P. 1988. Palaeobotanical investigations. 160-2. In: Harbottle B, Fraser R and Burton F C. The Westgate Road Milecastle, Newcastle upon Tyne. Britannia 19. 153-62.
8293	**Westgate Rd 91**	Newcastle	TWN	Huntley J P. 1994. The plant remains. 182. Heslop D H, Truman L and Vaughan J E. Excavations on Westgate Road, Newcastle 1991. Archaeol. Aeliana 5th Ser. 22. 153-84.
*#8295	**Westgate Rd 91 DEAR 9/91**	Newcastle	TWN	Huntley J P. 1991. Excavations on Westgate Road, Newcastle upon Tyne: CC91. An assessment of the botanical material. [Durham Environmental Archaeology Report 9/91]
8316	**Wether Hill CfA 19/2001**	Ingram, nr Wooler	NHU	Smith W. 2001. The use of cereal grain temper in a Bronze Age vessel from Wether Hill, Northumberland. Centre for Archaeology Report 19/2001. 10pp.
*8318	**Wetwang Slack AML 23/89**	Wetwang, nr Driffield	EYR	Watson J. 1989. Mineral preserved wood associated with metalwork from Wetwang Slack, Yorkshire. AML Report New Series 23/89.

Site no.	Site	Location	Cty	Reference
8319	**Wharram Percy 53-60**	nr Malton	NYR	Arthur J R B. 1979. Grains and seeds. 135. In: Andrews D D and Milne G. (eds). Wharram. A study of settlement on the Yorkshire Wolds I. Domestic settlement, 1: Areas 10 and 6. Soc. Medieval Archaeol. Monograph Series 8. London.
8322	**Wharram Percy (S Manor area)**	nr Malton	NYR	Carruthers W J. 2000. The botanical remains. 184-94. In: Stamper P A and Croft R A. The South Manor Area. Wharram. A study of settlement on the Yorkshire Wolds, VIII. York University Archaeological Publications 10.
8326	**Wharram Percy (silica skeletons)**	nr Malton	NYR	[Jones J. cited.] 1991. In: Robinson M and Straker V. Silica skeletons of macroscopic plant remains from ash. 3-13. In: Renfrew J. (ed.) New light on ancient farming. Edinburgh University Press.
*#8329	**Wharram Percy AML 1750**	nr Malton	NYR	Arthur J R B. 1975. [Botanical remains from Wharram Percy.] AML Report OS 1750.
*#8330	**Wharram Percy AML 1751**	nr Malton	NYR	Arthur J R B and Paradine P J. 1975. [Carbonised grain & seeds from Wharram Percy.] AML Report OS 1751.
*#8335	**Wharram Percy AML 2040**	nr Malton	NYR	Arthur J R B. 1975. [Seed identification at Wharram Percy (House 6).] AML Report OS 2040.
8338	**Wharram Percy AML 2750**	nr Malton	NYR	Monk M A. 1979. A large deposit of carbonised grain from Wharram Percy AML Report OS 2750.
*8350	**Wharram Percy Church AML 3679**	nr Malton	NYR	Bayley J. 1982. Daub samples from Wharram Percy Church. AML Report OS 3679.
*8353	**Wheatley Head ASUD 751**	nr West Rainton, Durham City/Sunderland	DUR	[Cotton J.] 2001. Wheatley Head, WH01: plant macrofossil evaluation. ASUD Report 751. 5pp.
*8358	**Whitby Headland DEAR 5/99**	Whitby	NYR	Huntley J P. 1999. Whitby Headland: WS98. The charred plant remains from 7th-8th century deposits. Durham Environmental Archaeology Report 5/99. 3pp.

Site no.	Site	Location	Cty	Reference
*8359	**Whitby Shaft B2 ASUD 709**	by Railway Station, Whitby	NYR	[Cotton J.] 2000. Whitby, North Yorkshire - CSW98, CSW99 and WS99: plant macrofossil evaluation and foraminiferal analysis. ASUD Report 709. 25pp.
8377	**Whitehall Shipyard EAU 2001/46**	Spital Bridge, Whitby	NYR	Kenward H, Jaques D, Hall A and Carrott J. 2001. Evaluation of biological remains from excavations at Whitehall Shipyard, Spital Bridge, Whitby, North Yorkshire (site code: WHITM 2001.12). Reports from the Environmental Archaeology Unit, York 2001/46, 4 pp.
8391	**Whitton Hill 82-3**	nr Milfield, nr Wooler	NHU	van der Veen M. 1985. Plant remains. 143 and 146-7. In: Miket R. Ritual enclosures at Whitton Hill, Northumberland. Proc. Prehist. Soc. 51. 137-48.
*#8392	**Whitton Hill 82-3 (crop plants)**	nr Wooler	NHU	van der Veen M. 1985. Evidence for crop plants from North-East England: an interim overview with discussion of new results, pp. 197-219 and unnumbered figs and tables. In: Fieller N R J, Gilbertson D D and Ralph N G A. Palaeobiological Investigations: Research design, methods and data analysis. BAR IS 266. Symposia of the AEA *. Oxford.
*#8393	**Whitton Hill AML 3832**	nr Wooler	NHU	van der Veen M. 1982. Carbonised plant remains from Whitton Hill (Northumberland). AML Report OS 3832.
*#8394	**Whitton Hill AML 4399**	nr Wooler	NHU	van der Veen M. 1984. Plant remains from Whitton Hill, Northumbria. AML Report OS 4399.
*8399	**Whorleys Moss 89-90**		LAN	Wells C. 1990. Stratigraphical investigations in basin mire sites in North Lancashire. North West Wetlands Survey Annual Report 1990. 33-4.
*8412	**Wigginton Rd (land off) EAU 2000/49**	nr York, by N by-pass	YOR	Hall A, Kenward H, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at land off Wigginton Road, York (site code: YORYM 2000.572). Reports from the Environmental Archaeology Unit, York. 2000/49. 5 pp.

Site no.	Site	Location	Cty	Reference
*8413	**Wigginton Rd EAU 99/56**	Wigginton/York	YOR	Carrott, J, Large, F. and Worthy D. 1999. Evaluation of biological remains from proposed roundabout at A1237/B1363 junction, WiggintonRoad, Clifton Moor, York (sitecode: YORYM 1999.955). Reports from the EAU, 99/56. 4 pp.
8417	**Wilbert Grove PRS 2002/09**	Beverley	EYR	Jaques D, Hall A and Carrott J. 2002. Evaluation of biological remains from excavations at Wilbert Grove, Beverley, East Riding of Yorkshire (site code: WIB2002). Palaeoecology Research Services Report 2002/09.
8420	**Wilderspool 66-9 & 76**	nr Warrington	CHE	Hillman G. 1992. Grain processing at 3rd century Wilderspool [from Lousher's Lane site, 1976 excavations]. 167-9. In: Hinchliffe J and Williams J H. 1992. Roman Warrington, excavations at Wilderspool 1966-9 and 1976. Brigantia Monograph No. 2. Department of Archaeology, Univ. of Manchester.
8490	**Winery Ln (S of) 96 HA (plants)**	Walton-le-Dale, nr Preston	LAN	Holden T G and Hastie M. 1999. Analysis of plant remains from Walton le Dale, Lancashire. [Report from Headland Archaeology] 8pp.
*#8507	**Winmarleigh Moss 89-90**	Over Wyresdale, Fylde	LAN	Wells C and Huckerby E. 1990. Stratigraphic, palynological and plant macrofossil investigations on Over Wyresdale: Winmarleigh Moss and Fentons Cottage. North West Wetlands Survey Annual Report 1990. 26-32.
*8508	**Winmarleigh Moss NWWS 3**	Over Wyre, Fylde	LAN	Middleton R, Wells C E and Huckerby E. 1995. The wetlands of North Lancashire. North West Wetlands Survey 3. Lancaster Imprints 4.
*8522	**Winteringham 95 EAU 95/25**	nr Scunthorpe	NLI	Carrott J, Issitt M, Jaques D, Johnstone C and Large F. 1995. Evaluation of biological remains from excavations at Winteringham, Humberside (site code: WEF95). Reports from the EAU, York 95/25. 4 pp.

Site no.	Site	Location	Cty	Reference
8524	**Winterton**	nr Scunthorpe	NLI	Williams D. 1977. A consideration of the sub-fossil remains of Vitis vinifera L. as evidence for viticulture in Roman Britain. Britannia 8. 327-34.
*8528	**Winterton AML 1744**	nr Scunthorpe	NLI	Arthur J R B. 1975. [Identification of seeds from Winterton Villa.] AML Report OS 1744.
*8533	**Winterton AML 1945**	nr Scunthorpe	NLI	Keepax C A [and O'Connor T]. 1975. Waterlogged vegetation from drainage ditch. Interim report. AML Report OS 1945.
8553	**Withow Gap EAU 94/37**	nr Skipsea, nr Hornsea	EYR	Carrott J, Hall A, Hill M, Issitt M, Kenward H and Large F. 1994. Assessment of biological remains from excavations at Withow Gap, Skipsea, Humberside (site code: CAS489). Reports from the EAU, York 94/37. 13 pp.
*8566	**Wood End DEAR 28/96**	Morley Green, nr Manchester	CHE	Huntley J P. 1996. Wood End, Mobberley, Morley Green, near Manchester: WEM96. A palaeoenvironmental assessment. Durham Environmental Archaeology Report 28/96.
8568	**Wood Hall SEF 9404**	nr Womersley	NYR	Wagner, P. and Pelling, R. 1995. Environmental evidence from the moat at Wood Hall, Womersley, North Yorkshire. Sheffield Environmental Facility Project 9404.
*8584	**Wooperton 97 HA**	Wooler/Alnwick	NHU	Holden T G and Hastie M. 1997. Assessment of samples from Wooperton (WOO97). [Headland Archaeology Report].
*8603	**Worsley Farm NWWS 2**	Urmston/Leigh, nr Manchester	GML	Hall D, Wells C E and Huckerby E. 1995. The wetlands of Greater Manchester. North West Wetlands Survey 2. Lancaster Imprints 3.
8617	**Wrenthorpe Potteries 83-6**	nr Wakefield	WYW	Roberts I. 1992. Wood identification. 166-7. In: Moorhouse S and Roberts I. Wrenthorpe potteries. Excavations of 16th and 17th century potting tenements near Wakefield. Yorkshire Archaeology 2. West Yorkshire Archaeol. Service. Wakefield.
*8638	**Wybunbury Moss**	nr Nantwich	CHE	Green, B.H. and Pearson, M.C. 1977. The ecology of Wybunbury Moss, Cheshire. II. The post-glacial history and the formation of the Cheshire mere and mire landscape. J. Ecol. 65, 793-814.

Site no.	Site	Location	Cty	Reference
8649	**Yarm 94 EAU 94/44**	Yarm, nr Stockton-on-Tees	CVS	Carrott J, Hall A, Hill M, Issitt M, Kenward H and Large F. 1994. Evaluation of biological remains from excavations at Yarm, Cleveland (sitecode: OCM 94). Reports from the EAU, York 94/44. 5 pp.
8650	**Yarm AML 2394**	Yarm, nr Stockton-on-Tees	CVS	Donaldson A. 1977. Botanical report on late medieval well deposits from Yarm. AML Report OS 2394.
*8652	**Yarm Flood Alleviation Scheme ASUD 809**	Yarm, nr Stockton-on-Tees	CVS	[Cotton J.] 2001. Yarm Flood Alleviation Scheme, Yarm, Stockton-on-Tees, YFS01: plant macrofossil evaluation. ASUD Report 809. 5pp.
*8653	**Yarm School Friary 94 DEAR 29/94**	Yarm, nr Stockton-on-Tees	CVS	Huntley J P and Gidney L J. 1994. Yarm School Friary: YSF94. An evaluation of the hand-recovered bone and the environmental sample. Durham Environmental Archaeology Report 29/94.
*8659	**Yearsley House EAU 2000/28**	York	YOR	Hall A, Kenward H, Rowland S and Carrott J. 2000. Evaluation of biological remains from excavations at Yearsley House, York (site code: YYH00). Reports from the EAU, York 2000/28, 4 pp.
*#8666	**Coppergate (16-22) (leather-working) EAU 99/27**	York	YOR	Hall A and Kenward H. 1999. A consideration of the bioarchaeological evidence from plant and invertebrate remains for leather working in Anglo-Scandinavian and medieval York. Reports from the Environmental Archaeology Unit, York 99/27, 6 pp. + 2pp. appendices.
*8675	**York Minster Library EAU 95/40**	York	YOR	Hall A, Issitt M, Jaques D, Kenward H and Large F. 1995. An evaluation of biological remains from excavations at York Minster Library (site code: YML95). Reports from the EAU, York 95/40. 4 pp.
*8676	**York Minster Library EAU 99/06**	York	YOR	Jaques D, Large F, Worthy D, Hall A and Carrott J. 1999. Assessment of biological remains from York Minster Library (sitecode: YML97). Reports from the EAU, York 99/6. 10 pp.

Site no.	Site	Location	Cty	Reference
*#8692	**East Gate (Mitre Yd) 73 (prelim)**	Lancaster	LAN	Wilson D G. 1979. Horse dung from Roman Lancaster: a botanical report. 331-50. In: Körber-Grohne U. (ed.) 1979. Festschrift Maria Hopf. Archaeo-Physika 8.
8693	**High Catton (NE of) EAU 2002/15**	nr Stamford Bridge	EYR	Jaques D, Hall, A, Rowland, S and Carrott J. 2002. Technical Report: Biological remains from a site north-east of High Catton, East Riding of Yorkshire (site code: TSEP 218). Reports from the EAU, York. 2002/15. 19pp. + 18pp. Apendix.
*8696	**Redcote 29**	Armley, Leeds	WYL	Raistrick A and Woodhead T W. 1930. Plant remains in post-glacial gravels near Leeds. The Naturalist for 1930. 39-44.
8705	**Brigg Logboat 1886 (mosses 1)**	Brigg	NLI	Hobkirk C P. 1889. Plagiothecium undulatum in Lincolnshire in pre-historic times. Naturalist for 1889, 4-5.
8728	**Catterick 58-97 (Thornbrough Farm Site 452)**	Catterick	NYR	Huntley J P. 2002. Charred and waterlogged plant remains from Thornbrough Farm (sites 452 and 482). 439-43. In: Wilson P R. 2002. Cataractonium: Roman Catterick and its hinterland. Excavations and research, 1958-1997. Part II. CBA Res. Rep. 129. York: CBA.
8732	**Catterick 58-97 (Thornbrough Farm Site 482)**	Catterick	NYR	Huntley J P. 2002. Charred and waterlogged plant remains from Thornbrough Farm (sites 452 and 482). 439-43. In: Wilson P R. 2002. Cataractonium: Roman Catterick and its hinterland. Excavations and research, 1958-1997. Part II. CBA Res. Rep. 129. York: CBA.
8735	**Round Hill 1880-1**	Ulrome/Skipsea, nr Bridlington	EYR	[Anon: mosses]. 606. In: Smith R A. 1911. Lake-dwellings in Holderness, Yorks., discovered by Thos. Boynton, Esq., F.S.A., 1880-1. Archaeologia 62. 593-610.
8736	**North Ferriby Boat No 3 63**	Hull	EYR	[wood identifications]. Passim. In: Wright E V and Churchill D M. 1965. The boats from North Ferriby, Yorkshire, England, with a review of the origins of the sewn boats of the Bronze Age. Proc. Prehist. Soc. 31. 1-24.

Site no.	Site	Location	Cty	Reference
				[Dickson J H. Moss identifications]. 5. In: Wright E V and Churchill D M. 1965. The boats from North Ferriby, Yorkshire, England, with a review of the origins of the sewn boats of the Bronze Age. Proc. Prehist. Soc. 31. 1-24. [Churchill D M]. [Plant macrofossils from peat and clay beneath boat]. 9-11. In: Wright E V and Churchill D M. 1965. The boats from North Ferriby, Yorkshire, England, with a review of the origins of the sewn boats of the Bronze Age. Proc. Prehist. Soc. 31. 1-24.
*8745	**Bainesse Farm (Anglian) 81-2**	Catterick	NYR	Wilson P R, Thompson A, Mould Q, Crowfoot E, Waldron T and Watson J. 1997. The burials. 33-45. In: Wilson P R, Cardwell P, Cramp, R J, Evans J, Taylor-Wilson R H, Thompson A and Wacher J S. 1997. Early Anglian Catterick and Catraeth. Medieval Archaeol. 40 (for 1996). 1-61.
*8747	**Wooperton 97 (5th strip) HA**	Wooler/Alnwick	NHU	Hastie M. 2000. Appendix VI. Assessment of samples from Wooperton. 26-7. In: Dalland M. 2000. Wooperton Quarry: Phase 1, Fifth strip. Assessment Report. [Headland Archaeology Report]
*8748	**Wooperton 97 (1st strip) HA**	Wooler/Alnwick	NHU	Holden T G. 1997. Appendix IV. Assessment of samples from Wooperton. 3pp. In: Dalland M. 1997. Wooperton gravel quarry: Phase 1, first strip. Assessment Report. [Headland Archaeology Report]
*8749	**Wooperton 97 (2nd strip) HA**	Wooler/Alnwick	NHU	Holden T G. 1997. Appendix IV. Assessment of samples from Wooperton, Phase 1, Strip 2. 16-17. In: Dalland M. 1997. Wooperton gravel quarry: Phase 1, Second strip. Assessment Report. [Headland Archaeology Report]
*8750	**Wooperton 97 (3rd strip) HA**	Wooler/Alnwick	NHU	Holden T G. 1998. Appendix IV. Assessment of samples from Wooperton. 24-6. In: Dalland M. 1998. Wooperton Quarry: Phase 1, Third strip. Assessment Report. [Headland Archaeology Report]

Site no.	Site	Location	Cty	Reference
*8751	**Wooperton 97 (4th strip) HA**	Wooler/Alnwick	NHU	Holden T G. 1999. Appendix 5. Assessment of samples from Wooperton. 21-3. In: Glendinning B. 1999. Wooperton Quarry: Phase 1, Fourth strip. Assessment Report. [Headland Archaeology Report]
*8758	**Giggleswick Tarn logboat**	nr Skipton	NYR	McGrail S. and O'Connor S. 1979. The Giggleswick Tarn logboat. Yorkshire Archaeol. J. 51. 41-9.
*8783	**Hatfield Moors (site 2)**	nr centre of Hatfield Moors	SYD	Smith B M. 2002. A palaeoecological study of raised mires in the Humberhead Levels. BAR BS 336. Oxford.
*8784	**Thorne Moors (site 1)**	nr centre of Thorne Moors	SYD	Smith B M. 2002. A palaeoecological study of raised mires in the Humberhead Levels. BAR BS 336. Oxford.
*8786	**Rawcliffe Moor (site 1)**	Rawcliffe Moor, Humberhead Levels	EYR	Smith B M. 2002. A palaeoecological study of raised mires in the Humberhead Levels. BAR BS 336. Oxford.
8807	**Sandyford Quarry Field 97**	nr Bolam Lake, nr Belsay	NHU	Huntley J P. 2002. Palaeoenvironmental samples. 42-3. In: Waddington C and Davies J. 2002. An Early Neolithic settlement and Late Bronze Age burial cairn near Bolam Lake, Northumberland: fieldwalking, excavation and reconstruction. Archaeol. Aeliana 5th Ser. 30. 1–47.
8829	**Billingley Drive 99**	Thurnscoe, Barnsley/Doncaster	SYR	Giorgi J. 2004. The charred plant remains. 63-76. In: Neal P G E and Fraser R. 2004. A Romano-British enclosed farmstead at Billingley Drive, Thurnscoe, South Yorkshire. Yorkshire Archaeol. J. 76. 7-92.
9106	**Brook House Farm (Cheshire)**	Bruen Stapleford, nr Duddon, nr Chester	CHE	Carruthers W J. 2003. Plant remains. 34-9. In: Fairburn N. 2003. Brook House Farm, Bruen Stapleford. Excavation of a first millennium BC settlement. J. Chester Archaeol. Soc. 77 (for 2002). 9-57 and Map p. 8.
9131	**Birch Heath 2001**	Tarporley	CHE	Carruthers W J. 2003. Plant remains. 90-6. In: Fairburn N. 2003. Birch Heath, Tarporley. Excavation of a rural Romano-British settlement. J. Chester Archaeol. Soc. 77 (for 2002). 58-114.

Site no.	Site	Location	Cty	Reference
9139	**Castle Garth 76-92**	Newcastle	TWN	Huntley J P and Daniell J R G. 2002. The charred plant remains. 239-43. In: Snape M and Bidwell P. 2002. Excavations at Castle Garth, Newcastle upon Tyne, 1976-92 and 1995-6. The excavation of the Roman fort. Archaeol. Aeliana 5th Ser. 31. 1-249.
9173	**Barton upon Humber**	Barton-upon-Humber	NLI	[Robinson M.] 1981. [seed identification]. 62. In: Meaney A L. 1981. Anglo-Saxon amulets and curing stones. British Archaeological Reports (British Series) 96. Oxford.
*9177	**North Bridge 93-4 (sparse remains)**	Doncaster	SYD	Hall A R, Kenward H K and McComish J M. 2003. Pattern in thinly-distributed plant and invertebrate macrofossils revealed by extensive analysis of occupation deposits at Low Fisher Gate, Doncaster, U.K. Env. Archaeol. 8, 129-144.
*9178	**North Bridge 93-4 (large pit)**	Doncaster	SYD	Kenward H K, Hall A R and McComish J M. 2004. Archaeological implications of plant and invertebrate remains from fills of a massive early post-medieval cut at Low Fisher Gate, Doncaster, UK. Env. Archaeol. 9, 61-74.
9182	**South Shields Fort 92-4 & 99 (prehistoric)**	South Shields	TWS	van der Veen M. 2001. The Iron-Age plant remains. 108-41. In: Hodgson N, Stobbs G C and van der Veen M. 2001. An Iron-Age settlement and remains of earlier prehistoric date beneath South Shields Roman fort, Tyne and Wear. Archaeol. J. 158. 62-160.
9254	**Brigg Logboat 1886 (mosses 3)**	Brigg	NLI	[Lett H W]. 1887. [mosses]. 365. In: Atkinson A. 1887. Notes on an ancient boat found at Brigg. Archaeologia 50, 361-70.
9368	**Barrow Rd 99-2000**	Barton-upon-Humber	NLI	Rackham J and Giorgi J A. 2002. The biological assemblage. 16-17. In: Bradley J. 2002. Excavations at Barrow Road, Barton-on-Humber, 1999-2000. Lincolnshire Hist. Archaeol. 37. 5-20.

Site no.	Site	Location	Cty	Reference
9382	**Old Abbey Farm 95**	Risley, nr Warrington	CHE	Kenward H, Hughes P and Hall A. 2004. Plant and invertebrate macrofossils. 132-8. In: Heawood R, Howard-Davis C, Drury D and Krupa M. 2004. Old Abbey Farm, Risley: building survey and excavation at a medieval moated site. Lancaster: Oxford Archaeology (North).
9390	**Glasson Moss 96-7 (hemp)**	Solway	CUM	Cox M, Chandler J, Cox C, Jones J and Tinsley H. 2000. Early-medieval hemp retting at Glasson Moss, Cumbria, in the context of the use of Cannabis sativa during the historic period. Trans. Cumberland Westmorland Antiq. Archaeol. Soc. 100 (2nd ser), 131-50.
*9392	**West Heslerton (Anglian Cemetery) 77-87 (2)**	Malton/Scarborough	NYR	[Watson J.] 1999. SEM and other micrographs. Preserved and mineral-preserved wood. 354-56. In: Haughton C and Powlesland D. 1999. West Heslerton. The Anglian Cemetery. ii. Catalogue of the Anglian graves and associated assemblages. Yedingham, N. Yorkshire: Landscape Research Centre.
*9396	**Amble (J&H)**	Amble	NHU	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9413	**Blanch (J&H)**	Pocklington/Driffield	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9440	**Broughton (J&H)**	nr Scunthorpe	NLI	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9452	**Ford (J&H)**	nr Crookham	NHU	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.

Site no.	Site	Location	Cty	Reference
*9480	**Hutton Buscel (J&H)**	Scarborough/Pickering	NYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9495	**Londesborough (J&H)**	nr Market Weighton	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9509	**Newbald (J&H)**	Market Weighton/Hull	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9516	**Papcastle (J&H)**	nr Cockermouth	CUM	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9522	**Plumpton (J&H)**	nr Penrith	CUM	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9532	**Riggs (J&H)**	near Fridaythorpe, York/Driffield	NYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab, Biologisker Skrifter III(2), 1-68.
*9581	**Wharram Percy (J&H)**	nr Malton	NYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9734	**Layerthorpe Bridge (leather-working) EAU 99/27**	York	YOR	Hall A and Kenward H. 1999. A consideration of the bioarchaeological evidence from plant and invertebrate remains for leather working in Anglo-Scandinavian and medieval York. Reports from the Environmental Archaeology Unit, York 99/27, 6 pp. + 2pp. appendices.

Site no.	Site	Location	Cty	Reference
*9736	**Goodmanham (NE of) CHP 2003/01**	nr Market Weighton	EYR	Hall A, Jaques D and Carrott J. 2003. Technical Report: Biological remains from a site north-east of Goodmanham, East Riding of Yorkshire (site code: TSEP907). Reports from the Centre for Human Palaeoecology, University of York 2003/01, 31pp.
*9749	**Layerthorpe Bridge (leather-working)**	York	YOR	Hall A and Kenward H. 2003. Evidence for tanning from plant and insect remains. 3230-1. In: Mould Q, Carlisle I and Cameron E. 2003. Craft, Industry and Everyday Life: Leather and Leatherworking in AngloScandinavian and Medieval York Archaeology of York 17(16). Council for British Archaeology, York.
*9750	**Coppergate (16-22) (leather-working)**	York	YOR	Hall A and Kenward H. 2003. Evidence for tanning from plant and insect remains. 3230-1. In: Mould Q, Carlisle I and Cameron E. 2003. Craft, Industry and Everyday Life: Leather and Leatherworking in AngloScandinavian and Medieval York Archaeology of York 17(16). Council for British Archaeology, York.
*9777	**Bagmere**	Congleton/Middlewich	CHE	Birks H J B. 1965. Late-glacial deposits at Bagmere, Cheshire, and Chat Moss, Lancashire. New Phytol. 64. 270-85.
*9778	**Chat Moss**	Manchester/Warrington	XXX	Birks H J B. 1965. Late-glacial deposits at Bagmere, Cheshire, and Chat Moss, Lancashire. New Phytol. 64. 270-85.
*9793	**Warter Wold (J&H)**	nr Pocklington	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
*9794	**Huggate & Warter (J&H)**	nr Pocklington	EYR	Jessen K and Helbæk H. 1944. Cereals in Great Britain and Ireland in prehistoric and early historic times. Det Kongelige Danske Videnskabernes Selskab. Biologisker Skrifter III(2). 1-68.
9958	**Papcastle (grain)**	nr Cockermouth	CUM	Irwin W. 1924. Report on a bed of wheat found just outside the Roman fort at Papcastle. Trans. Cumberland Westmorland Archaeol. Antiq. Soc. 24. 371-3.

Site no.	Site	Location	Cty	Reference
*10222	**Coppergate (vegetative remains)**	York	YOR	Tomlinson P. 1991. Vegetative plant remains from waterlogged deposits identified at York. 109-19. In: Renfrew J. (ed.) New Light on ancient Farming. Edinburgh University Press.
10276	**Brewery Field**	Cockermouth	CUM	Irwin W. 1924. Ancient oats near Cockermouth. Trans. Cumberland Westmorland Archaeol. Antiq. Soc. 24. 373-4.
*10295	**Cawthorn Camps CfA 17/2003**	nr Pickering	NYR	Evans J, Cromwell T, Hall A, Wilson P, Hembrey N, Usai R and Makey P. 2003. Excavations at Cawthorn Camps, North Yorkshire 1999-2000:... Centre for Archaeology Report 17/2003. 21pp.
10848	**Roecliffe 93**	Nr Boroughbridge	NYR	Huntley J P. 2005. The plant remains. 207-9. In: Bishop M C. A new Flavian military site at Roecliffe, North Yorkshire. Britannia 36. 135-223.

10.2 *Appendix 2*

List of sites for which reports of plant macrofossil remains have been considered for this review in 'county' and site number order (county codes and site numbers as in Appendix 1). Hyperlinks have been provided in order to obtain full references the the reports concerned. This list includes all those marked '*' and/or '#' in Appendix 1. The numbers can be used to identify sites in the maps in the text.

Cheshire

CHE 712 Beeston Castle 68-85
CHE 718 Beeston Castle AML 1806
CHE 1172 Bridge St (Chester) PRS 2002/16
CHE 1492 Canalside/Witter Pl PRS 2001/06
CHE 1918 Church Moss 95
CHE 1919 Church Moss 95 EAU 96/36
CHE 1920 Church Moss 95 EAU 98/26
CHE 2337 Crown Car Park 78
CHE 2338 Crown Car Park AML 3347
CHE 2418 Danes Moss NWWS 4
CHE 2756 Eastgate St (3-15) (Chester) 90-1
CHE 2901 Farm Wood Quarry 57
CHE 3165 Gadbrook Park EAU 96/45
CHE 3333 Goss St 72
CHE 3955 Hunter St School 79-81
CHE 4477 Lindow Moss (body)
CHE 4478 Lindow Moss 87-88 AML 111/88
CHE 4691 Lower Bridge St 74-6
CHE 4692 Lower Bridge St EAU 89/32
CHE 5020 Middlewich EHy
CHE 5257 New Crane St PRS 2002/08
CHE 5442 Norton (Cheshire) 74-6
CHE 5451 Norton Priory AML 1833
CHE 5504 Oakwood Quarry 78-80
CHE 5529 Old Abbey Farm EAU 96/13
CHE 5530 Old Abbey Farm EAU 98/23
CHE 5941 Princess St 81 AML 3980
CHE 6338 Sankey Brook OAN
CHE 6829 St Annes Ln (Nantwich) 85
CHE 7874 Upton Recreation Centre DEAR 18/97
CHE 7976 Walkers Heath NWWS 4
CHE 8070 Watergate St (12) 85
CHE 8072 Watergate St AML 57/88
CHE 8126 Welsh Row (42)/Cheshire Cat LUAU
CHE 8420 Wilderspool 66-9 & 76
CHE 8566 Wood End DEAR 28/96
CHE 8638 Wybunbury Moss
CHE 9106 Brook House Farm (Cheshire)
CHE 9131 Birch Heath 2001
CHE 9382 Old Abbey Farm 95
CHE 9647 Widnes Warth PRS 2003/04
CHE 9777 Bagmere

Cumbria

CUM 95 Abbey St 90
CUM 256 Ambleside 82
CUM 257 Ambleside AML 11/93
CUM 285 Annetwell St AML 1/89
CUM 286 Annetwell St AML 107/89
CUM 288 Annetwell St AML 17/89
CUM 290 Annetwell St AML 37/89
CUM 291 Annetwell St AML 3885
CUM 292 Annetwell St AML 81/89
CUM 320 Appletree EAU 2000/46
CUM 424 BBC site (Carlisle) DEAR 1/92
CUM 834 Birdoswald 87-92
CUM 835 Birdoswald AML 104/91
CUM 898 Blackfriars St (Carlisle) 77-9
CUM1019 Botchergate (53-63) OAN
CUM1034 Bowling Green (Carlisle) DEAR 2/93
CUM1272 Broomrigg 48-9
CUM1295 Brougham Castle DEAR 5/92
CUM1529 Carlisle 73-5 AML 3222
CUM1530 Carlisle 73-6 AML 2402
CUM1533 Carlisle 77 AML 2483
CUM1534 Carlisle 78 AML 3219
CUM1540 Carlisle AML 24/91
CUM 1546 Carlisle AML 3174
CUM1570 Carnaud Metal Box 97
CUM1656 Castle St (Carlisle) 81-2
CUM1660 Castle St (Carlisle) AML 4010
CUM1665 Castle St (Carlisle) AML 77/88
CUM2302 Croftlands 77
CUM2303 Croftlands AML 2930
CUM2315 Crosby By-pass DEAR 35/94
CUM2589 Drigg LUAU
CUM2785 Edderside 89-90 DEAR 3/91
CUM2849 Eskmeals AML 3978
CUM2864 Ewanrigg 83-7

CUM2865 Ewanrigg AML 85/88
CUM2866 Ewanrigg Cemetery AML 4400
CUM2867 Ewanrigg Settlement 86-7
CUM3158 Furness Abbey 88 AML 66/89
CUM3256 Glasson Moss 96-7
CUM3572 Hardendale Nab AML 61/88
CUM3842 Holbeck Park Ave OAN
CUM4246 Kirkby Thore 83
CUM4248 Kirkby Thore AML 4470
CUM4249 Kirkby Thore LUAU
CUM4669 Low Borrowbridge 92 DEAR 6/92
CUM5028 Midtodhill Kiln DEAR 2/92
CUM5563 Old Penrith 77-9
CUM5676 Papcastle AML 76/88
CUM5758 Penrith EAU 96/46
CUM6048 Ravenglass 76 AML 2269
CUM6128 Rickerby House HA
CUM6375 Scotch St (Carlisle) AML 2387
CUM6407 Seathwaite Valley 93
CUM6756 Sparrowmire Fam LUAU
CUM7007 St Nicholas Yard 96-7
CUM7108 Stanwix 94 EAU 94/57
CUM7110 Stanwix Fort (nr) ASUD 641
CUM7116 Williamsons Moss 1
CUM7244 Stricklandgate 87-8 AML 65/89
CUM7360 Tarraby (grass cuttings) AML 2264
CUM7366 Tarraby Ln 76
CUM7456 The Lanes AML 51/92
CUM7791 Tullie House 79 AML 3218
CUM7793 Tullie House AML 2389
CUM7794 Tullie House Extension & Basement DEAR 1/91
CUM8028 Walton Moss (d)
CUM9390 Glasson Moss 96-7 (hemp)
CUM9516 Papcastle (J&H)
CUM9522 Plumpton (J&H)
CUM9953 Walton Moss (e)
CUM9954 Bolton Fell Moss (d)
CUM9958 Papcastle (grain)
CUM10276 Brewery Field

Hartlepool (formerly Cleveland)
CVH 1578 Carr House Sands HA
CVH 1692 Catcote 87
CVH 1693 Catcote AML 16/89
CVH 1695 Catcote School (nr) ASUD 669
CVH 1905 Church Close 84-5 (Anglo-Saxon)
CVH 1906 Church Close 84-5 (medieval)
CVH 1908 Church Close 84-5 AML 74/87
CVH 1987 Claxton Quarry DEAR 23/94
CVH 3594 Hart 96 DEAR 6/96
CVH 3601 Hartlepool Headland sites ASUD 644
CVH 4684 Low Throston House 96 DEAR 18/96
CVH 4722 Lumley St ASUD 657
CVH 5015 Middlegate 87 AML 86/88
CVH 5135 Morrison Hall 87 AML 52/90
CVH 5301 Newton Bewley 98 ASUD 650
CVH 5302 Newton Bewley 98 ASUD 729
CVH 6735 Southgate 81 AML 73/87
CVH 6736 Southgate 81-2

Middlesbrough (formerly Cleveland)
CVM 993 Bonny Grove Farm 92
CVM 994 Bonny Grove Farm DEAR 16/94
CVM3681 Hemlington Larchfield AML 4371
CVM4672 Low Farm ASUD 689
CVM4673 Low Farm ASUD 696
CVM5973 Quarry Farm 2000 ASUD 660

Redcar and Cleveland (formerly Cleveland)
CVR 540 Barnaby Side DEAR 24/96
CVR 541 Barnaby Side Farm DEAR 2/95
CVR 2853 Eston Nab 84-7
CV 3470 Highcliff Nab DEAR 39/97
CVR 3471 Highcliff Nab DEAR 9/96
CVR 3799 Highcliff Nab 95
CVR 4174 Kilton Thorpe Ln 2000 ASUD 726
CVR 4175 Kilton Thorpe Ln 2001 ASUD 841
CVR 4176 Kilton Thorpe Ln 2001 ASUD 846
CVR 4177 Kilton Thorpe Ln 2001 ASUD 847
CVR 6309 Saltburn DEAR 1/95
CVR 7615 Tocketts Farm ASUD 731

Stockton-on-Tees (formerly Cleveland)
CVS 304 Annigate 95 DEAR 5/96
CVS 2824 Elton West Garth 91 DEAR 13/93
CVS 2825 Elton West Garth 93 DEAR 17/94
CVS 3352 Grange Farm (Norton) 93 DEAR 24/94
CVS 3625 Haugh Hill ASUD 651
CVS 4002 Ingleby Barwick
CVS 4003 Ingleby Barwick 94 DEAR 36/94
CVS 4004 Ingleby Barwick DEAR 15/97
CVS 4520 Little Maltby Farm DEAR 47/97
CVS 5447 Norton Mill AML 2931
CVS 6301 Sadberge DEAR 14/93
CVS 6336 Sandy Lees Farm ASUD 651
CVS 7436 The Garth ASUD 803
CVS 7554 Thorpe Thewles 80-2
CVS 7555 Thorpe Thewles 80-2 (CHR)
CVS 7556 Thorpe Thewles AML 4012
CVS 7557 Thorpe Thewles AML 4154

CVS 7558 Thorpe Thewles AML 4277
CVS 7559 Thorpe Thewles AML 4372
CVS 8649 Yarm 94 EAU 94/44
CVS 8650 Yarm AML 2394
CVS 8652 Yarm Flood Alleviation Scheme ASUD 809
CVS 8653 Yarm School Friary 94 DEAR 29/94

Durham (County)
DUR 28 A66 AML 2/91
DUR 331 Archibalds DEAR 54/97
DUR 332 Archibalds DEAR 8/96
DUR 429 Back Silver St 75 AML 2155
DUR 431 Back Silver St 75-6
DUR 547 Barnard Castle 76-8
DUR 550 Barnard Castle AML 2928
DUR 551 Barnard Castle AML 3923
DUR 654 Bear Park Kiln 96 DEAR 15/96
DUR 1833 Middle Chare 78-9
DUR 1834 Chester le Street AML 2929
DUR 1836 Chester le Street DEAR 2/91
DUR 1901 Church Chare 90-1
DUR 1903 Church Chare AML 84/91
DUR 1990 Claypath 99 ASUD 636
DUR 1992 Claypath AML 4899
DUR 2206 Cosins Chapel 96 DEAR 10/96
DUR 2262 Coxhoe
DUR 2263 Coxhoe (crop plants)
DUR 2281 Crawley Edge AML 2265
DUR 2603 Dubby Sike 84
DUR 2604 Dubby Sike AML 4761
DUR 2650 Durham Almshouses DEAR 25/97
DUR 2655 Durham Castle (Fellows Garden) (plants)
DUR 2662 Durham Prison DEAR 22/97
DUR 2714 East Lea ASUD 690
DUR 2846 Escomb Church ASUD 808
DUR 2911 Faverdale ASUD 746
DUR 2921 Fellows Garden 91 DEAR 4/91
DUR 2922 Fellows Garden 91 DEAR 8/91
DUR 3069 Forcegate Pasture North 72-4
DUR 3422 Greta Bridge DEAR 34/96
DUR 3519 Hallgarth Hall DEAR 15/98
DUR 3520 Hallgarth Hall DEAR 45/97
DUR 3819 Hindon Edge DEAR 9/98
DUR 4384 Leazes Bowl 96
DUR 4385 Leazes Bowl DEAR 11/95
DUR 4388 Leazes Bowl DEAR 30/98
DUR 4872 Market Pl (Darlington) DEAR 14/95
DUR 4874 Market Pl (Darlington) DEAR 18/94
DUR 5031 Milburngate 83
DUR 5032 Milburngate AML 4009
DUR 5034 Milburngate AML 4674
DUR 5230 Neasham (dating)
DUR 5231 Neasham Abbey DEAR 14/97
DUR 5258 New Elvet (19-20) 92
DUR 5346 North Bailey (gas main)
DUR 5531 Crossgate (rear) 95
DUR 5544 Old Durham 51
DUR 5545 Old Durham Gardens 89-92
DUR 5547 Old Elvet (16-20) (Police Hostel)
DUR 5695 Park View DEAR 20/94
DUR 5696 Park View School ASUD 734
DUR 5697 Park View School ASUD 794
DUR 6159 River Skerne DEAR 7/95
DUR 6302 Saddler St (61-3) 74
DUR 6396 Seaham Headland DEAR 24/95
DUR 6560 Simy Folds AML 2397
DUR 6596 Skerne Bridge DEAR 25/95
DUR 6708 South St (Durham) ASUD 889
DUR 7410 The Annums ASUD 737
DUR 7568 Thrislington 73-4
DUR 7569 Thrislington 74 AML 2160
DUR 7975 Walkergate 2000 EAC
DUR 8353 Wheatley Head ASUD 751

East Riding of Yorkshire
EYR 160 Albion St 92 EAU 92/12
EYR 179 Aldro (J&H)
EYR 348 Arras Cottages ASUD 722
EYR 349 Arras Cottages ASUD 723
EYR 350 Arras Cottages ASUD 782 (TSEP)
EYR 426 Back Field ASUD 733
EYR 537 Barmby on the Marsh PRS 2001/02
EYR 624 Baxtergate (16) (Hedon) EAU 2001/29
EYR 675 Beckside North PRS 2002/06
EYR 677 Beckview Tilery 86 EAU 93/05
EYR 844 Bishop Burton 93 EAU 93/03
EYR 845 Bishop Burton/Dale Gate EAU 2000/65
EYR 847 Bishop Wilton 93 EAU 93/06
EYR 848 Bishop Wilton 93 EAU 93/09
EYR 849 Bishop Wilton EAU 2000/43
EYR 850 Bishop Wilton EAU 2001/18
EYR 980 Bolton AML 1819
EYR 982 Bolton Common EAU 2000/67
EYR 985 Bolton Hall EAU 2000/66
EYR 986 Bolton Hall EAU 2002/04
EYR 1096 Brandesburton ASUD 662
EYR 1179 Bridgegate ASUD 791
EYR 1184 Bridlington 95 DEAR 27/95

EYR 1290 Brough on Humber 58-61
EYR 1299 Browns Yd EAU 2001/01
EYR 1364 Bursea Grange 86
EYR 1365 Bursea House 83-4, 87, 91-2
EYR 1369 Burton Fleming AML 2891
EYR 1371 Burton Fleming AML 67/92
EYR 1459 Callis Wold AML 1871
EYR 1522 Carberry Hall Farm EAU 2000/72
EYR 1523 Carberry Hall Farm EAU 2002/05
EYR 1635 Castle Hill Farm EAU 2000/60
EYR 1743 Caythorpe Gas Pipeline DEAR 3/92
EYR 1746 Caythorpe Pipeline
EYR 1770 Champney Rd 93 EAU 93/01
EYR 1777 Chapel Farm (rear) PRS 2002/14
EYR 1910 Church Farm (Flamborough) EAU 99/16
EYR 1928 Church St (Burton Pidsea) EAU 2001/28
EYR 2121 Cooper Farm EAU 99/13
EYR 2211 Cottage Farm CfA 95/2001
EYR 2213 Cottam 93 EAU 94/32
EYR 2215 Cottam 93-6
EYR 2222 County Hall (Beverley) EAU 2001/25
EYR 2244 Cowick
EYR 2245 Cowick 76
EYR 2247 Cowick Moat AML 4498
EYR 2250 Cowlam (J&H)
EYR 2252 Cowlam Wold Barrows 68
EYR 2291 Creyke Beck DEAR 21/98
EYR 2294 Creyke Beck DEAR 41/97
EYR 2405 Dancing Ln/Main St ASUD 881
EYR 2509 Dimlington (moss)
EYR 2531 Dominican Friary (Beverley) AML 21/90
EYR 2534 Dominican Priory (Beverley) 86-9
EYR 2743 Eastgate (Beverley) 83-6
EYR 2752 Eastgate (Beverley) 84 EAU 88/30
EYR 2755 Eastgate South (Driffield) EAU 2001/36
EYR 2945 North Ferriby Boat No 2 78-80
EYR 2946 North Ferriby Boat No 5
EYR 2964 Figham Common EAU 98/17
EYR 3032 Flat Ln EAU 2000/68
EYR 3033 Flat Ln EAU 2002/10
EYR 3041 Flemingate 95 EAU 95/48
EYR 3042 Flemingate House 93 EAU 93/07
EYR 3185 Ganstead (S of) EAU 2000/74
EYR 3186 Ganstead (S of) EAU 2002/09
EYR 3189 Gardham ASUD 724
EYR 3271 Glen Garth ASUD 883
EYR 3313 Goodmanham (J&H)
EYR 3314 Goodmanham (NE of) EAU 2000/73
EYR 3315 Goodmanham Wold EAU 2000/69
EYR 3516 Hall Garth 80 EAU 94/18
EYR 3517 Hall Garth 80 EAU 94/60
EYR 3638 Hawling Rd 89
EYR 3643 Hayton 95 DEAR 17/96
EYR 3676 Garton Slack (J&H)
EYR 3693 Hengate EAU 96/57
EYR 3738 High Catton (E of) EAU 2000/71
EYR 3739 High Catton (E of) EAU 2002/12
EYR 3740 High Catton (NE of) EAU 2000/70
EYR 3790 High St/Long St (Rudston) PRS 2002/24
EYR 3806 Highgate 77
EYR 3856 Holme Church Ln EAU 96/43
EYR 3918 Howden ASUD 839
EYR 4082 Jack Taylor Ln EAU 98/10
EYR 4127 Keldgate (by 52) EAU 2001/35
EYR 4128 Keldgate 94 EAU 95/03
EYR 4171 Kilnsea Boat 96
EYR 4287 Knights Hospitallers EAU 92/21
EYR 4326 Landress Ln EAU 96/25
EYR 4367 Lawns Farm EAU 2000/62
EYR 4368 Lawns Farm EAU 2002/06
EYR 4411 Leven-Brandesburton EAU 93/20
EYR 4412 Leven-Brandesburton EAU 94/15
EYR 4413 Leven-Brandesburton garage EAU 95/06
EYR 4435 Lime Tree Ln 93 EAU 96/29
EYR 4645 Long Ln (Beverley)
EYR 4657 Lord Roberts Rd EAU 99/07
EYR 4674 Low Farm EAU 2000/61
EYR 4675 Low Farm EAU 2002/08
EYR 4727 Lurk Ln 79-82
EYR 4777 Magdalen Ln DEAR 26/98
EYR 4785 Magistrates Court (Beverley) EAU 2001/06
EYR 4786 Magistrates Court (Brough) EAU 2001/38
EYR 4812 Main St (Long Riston) PRS 2002/07
EYR 4967 Melton (South Lawn) 94
EYR 4968 Melton DEAR 31/94
EYR 5141 Morton Ln EAU 2002/02
EYR 5344 North Back Ln EAU 2001/52
EYR 5348 North Bar Within 95 EAU 95/54
EYR 5350 North Beckside 93 EAU 93/05
EYR 5355 North Cave AML 105/90

EYR 5356 North Cave EAU 96/42
EYR 5357 North Cave EAU 97/37
EYR 5363 North Ferriby Boats Nos 1 and 2 47
EYR 5369 North Ferriby Boats (artefacts)
EYR 5431 Northgate (7) EAU 99/59
EYR 5552 Old Gardham Field ASUD 725
EYR 5554 Old Hall (Hedon) EAU 96/22
EYR 5560 Old Manor House 95 EAU 95/34
EYR 5627 The Outgang 96 EAU 96/37
EYR 5656 Paddock Hill (Octon) AML 14/93
EYR 5657 Painsthorpe Wold (J&H)
EYR 5684 Park Grange Farm EAU 91/35
EYR 5821 Pits Plantation DEAR 3/96
EYR 5854 Poplar Farm EAU 2000/63
EYR 5855 Poplar Farm EAU 2002/07
EYR 6074 Rectory Ln EAU 96/50
EYR 6256 Rudston (J&H)
EYR 6260 Rudston Villa
EYR 6262 Rudston Villa AML 1769
EYR 6264 Rudston Well AML 1882
EYR 6265 Rudston Well AML 2221
EYR 6272 Runner End DEAR 54/98
EYR 6325 Sancton (Saxon Cemetery) 76-80
EYR 6433 Sewerby AML 2601
EYR 6434 Sewerby AML 2866
EYR 6435 Sewerby AML 3648
EYR 6493 Ship Inn (rear) EAU 97/40
EYR 6494 Ship Inn (rear) EAU 99/18
EYR 6604 Skipsea Withow Mere (a)
EYR 6605 Skipsea Withow Mere (b)
EYR 6676 South Beckside 2000 EAU 2000/15
EYR 6677 South Beckside PRS 2002/10
EYR 6845 St Augustines Gate (15-19) 93 EAU 93/04
EYR 6846 St Augustines Gate (9-11, rear) 99 EAU 2000/02
EYR 7071 Stamford Bridge 98 HA
EYR 7147 Station Yd (Beverley) EAU 91/17
EYR 7221 Storking Ln (land off) 99 EAU 99/50
EYR 7578 Thwing AML 116/93
EYR 7581 Thwing AML 4833
EYR 7682 West Hull (Transco) Pipeline PRS 2001/05
EYR 7779 Trinity Ln EAU 2002/03
EYR 8077 Waterside Rd EAU 2001/21
EYR 8078 Waterside Rd EAU 2001/39
EYR 8112 Welham Bridge 85
EYR 8115 Well Ln (9-17) 98 EAU 99/04
EYR 8129 Welton Low Rd EAU 96/17
EYR 8130 Welton Low Rd EAU 97/29
EYR 8131 Welton Rd (rear 40-52) 91 EAU 91/25
EYR 8132 Welton Rd 94
EYR 8133 Welton Rd 94 EAU 94/50
EYR 8134 Welton Rd 94 EAU 95/09
EYR 8135 Welton Rd 94 EAU 98/24
EYR 8136 Welton Wold
EYR 8137 Welton Wold AML 35/86
EYR 8160 West Beck EAU 96/10
EYR 8173 West End EAU 99/17
EYR 8208 West Hull (Transco) pipeline EAU 2001/16
EYR 8209 West Hull (Transco) pipeline EAU 2001/19
EYR 8318 Wetwang Slack AML 23/89
EYR 8417 Wilbert Grove PRS 2002/09
EYR 8553 Withow Gap EAU 94/37
EYR 8693 High Catton (NE of) EAU 2002/15
EYR 8735 Round Hill 1880-1
EYR 8736 North Ferriby Boat No 3 63
EYR 8771 Lone Farm PRS 2003/60
EYR 8786 Rawcliffe Moor (site 1)
EYR 9413 Blanch (J&H)
EYR 9495 Londesborough (J&H)
EYR 9509 Newbald (J&H)
EYR 9736 Goodmanham (NE of) CHP 2003/01
EYR 9793 Warter Wold (J&H)
EYR 9794 Huggate & Warter (J&H)

Salford (formerly Greater Manchester)
GML 603 Barton Moss NWWS 2
GML 5318 Nook Farm NWWS 2
GML 8603 Worsley Farm NWWS 2

Manchester (formerly Greater Manchester)
GMM 4836 Manchester 1899

Hull (formerly Humberside)
KUH 882 Blackfriargate (Hull) EAU 84/19
KUH 935 Blanket Row EAU 2001/12
KUH 936 Blanket Row EAU 97/18
KUH 937 Blanket Row EAU 99/01
KUH 1655 Castle St (Blanket Row) EAU 99/12
KUH 1670 Castle St (Hull) EAU 95/31
KUH 1782 Chapel Lane Staith 78
KUH 1783 Chapel Lane Staithe 2000
KUH 1964 Citadel Way EAU 2001/37
KUH 1965 Citadel Way PRS 2001/03
KUH 3078 Foredyke EAU 98/07

KUH 3242 Gibraltar Farm EAU 97/17
KUH 3243 Gibraltar Farm EAU 98/06
KUH 3766 High St (36A-40) (Hull) EAU 94/01
KUH 3767 High St (37) (Hull) EAU 94/49
KUH 3779 High St (Hull) EAU 84/19
KUH 3789 High St/Blackfriargate (Hull) 73-6
KUH 3930 Citadel Moat (South Barracks) EAU 97/22
KUH 4232 Kingswood EAU 96/55
KUH 4427 Liberty Ln 99 EAU 99/57
KUH 4790 Magistrates Courts (Hull) 94 & 99 EAU 2000/25
KUH 4791 Magistrates Courts (Hull) 94 & 99 EAU 2000/33
KUH 4793 Magistrates Courts (Hull) 94 EAU 95/17
KUH 4794 Magistrates Courts (Hull) 99 EAU 2000/19
KUH 4827 Malmo Rd EAU 92/01
KUH 4828 Malmo Rd EAU 97/38
KUH 5110 Monkgate (Hull) 76-7
KUH 5208 Mytongate 75
KUH 5893 Post Office (Hull) ASUD 828
KUH 5982 Queen St (Hull) 76
KUH 5983 Queen St (Hull) EAU 84/17
KUH 6316 Saltshouse Rd 91 EAU 91/26
KUH 6319 Sammys Point EAU 97/21
KUH 6320 Sammys Point EAU 98/25
KUH 6348 Scale Ln/Lowgate 74
KUH 6429 Sewer Ln 74
KUH 7659 Tower St (Hull) 95 EAU 95/37
KUH 7925 Vicar Ln 75
KUH 7926 Vicar Ln 75-6 EAU 84/18
KUH 9731 Salt End Farm PRS 2003/93

Lancashire
LAN 1249 Brook Farm 91 (Kates Pad)
LAN 1250 Brook Farm NWWS 3
LAN 1993 Clayton Hall LUAU
LAN 2398 Damside (Lancaster) 90 DEAR 4/92
LAN 2570 Dowbridge Close 94 EAU 95/02
LAN 2704 East Gate (Mitre Yd) 73
LAN 2939 Fenton Cottage (inc tephra)
LAN 2941 Fenton Cottage 90-1
LAN 2943 Fenton Cottage NWWS 3
LAN 4840 Manor Farm (Borwick)
LAN 4842 Manor Farm (Borwick) AML 3977
LAN 5093 Mitchells Brewery DEAR 12/93
LAN 5728 Peel 92
LAN 5736 Peel NWWS 3
LAN 6060 Rawcliffe Moss NWWS 3
LAN 6111 Ribchester 80, 89-90
LAN 6119 Ribchester Museum Extn/Granaries OAN
LAN 7222 Storrs Moss 65-7
LAN 7575 Thwaite House Moss 89-90
LAN 7576 Thwaite House Moss NWWS 3
LAN 8033 Walton le Dale AML 4544
LAN 8399 Whorleys Moss 89-90
LAN 8490 Winery Ln (S of) 96 HA (plants)
LAN 8507 Winmarleigh Moss 89-90
LAN 8508 Winmarleigh Moss NWWS 3
LAN 8692 East Gate (Mitre Yd) 73 (prelim)

St Helens (formerly Merseyside)
MEH 3852 Holliday Moss

Knowsley (formerly Merseyside)
MEK 1251 Brook House Farm (Merseyside) 93
MEK 5509 Ochre Brook DEAR 3/98
MEK 5513 Ochre Brook 93

Liverpool (formerly Merseyside)
MEL 3802 Higher Ln (Fazakerley) 94 EAU 95/22
MEL 3803 Higher Ln (Fazakerley) 94 EAU 96/05
MEL 6759 Speke Hall 81-2

Wirral (formerly Merseyside)
MEW 2506 Digg Ln 87 EAU 89/26
MEW 2507 Digg Ln EAU 89/29
MEW 4043 Irby CfA 31/2002
MEW 4044 Irby DEAR 27/96
MEW 4974 Meols boat EAU 89/31

North-East Lincolnshire (formerly South Humberside)
NEL 418 Aylesby 94 EAU 94/51
NEL 1601 Cartergate 94 EAU 94/22
NEL 3663 Healing 95 EAU 95/45
NEL 3664 Healing 98 EAU 98/18

Northumberland
NHU 231 Allerwash 72
NHU 239 Alnwick Castle Gardens ASUD 681
NHU 570 Barrasford ASUD 656
NHU 739 Belling Mill 73
NHU 740 Belling Mill AML 2161
NHU 766 Berwick-upon-Tweed AML 2198

NHU 767 Berwick-upon-Tweed AML 2266
NHU 865 Black Carts DEAR 18/98
NHU 1033 Bowling Green (Berwick) ASUD 682
NHU 1118 Ingram Farm DEAR 37/94
NHU 1119 Breamish Valley 99 ASUD
NHU 1271 Broomlee Lough AML 2268
NHU 1305 Brucegate DEAR 6/99
NHU 1585 Carrawburgh 50
NHU 1732 Causeway House
NHU 1830 Chester House (dating)
NHU 1831 Chester House 85
NHU 1838 Chesters Bridge AML 29/93
NHU 1843 Chevington Chapel DEAR 1/98
NHU 1844 Chevington Chapel DEAR 14/98
NHU 1846 Cheviot Quarry EAU 2000/78
NHU 2189 Corbridge AML 158/87
NHU 2227 Coupland Enclosure (Milfield basin)
NHU 2465 Delhi ASUD 826
NHU 2522 Dod Law
NHU 2523 Dod Law West
NHU 2561 Doubstead 80
NHU 2739 Eastern Ln 98
NHU 2740 Eastern Ln DEAR 52/97
NHU 2913 Fawdon Dene ASUD 756
NHU 3524 Hallshill 81-6
NHU 3525 Hallshill AML 48/87
NHU 3526 Hallshill Farm 81
NHU 3527 Hallshill Farm AML 3745
NHU 3531 Haltwhistle by-pass DEAR 31/96
NHU 3865 Holy Island Village 77
NHU 3904 Housesteads 84
NHU 3906 Housesteads AML 3746
NHU 3907 Housesteads AML 4546
NHU 3909 Housesteads Farm 87 AML 189/88
NHU 3910 Housesteads Fort 84 AML 188/88
NHU 3911 Housesteads Fort AML 186/88
NHU 4007 Ingram DEAR 22/96
NHU 4129 Kellah Burn ASUD 743
NHU 4469 Lindisfarne AML 4370
NHU 4472 Lindisfarne Midden 84
NHU 4493 Linhope Burn 89
NHU 4679 Low Hauxley DEAR 6/95
NHU 4908 Marygate (104-6) (Berwick) ASUD 721
NHU 4910 Marygate (Berwick) LUAU
NHU 4911 Marygate (Lindisfarne) ASUD 908
NHU 4912 Marygate (Lindisfarne) ASUD 926
NHU 4913 Marygate 96 DEAR 23/96
NHU 4926 Maxway Foods DEAR 20/97
NHU 4927 Maxway Foods DEAR 8/97
NHU 5043 Milfield AML 4156
NHU 5045 Milfield Basin ASUD 678
NHU 5046 Milfield sites
NHU 5196 Murton
NHU 5197 Murton High Crags
NHU 5198 Murton High Crags AML 4720
NHU 5225 National Trust Estate AML 24/89
NHU 5269 New Quay 96
NHU 5270 New Quay DEAR 34/98
NHU 5271 New Quay DEAR 44/98
NHU 5523 Oil Mill Ln
NHU 5566 Old Rectory Gardens ASUD 854
NHU 5567 Old Rectory Gardens ASUD 875
NHU 5662 Palace Green ASUD 758
NHU 5735 Peel Gap AML 114/89
NHU 5738 Pegswood Moor Farm ASUD 686
NHU 5739 Pegswood Village ASUD 925
NHU 5897 Pottergate (Alnwick) ASUD 868
NHU 5898 Pottergate (Alnwick) ASUD 922
NHU 5950 Prudhoe Castle AML 3924
NHU 6050 Ravensdowne Barracks ASUD 682
NHU 6437 Sewingshields AML 4545
NHU 6877 St Cuthberts Square 2000 ASUD 665
NHU 7445 The Heugh DEAR 38/94
NHU 7482 The Palace 2000 EAC 17/01
NHU 7498 The Winery 2000 EAC
NHU 7515 Thirlings 73-81
NHU 7516 Thirlings 75 AML 2159
NHU 7520 Thirlings AML 3831
NHU 7531 Thornbrough Scar AML 4075
NHU 7532 Thornbrough 83-4
NHU 7610 Titlington Mount 92-3
NHU 7611 Titlington Mount DEAR 3/93
NHU 7855 Upper Redesdale 80-1 (Loaning Burn)
NHU 7941 Vindolanda (bracken)
NHU 7943 Vindolanda 73-6 & 85-9
NHU 7945 Vindolanda (puff-balls)
NHU 7949 Vindolanda 71-6
NHU 7950 Vindolanda 72
NHU 7953 Vindolanda 97
NHU 7955 Vindolanda AML 3841
NHU 8114 Well House Farm 80
NHU 8161 West Bitchfield 95 DEAR 26/95
NHU 8175 West Hartford ASUD 742
NHU 8282 West Whelpington AML 2542
NHU 8316 Wether Hill CfA 19/2001
NHU 8391 Whitton Hill 82-3

NHU 8392 Whitton Hill 82-3 (crop plants)
NHU 8393 Whitton Hill AML 3832
NHU 8394 Whitton Hill AML 4399
NHU 8584 Wooperton 97 HA
NHU 8747 Wooperton 97 (5th strip) HA
NHU 8748 Wooperton 97 (1st strip) HA
NHU 8749 Wooperton 97 (2nd strip) HA
NHU 8750 Wooperton 97 (3rd strip) HA
NHU 8751 Wooperton 97 (4th strip) HA
NHU 8807 Sandyford Quarry Field 97
NHU 9396 Amble (J&H)
NHU 9452 Ford (J&H)
NHU 9955 Coom Rigg Moss (climate)
NHU 9956 Felecia Moss

North Lincolnshire (formerly South Humberside)

NLI 462 Baldwin Ave DEAR 5/98
NLI 580 Barrow Rd 99 EAU 2000/03
NLI 604 Barton St EAU 98/02
NLI 1191 Brigg Raft 1888
NLI 1193 Brigg Logboat 1886 (mosses 2)
NLI 1626 Castledyke AML 4326
NLI 1676 Castledyke 89-90 EAU 92/02
NLI 1677 Castledyke AML 74/93
NLI 1686 Castlethorpe I EAU 92/39
NLI 1687 Castlethorpe II EAU 92/40
NLI 2100 Conesby Quarry Sidings EAU 2001/07
NLI 2581 Dragonby (woad)
NLI 2582 Dragonby 64-73
NLI 2706 East Halton Skitter EAU 2000/32
NLI 2897 Far Ings PRS 2002/05
NLI 3049 Flixborough 89 EAU 2000/56
NLI 3050 Flixborough 89 EAU 93/21
NLI 3053 Flixborough 89 EAU 94/09
NLI 3266 Glebe Farm 92 EAU 92/15
NLI 3267 Glebe Farm 92 EAU 93/13
NLI 4267 Kirmington 1
NLI 4269 Kirmington 3
NLI 4273 Kirmington Runway 91 EAU 91/27
NLI 4991 Messingham 1
NLI 4992 Messingham 2
NLI 4993 Messingham EAU 97/48
NLI 5328 Normanby Park Steelworks EAU 2001/10
NLI 7080 Staniwells Farm EAU 90/05
NLI 8079 Waterton EAU 96/40
NLI 8522 Winteringham 95 EAU 95/25
NLI 8524 Winterton
NLI 8528 Winterton AML 1744
NLI 8533 Winterton AML 1945
NLI 8705 Brigg Logboat 1886 (mosses 1)
NLI 9173 Barton upon Humber
NLI 9254 Brigg Logboat 1886 (mosses 3)
NLI 9368 Barrow Rd 99-2000
NLI 9440 Broughton (J&H)

North Yorkshire

NYR 22 A1 Leeming-Dishforth 95 EAU 95/43
NYR 25 A1 Walshford-Dishforth DEAR 4/93
NYR 29 A66 EAU 99/62
NYR 96 Abbey Walk 97
NYR 133 Acaster Hill ASUD 716
NYR 137 Acklam Wold (J&H)
NYR 155 Ailcy Hill EAU 98/15
NYR 229 Allerton Grange DEAR 15/94
NYR 230 Allerton Grange Farm DEAR 40/94
NYR 315 Appleton le Moors 94
NYR 421 Aysgarth-Hawes Main DEAR 6/91
NYR 520 Bar Ln DEAR 16/96
NYR 522 Bar Ln DEAR 36/98
NYR 625 Baxtergate (63-4) (Whitby) EAU 93/26
NYR 626 Baxtergate (Whitby) 92 EAU 92/04
NYR 641 Bayram Hill DEAR 1/94
NYR 955 Blubberhouses Moor 59
NYR 1130 Brecks Ln HA
NYR 1278 Brough St Giles (IA) 88-90
NYR 1279 Brough St Giles (hospital) 88-90
NYR 1283 Brough St Giles AML 90/91
NYR 1388 Burythorpe Church 95 EAU 95/50
NYR 1389 Burythorpe Quarry 94 EAU 95/49
NYR 1580 Carr Naze 93 EAU 94/07
NYR 1581 Carr Naze 93-4
NYR 1582 Carr Naze 94 EAU 95/15
NYR 1583 Carr Naze 93-4 EAU 96/26
NYR 1707 Catterick (RAF) (kiln)
NYR 1709 Catterick 58-97 (overview)
NYR 1713 Catterick AML 109/87
NYR 1717 Catterick AML 4645
NYR 1723 Catterick site 524 DEAR 2/94
NYR 1724 Catterick sites 506 & 511 DEAR 3/94
NYR 1740 Cawthorn Camps 2000 EAU 2001/17
NYR 1741 Cawthorn Camps 99 EAU 2000/09
NYR 1779 Chapel Haddlesey-Eggborough Pipeline EAU 99/31
NYR 1911 Church Fenton ASUD 823

NYR 1944 Church St (Whitby) ASUD 709
NYR 1945 Church St (Whitby) DEAR 9/99
NYR 1948 Church St carpark (Whitby) ASUD 709
NYR 2257 Cowstand Farm ASUD 687
NYR 2268 Crab Ln WYAS 757
NYR 2327 Crossgates Farm EAU 96/56
NYR 2343 Crown Hotel 99 EAU 99/22
NYR 2614 Duggleby Lodge EAU 93/12
NYR 2690 Easingwold By-pass 93 EAU 93/32
NYR 2691 Easingwold By-pass 93 EAU 94/36
NYR 2705 East Gilmoor ASUD 732
NYR 2711 East Knapton 93-4
NYR 2712 East Knapton DEAR 21/94
NYR 2727 East Rd ASUD 679
NYR 2728 East Rd ASUD 788
NYR 3034 Flaxby 94 EAU 94/35
NYR 3137 Friary Fields DEAR 8/98
NYR 3247 Gilling (J&H)
NYR 3338 Gowthorpe (16)
NYR 3579 Hare and Hounds EAU 99/48
NYR 3662 Healam Bridge BUFAU 306
NYR 3801 Higher Land 77-81
NYR 3854 Hollow Banks ASUD 717
NYR 3968 Hutton Common 68-71
NYR 4154 Kildale Hall 2
NYR 4257 Kirklington DEAR 13/92
NYR 4277 Knaresborough Bus Station WYAS 892
NYR 4338 Langton Villa
NYR 4343 Larpool Hall ASUD 676
NYR 4814 Main St (Spaunton) EAU 97/50
NYR 4830 Malton 30 (J&H)
NYR 4831 Malton 30 (reconsidered)
NYR 4838 Manor Cottage ASUD 792
NYR 4877 Market Pl (Richmond) DEAR 13/94
NYR 4880 Market Pl (Ripon) ASUD 793
NYR 4881 Market Pl (Ripon) EAU 2001/02
NYR 4882 Market Pl (Selby) 97
NYR 4890 Marne Barracks ASUD
NYR 4891 Marne Barracks ASUD 911
NYR 4914 Masham 96 DEAR 34/97
NYR 4915 Masonic Ln (off) PRS 2001/04
NYR 4966 Melsonby 92-5
NYR 4994 Metcalfe Ln PRS 2002/18
NYR 5017 Middleham DEAR 2/97
NYR 5054 Mill Ln 95 DEAR 20/95
NYR 5157 Mount Grace Priory 89-92 EAU 94/10
NYR 5168 Mourie Farm ASUD 783
NYR 5274 New School EAU 2001/03
NYR 5283 Newbridge Quarry EAU 2000/27
NYR 5285 Nunthorpe-Newby 2000 EAC 65/01
NYR 5288 Newcastle Packet EAU 2000/38
NYR 5358 North Duffield EAU 94/34
NYR 5362 North Farm EAU 93/11
NYR 5466 Nosterfield 95 DEAR 13/96
NYR 5467 Nosterfield 97 HA (I)
NYR 5468 Nosterfield 97 HA (II)
NYR 5588 Orchard Fields 92 EAU 93/19
NYR 5620 Osgodby Ln EAU 98/20
NYR 5974 Quay St (22A) EAU 96/35
NYR 5991 Queen St (Scarborough)
NYR 5992 Queen St (Scarborough) EAU 96/54
NYR 6013 RAF Catterick 94 EAU 94/41
NYR 6102 Rest Park 63
NYR 6109 Ribblehead AML 2398
NYR 6122 Richardsons Depot DEAR 10/97
NYR 6125 Richmond Castle ASUD 663
NYR 6142 Ripon Quarry 98
NYR 6171 Rock Castle 87
NYR 6172 Rock Castle 87 (CHR)
NYR 6209 Rosedale 68-71
NYR 6210 Rosedale West 74-7
NYR 6317 Saltwick EAU 92/25
NYR 6368 Scollands Hall (Richmond Castle) ASUD 829
NYR 6370 Scorton Quarry 96 HA
NYR 6371 Scorton Quarry DEAR 32/96
NYR 6372 Scotch Corner 95
NYR 6373 Scotch Corner 95 DEAR 12/95
NYR 6416 Selby (town centre) 93 EAU 93/08
NYR 6419 Selby boreholes 92 EAU 92/07
NYR 6420 Selby watermain DEAR 33/97
NYR 6487 Sherburn 99 EAU 2000/06
NYR 6522 Sike Spa ASUD 710
NYR 6523 Sike Spa ASUD 754
NYR 6594 Skellgarths EAU 2001/24
NYR 6599 Skeugh Farm ASUD 711
NYR 6611 Slingsby EAU 98/08
NYR 6619 Smaws Quarry ASUD 727
NYR 6620 Smaws Quarry EAU 97/14
NYR 6635 Snowdrift Laundry DEAR 39/94
NYR 6931 St Leonards Church EAU 91/14
NYR 7037 St Sepulchre St EAU 97/26
NYR 7045 St Thomas St (Scarborough) 99 EAU 2000/34
NYR 7103 Stanwick
NYR 7106 Stanwick 84-9
NYR 7115 Staple Howe 51-6
NYR 7124 Star Carr 85 & 89
NYR 7128 Star Carr (preliminary report)

NYR 7132 Star Carr 49-50
NYR 7139 Star Carr Site VP D
NYR 7140 Star Carr Site VP E
NYR 7142 Station Rd (Brompton) DEAR 10/95
NYR 7185 Stockton West Moor EAU 96/27
NYR 7411 Market Pl (8/9 & 10) (The Arcade) EAU 2000/59
NYR 7416 The Bolts (24-6) EAU 90/11
NYR 7425 The Cockpit (Richmond Castle) ASUD 749
NYR 7496 The Vivars EAU 95/38
NYR 7521 Thirsk Castle 94 EAU 95/11
NYR 7530 Thornborough 99 HA
NYR 7536 Thornbrough Farm AML 105/97
NYR 7537 Thornbrough Farm DEAR 1/93
NYR 7538 Thornbrough Farm DEAR 12/97
NYR 7539 Thornbrough Farm DEAR 21/96
NYR 7671 Town St 94 EAU 94/20
NYR 7964 Wakemans House EAU 2001/09
NYR 8081 Wath Quarry EAU 2001/34
NYR 8188 West Heslerton (draft plant report)
NYR 8190 West Heslerton 78-82
NYR 8196 West Heslerton AML 4255
NYR 8210 West Lilling EAU 2000/82
NYR 8211 West Lilling EAU 2002/01
NYR 8212 West Lilling EAU 99/19
NYR 8220 West Moor Farm ASUD 738
NYR 8243 West St (Gargrave) EAU 97/36
NYR 8319 Wharram Percy 53-60
NYR 8322 Wharram Percy (S Manor area)
NYR 8326 Wharram Percy (silica skeletons)
NYR 8329 Wharram Percy AML 1750
NYR 8330 Wharram Percy AML 1751
NYR 8335 Wharram Percy AML 2040
NYR 8338 Wharram Percy AML 2750
NYR 8350 Wharram Percy Church AML 3679
NYR 8358 Whitby Headland DEAR 5/99
NYR 8359 Whitby Shaft B2 ASUD 709
NYR 8377 Whitehall Shipyard EAU 2001/46
NYR 8568 Wood Hall SEF 9404
NYR 8728 Catterick 58-97 (Thornbrough Farm Site 452)
NYR 8732 Catterick 58-97 (Thornbrough Farm Site 482)
NYR 8745 Bainesse Farm (Anglian) 81-2
NYR 8758 Giggleswick Tarn logboat
NYR 9392 West Heslerton (Anglian Cemetery) 77-87 (2)
NYR 9480 Hutton Buscel (J&H)
NYR 9532 Riggs (J&H)
NYR 9581 Wharram Percy (J&H)
NYR10295 Cawthorn Camps CfA 17/2003
NYR10848 Roecliffe 93

Barnsley (formerly South Yorkshire)
SYB 3785 High St (Shafton) WYAS 860
SYB 6445 Shafton by-pass/Engine Ln WYAS 903

Doncaster (formerly South Yorkshire)
SYD 152 Adwick le Street DEAR 25/96
SYD 394 Austerfield Quarry ASUD 698
SYD 1696 Catesby Business Park BUFAU 895.01
SYD 2540 Doncaster AML 1818
SYD 3006 Fishlake Village ASUD 748
SYD 3120 Frenchgate 64-9
SYD 3947 Hatfield Moors (site 1)
SYD 5352 North Bridge 93 EAU 94/05
SYD 5353 North Bridge 93-4 EAU 97/16
SYD 6083 Red House Park Sewer Requisition ASUD 796
SYD 7271 Sutton Common 87-93
SYD 7272 Sutton Common 87
SYD 7273 Sutton Common ARCUS 181
SYD 7435 The Gardens EAU 2001/22
SYD 8221 West Moor Park WYAS 942
SYD 8783 Hatfield Moors (site 2)
SYD 8784 Thorne Moors (site 1)
SYD 9177 North Bridge 93-4 (sparse remains)
SYD 9178 North Bridge 93-4 (large pit)

Rotherham (formerly South Yorkshire)
SYR 805 Billingley Drive 99 EAC
SYR 806 Billingley Drive 99 EAC (assessment)
SYR 1579 Carr Lodge Farm 2000 EAC 24/02
SYR 3672 Hellaby Hall 96 HA
SYR 8829 Billingley Drive 99

Sheffield (formerly South Yorkshire)
SYS 4604 Lodge Moor Hospital EAC
SYS 6097 Redmires EAU 2000/05

Gateshead (formerly Tyne & Wear)
TWG1024 Bottle Bank DEAR 35/98
TWG1025 Bottle Bank LUAU
TWG5814 Pipewellgate ASUD 735
TWG5815 Pipewellgate DEAR 2/99

Newcastle (formerly Tyne & Wear)
TWN 627 Baxters Warehouse 99 ASUD 640
TWN 827 Binns Store DEAR 12/98
TWN 874 Black Gate DEAR 7/91
TWN 905 Blackgate 76 AML 2199
TWN 906 Blackgate 76 AML 2267
TWN 907 Blackgate AML 2392
TWN 908 Blackgate AML 2393
TWN 913 Blackgate DEAR 41/94
TWN1555 Carmelite Friary (Newcastle) 65
TWN1625 Castle Ditch (Newcastle) 74-6
TWN2016 Close Gate 88-9
TWN2018 Closegate 88 AML 124/90
TWN2020 Closegate 90 AML 125/90
TWN2339 Crown Court 85-6
TWN2341 Crown Court AML 84/88
TWN4856 Mansion House 90
TWN5286 Newcastle Bastion 76-81
TWN5440 Northumberland St DEAR 14/96
TWN5957 Pudding Chare 2000 ASUD 744
TWN5975 Quayside (Newcastle) AML 4155
TWN5986 Queen St (Newcastle) 84-5
TWN5987 Queen St (Newcastle) 84-5 AML 45/86
TWN6492 Shields Rd 2001 ASUD 786
TWN7181 Stockbridge 94 DEAR 30/94
TWN7182 Stockbridge 95
TWN7667 Town Ditch (Newcastle) 86-7
TWN8292 Westgate Rd (67-75) 85
TWN8293 Westgate Rd 91
TWN8295 Westgate Rd 91 DEAR 9/91
TWN9139 Castle Garth 76-92

South Tyneside (formerly Tyne & Wear)
TWS4092 Jarrow 65-76 AML 2156
TWS6700 South Shields 84
TWS6701 South Shields 84 (CHR)
TWS6703 South Shields Fort
TWS9182 South Shields Fort 92-4 & 99 (prehistoric)

North Tyneside (formerly Tyne & Wear)
TWT4494 Link Building DEAR 7/98
TWT7293 Swan Hunter 2001 ASUD 842
TWT7988 Wallsend (Segedunum) DEAR 37/98

Sunderland (formerly Tyne & Wear)
TWU5118 Monkwearmouth 64-70

Bradford (formerly West Yorkshire)
WYB 146 Addingham 71-5 & 89-90

Kirklees (formerly West Yorkshire)
WYK4473 Lindley Moor ASUD 671
WYK5502 Oakwell Hall EAU 88/03
WYK7917 Venn St (land off) WYAS 801

Leeds (formerly West Yorkshire)
WYL 732 Bell Hill EAC 76/01
WYL2397 Dalton Parlours 76
WYL2416 Danefield Wood 97 HA
WYL3451 Grims Ditch South (A1-M1) 92-8
WYL4309 Lakeland Crescent DEAR 12/94
WYL4839 Manor Farm (A1-M1) 92-8
WYL4850 Manor Farm (Thorner) WYAS 835
WYL4995 Methley 51
WYL5647 Oxbow
WYL5685 Park House DEAR 8/95
WYL5705 Parlington Hollins (A1-M1) 92-8
WYL6187 Roman Ridge Rd 98 HA
WYL6684 South Dyke (A1-M1) 92-8
WYL7332 Swillington Brick Works 92 HA
WYL7333 Swillington Common (A1-M1) 92-8
WYL7552 Thorpe Park 98 HA
WYL8696 Redcote 29

Wakefield (formerly West Yorkshire)
WYW1065 Bradley St 91-3
WYW1681 Castleford 74-85
WYW2391 Dale Ln 96 HA
WYW5329 Normanton Golf Course 98 HA
WYW5839 Pontefract Castle 82-6
WYW6329 Sandal Castle 64-73
WYW8617 Wrenthorpe Potteries 83-6

More than one county or district
XXX 1267 Hadrians Wall (Twelfth Pilgrimage)
XXX 4985 Merseyside Wetlands
XXX 9778 Chat Moss
XXX 9813 Merseyside

City of York (formerly North Yorkshire)
YOR 143 Adams Hydraulics I EAU 90/01
YOR 144 Adams Hydraulics II EAU 91/12

YOR 145 Adams Hydraulics III EAU 91/05
YOR 180 Aldwark (21-33) (Ebor Brewery) 73-4
YOR 181 Aldwark (36) 83 AML 59/89
YOR 182 Aldwark (36) EAU 89/17
YOR 184 Aldwark (7-9) 85 AML 58/89
YOR 185 Aldwark (7-9) EAU 89/18
YOR 191 Aldwark (adj 1-5) EAU 88/05
YOR 221 All Saints (York) EAU 96/47
YOR 222 All Saints (York) EAU 98/30
YOR 223 All Saints School 91 EAU 91/36
YOR 224 All Saints School 93 EAU 93/10
YOR 378 Askham Bog 78 (hemp)
YOR 379 Askham Bog 78 (macros)
YOR 432 Back Swinegate EAU 94/13
YOR 681 Bedern 73-6 (Foundry)
YOR 685 Bedern 73-81 (cess pit)
YOR 687 Bedern/Aldwark 76-81 (Anglian pits)
YOR 688 Bedern 76-81 (well fills)
YOR 692 Bedern AML 56/93
YOR 693 Bedern AML 57/93
YOR 694 Bedern AML 58/93
YOR 864 Bishopthorpe Rd (292) EAU 98/28
YOR 930 Blake St EAU 86/07
YOR 952 Blossom St (12-20) EAU 91/18
YOR 953 Blossom St (28-40) 2000 EAU 2000/50
YOR 954 Blossom St (47) 91 EAU 92/13
YOR 957 Blue Bridge Ln 94 EAU 94/55
YOR 998 Bootham Engineering Works EAU 2000/45
YOR 999 Bootham School EAU 96/19
YOR 1209 Britannia Car Park EAU 2001/05
YOR 1557 Carmelite St EAU 91/15
YOR 1621 Castle Car Park 92 EAU 92/06
YOR 1622 Castle Car Park 95 EAU 95/32
YOR 1917 Church Ln (Wheldrake) 2001 EAC 35/01
YOR 1946 Church St (York) 72-3
YOR 1947 Church St (York) AML 2543
YOR 1967 City Arms EAU 2001/44
YOR 1976 Clarence St EAU 98/41
YOR 2010 Clifford St (2) EAU 2000/17
YOR 2011 Clifton Moorgate 94 EAU 94/43
YOR 2012 Clifton Moorgate 94 EAU 95/19
YOR 2044 Coffee Yd EAU 89/12
YOR 2102 Coney St (13-17) EAU 91/13
YOR 2103 Coney St (3-7) EAU 97/01
YOR 2104 Coney St (39-41) 74-5 (W H Smith)
YOR 2105 Coney St (39-41) AML 2021
YOR 2126 Coppergate (16-22) (Anglo-Scand)
YOR 2127 Coppergate (16-22) (Period 3) EAU 99/30
YOR 2128 Coppergate (16-22) (Period 4A/B) EAU 99/38
YOR 2129 Coppergate (16-22) (Period 5A) EAU 99/47
YOR 2130 Coppergate (16-22) (Period 5B) EAU 99/49
YOR 2131 Coppergate (16-22) (Period 5C) EAU 99/63
YOR 2132 Coppergate (16-22) (bran)
YOR 2133 Coppergate (16-22) (dyeplants)
YOR 2134 Coppergate (16-22) (hair moss)
YOR 2136 Coppergate (16-22) (textile production)
YOR 2137 Coppergate (16-22) (woad bacteria)
YOR 2139 Coppergate (16-22) (worked wood)
YOR 2169 Coppergate (16-22) EAU 96/09
YOR 2171 Coppergate (5-7) 74
YOR 2175 Coppergate Helmet
YOR 2176 Coppergate Helmet AML 4491
YOR 2224 County House EAU 97/52
YOR 2433 Davygate (British Gas) EAU 97/51
YOR 2434 Davygate 55-8
YOR 2435 Davygate Centre EAU 98/09
YOR 2628 Dundas St EAU 90/09
YOR 2915 Feasegate (BHS store) EAU 98/16
YOR 2954 Fetter Ln EAU 97/45
YOR 2955 Fetter Ln EAU 98/37
YOR 2984 Fishergate (46-54) 85-6 (Anglian)
YOR 2985 Fishergate (46-54) 85-6 (Priory)
YOR 2993 Fishergate (46-54) EAU 89/01
YOR 2994 Fishergate (46-54) EAU 89/02
YOR 3086 Former Female Prison EAU 98/21
YOR 3109 Foxtons Garage EAU 2000/30
YOR 3188 Garden Pl EAU 90/08
YOR 3215 Tanner Row (24-30) 83-4
YOR 3248 Gillygate (45-57) 92 EAU 92/22
YOR 3359 Grape Ln (8) (York) EAU 94/13
YOR 3848 Holgate Cattle Dock EAU 92/41
YOR 3849 Holgate Rd (39) EAU 98/33
YOR 3949 Hungate 50-1
YOR 3950 Hungate area EAU 2000/29
YOR 3961 Huntington South Moor EAU 2000/48
YOR 3983 Ideal Laundry EAU 91/03

YOR 4102 Jewbury 82-3
YOR 4104 Jewbury 82-3 EAU 91/24
YOR 4370 Lawrence St (148) 93 EAU 94/25
YOR 4372 Lawrence St (D C Cook) EAU 2001/40
YOR 4378 Layerthorpe Bridge EAU 2000/64
YOR 4379 Layerthorpe Bridge EAU 97/25
YOR 4488 Lingcroft Farm 80-91
YOR 4538 Little Stonegate (3) EAU 99/46
YOR 4539 Little Stonegate (9) EAU 98/27
YOR 4540 Little Stonegate (rear 3) EAU 99/21
YOR 4854 Manor Ln EAU 97/27
YOR 4909 Marygate (26-8) EAU 92/10
YOR 4977 Merchant Adventurers Hall EAU 96/01
YOR 4978 Merchant Adventurers Hall EAU 96/44
YOR 4997 Methodist Church EAU 91/19
YOR 5007 Micklegate (63-7) EAU 2001/30
YOR 5053 Mill House Farm EAU 97/31
YOR 5109 Monkgate (50-2) (York) 95 EAU 95/20
YOR 5211 Skeldergate (64-74) EAU 2000/53
YOR 5214 Naburn Hospital OAU
YOR 5215 Naburn Sewage Works EAU 97/46
YOR 5216 Naburn-Moreby Park WYAS 962
YOR 5326 Norman Court 95 EAU 95/21
YOR 5407 North St (York) (b/holes) EAU 92/17
YOR 5409 North St (York) 93 EAU 93/14
YOR 5665 Palmer Ln 92 EAU 92/05
YOR 5701 Parliament St (4-7) EAU 2000/22
YOR 5702 Parliament St (44-5) 94 EAU 95/08
YOR 5715 Pavement (6-8) 72
YOR 5716 Pavement (6-8) 72 (preliminary)
YOR 5786 Piccadilly (17-21) EAU 91/01
YOR 5787 Piccadilly (22) 87 EAU 95/53
YOR 5788 Piccadilly (38) EAU 92/09
YOR 5789 Piccadilly (41) EAU 92/20
YOR 5790 Piccadilly (41) EAU 99/45
YOR 5791 Piccadilly (50) EAU 92/08
YOR 5792 Piccadilly (58-60) EAU 2000/23
YOR 5793 Piccadilly (84) EAU 91/16
YOR 5794 Piccadilly (90) EAU 98/40
YOR 5933 Presto Supermarket EAU 2001/13
YOR 6000 Micklegate (1-9) 88-9 EAU 93/22
YOR 6001 Micklegate (1-9) 88-9 EAU 2000/14
YOR 6003 Micklegate (1-9) 88-9 EAU 90/21
YOR 6024 Railway Station (York) EAU 99/29
YOR 6056 Rawcliffe Manor 92 EAU 92/11
YOR 6057 Rawcliffe Manor 92 EAU 92/16
YOR 6058 Rawcliffe Manor EAU 94/08
YOR 6059 Rawcliffe Moor EAU 96/27
YOR 6211 Rosemary Pl 94 EAU 94/47
YOR 6224 Rougier St (5) 81
YOR 6228 Rougier St (5) AML 57/89
YOR 6248 Royal Chase EAU 98/04
YOR 6576 Skeldergate (14) EAU 91/06
YOR 6577 Skeldergate (17-19) ASUD 718
YOR 6578 Skeldergate (26-34) EAU 91/10
YOR 6579 Skeldergate (47-51) EAU 96/18
YOR 6581 Skeldergate (58-9) 73-5 AML 61/89
YOR 6583 Skeldergate (58-9) 73-5 EAU 89/20
YOR 6585 Skeldergate (58-9) 73-5 (bucket)
YOR 6587 Skeldergate (58-9) 73-5 (buried soil)
YOR 6588 Skeldergate (58-9) 73-5 (well fills)
YOR 6804 Spurriergate 7-15 (rear of) EAU 2000/80
YOR 6823 St Andrewgate 93 EAU 93/02
YOR 6824 St Andrewgate PRS 2002/12
YOR 6890 St Georges School ARCUS 208
YOR 6901 St Helens Rd 94 EAU 94/31
YOR 6916 St Johns Coach Park EAU 2001/15
YOR 6985 St Maurices Rd (2) 92 EAU 92/14
YOR 7033 St Saviourgate (9) 95 EAU 95/51
YOR 7034 St Saviourgate (9) 95 EAU 98/14
YOR 7141 Starting Gate EAU 96/34
YOR 7145 Station Rise EAU 2000/47
YOR 7334 Swinegate (12-18) EAU 94/13
YOR 7335 Swinegate (20-4) EAU 91/23
YOR 7342 Tadcaster Rd (62) 95 EAU 95/44
YOR 7355 Tanner Row (47-55) EAU 97/24
YOR 7412 The Avenue (12-13) EAU 2001/04
YOR 7432 The Fox EAU 97/41
YOR 7471 The Mount (89) EAU 91/02
YOR 7472 The Mount (90) EAU 2000/37
YOR 7658 Tower St (1-2) (York) EAU 95/35
YOR 7759 Trentholme Dr 51-2
YOR 7830 Union Terrace (6-28/21-7) EAU 89/21
YOR 7832 Union Terrace EAU 2001/42
YOR 7933 Victoria House EAU 2001/51
YOR 7995 Walmgate (104-12) EAU 92/03

YOR 7998 Walmgate (118-26) AML 60/89
YOR 7999 Walmgate (118-26) EAU 2000/20
YOR 8000 Walmgate (118-26) EAU 89/19
YOR 8001 Walmgate (41-9) EAU 2000/04
YOR 8002 Walmgate (41-9) EAU 2001/26
YOR 8003 Walmgate (41-9) PRS 2002/26
YOR 8004 Walmgate (41-9)/George St EAU 91/11
YOR 8120 Wellington Row 88-9 EAU 95/14
YOR 8412 Wigginton Rd (land off) EAU 2000/49
YOR 8413 Wigginton Rd EAU 99/56
YOR 8659 Yearsley House EAU 2000/28
YOR 8666 Coppergate (16-22) (leather-working) EAU 99/27
YOR 8675 York Minster Library EAU 95/40
YOR 8676 York Minster Library EAU 99/06
YOR 9658 Hob Moor Junior School PRS 2003/15
YOR 9734 Layerthorpe Bridge (leather-working) EAU 99/27
YOR 9749 Layerthorpe Bridge (leather-working)
YOR 9750 Coppergate (16-22) (leather-working)
YOR 10222 Coppergate (vegetative remains)






ENGLISH HERITAGE RESEARCH DEPARTMENT

English Heritage undertakes and commissions research into the historic environment, and the issues that affect its condition and survival, in order to provide the understanding necessary for informed policy and decision making, for sustainable management, and to promote the widest access, appreciation and enjoyment of our heritage.

The Research Department provides English Heritage with this capacity in the fields of buildings history, archaeology, and landscape history. It brings together seven teams with complementary investigative and analytical skills to provide integrated research expertise across the range of the historic environment. These are:

* *Aerial Survey and Investigation*
* *Archaeological Projects (excavation)*
* *Archaeological Science*
* *Archaeological Survey and Investigation (landscape analysis)*
* *Architectural Investigation*
* *Imaging, Graphics and Survey (including measured and metric survey, and photography)*
* *Survey of London*

The Research Department undertakes a wide range of investigative and analytical projects, and provides quality assurance and management support for externally-commissioned research. We aim for innovative work of the highest quality which will set agendas and standards for the historic environment sector. In support of this, and to build capacity and promote best practice in the sector, we also publish guidance and provide advice and training. We support outreach and education activities and build these in to our projects and programmes wherever possible.

We make the results of our work available through the Research Department Report Series, and through journal publications and monographs. Our publication Research News, which appears three times a year, aims to keep our partners within and outside English Heritage up-to-date with our projects and activities. A full list of Research Department Reports, with abstracts and information on how to obtain copies, may be found on www.english-heritage.org.uk/researchreports

For further information visit www.english-heritage.org.uk

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