
Chapter 8: Environmental Archaeology: Mesolithic to Roman Period

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The past

In the past the only environmental evidence recovered from excavations was in the form of hand-recovered animal bones, occasionally with collection from caches of hazelnut shells or burnt cereal grain, for example. References to straw and wood deposits can be found, but with no indication of the types of cereal. Plant remains were, by and large, ignored, as were the smaller mammal, fish and often bird bones, and the invertebrates in general. In the 1960s people started wondering more about this smaller material, and consequently methods were devised to sample deposits and process them by some means or other in order to undertake microscopic investigation of the contents. Sampling became routine in the late 1970s, and this has allowed much more information about the diet and economy of sites, as well as environmental aspects, to be determined, interpreted and discussed.

The excavations of the past concentrated upon the structures rather than related activities, and this is especially clear from the work on the numerous Roman forts of the region, and the very detailed surveys and excavations of native sites by Jobey in particular (Jobey 1965; 1985). Again in the 1970s, the emphasis changed subtly and at least some archaeologists became interested in the activities themselves. This can be seen as the development of a holistic approach.

Many of the excavations themselves were undertaken as a result of urban revival – the rescue excavation, for example in Newcastle (O'Brien *et al* 1989), Hartlepool (Daniels 1988; 1990) and Carlisle (McCarthy 1991) – and thus much of the material from those excavations reflects medieval and later town developments, plus the underlying Roman deposits where present. Such urban sites often produced deep, well-stratified and waterlogged deposits, and thus the potential for preservation of organic material was extremely high (and the material was obvious during excavation – it smelt!).

With major rescue-funded excavations under way, vast numbers of samples were taken, although in general there were not the specialists

available to cope with the volume of material being produced. The inevitable backlog was produced.

Environmental archaeology therefore became a regular part of excavation in the 1970s, with the 1980s and early 1990s largely being spent producing detailed archive reports upon specific sites. Environmental archaeology was excavation-led, and in the rare instance of synthetic work being undertaken (notably van der Veen's 1992 analysis of later prehistoric sites), it was as a result of large bodies of site data having been individually accrued.

The present

At present much of that backlog has been completed, although regrettably not published. Backlogs do not apply only to *environmental* archaeologists. There has, therefore, been time to sit back and review the work of the past – what has been achieved, where spatial and temporal lacunae remain – and to start developing a research framework for the future.

Today, few excavations are rescue-driven; the majority are undertaken as a result of planning policy, and hence are small and rarely allow full excavation or post-excavation work to be carried out. In such a market-place it is vital that research frameworks are in place, and reviewed at regular intervals, to allow the best to be achieved in terms of environmental (and other) archaeology in what is inevitably an unsatisfactory situation.

Environmental archaeology: status today

The Mesolithic period

Cultural evidence for the Mesolithic has been found throughout most parts of the region. A hunter-gatherer culture is not going to leave behind well-stratified deposits of domestic refuse, however, and so evidence for the Mesolithic comes mainly from palynological work and spot finds of animal bones. The latter are relatively common (Fig 8.1), and at least some have associated tool marks suggesting human presence. The region has been well studied in respect of the palynological work,

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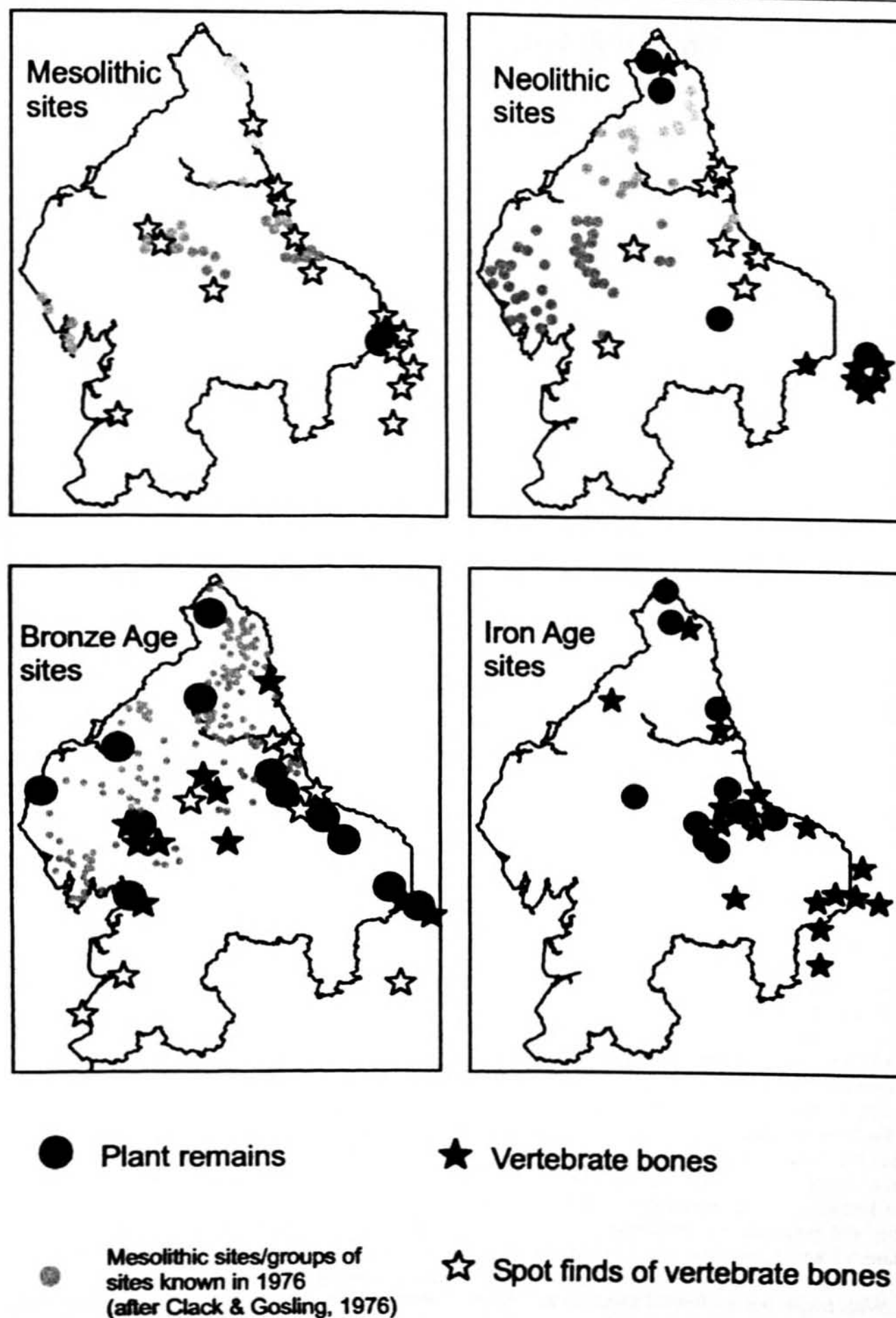


Fig. 8.1 Distribution of archaeological sites with assemblages of plant remains and animal bones (after Huntley and Stallibrass 1995)

although most pollen diagrams were produced with questions of vegetational history in mind, not specific archaeological questions. In addition, the older diagrams were neither dated nor of sufficiently fine resolution for short-term fluctuations in the pollen to be perceived. By analysing pollen from very thin slices of sediment in conjunction with radiocarbon dating, it is possible to produce pollen counts representing only a few years of accumulation. Using contiguous samples allows the definition of short-term changes. Such modern techniques of fine-resolution work have enabled Simmons and Innes (1996a; 1996b) to investigate the spatial effect of Mesolithic people upon the vegetation of parts of the North York Moors. Although at some of their sites fire (evidenced by charcoal fragments) evidently initiated forest clearance, at others it did not, instead being used to increase a grass component in a clearance. This, they surmise, could have been the result of Mesolithic activity to encourage grazing animals.

The region (more broadly defined) contains arguably the most important Mesolithic site in Britain, Star Carr, where detailed analyses of bone remains have shown that it was a year-round settlement site (Legge and Rowley-Conwy 1988). Palynological work here (Day 1993; Day and Mellars 1994) has demonstrated two periods of clearance and activity. Ongoing work in the Eskmeals area of Cumbria suggests a similar settlement, although of considerably younger date (Bonsall *et al* 1990).

What has become clear in some pollen diagrams is the presence of cereal-type pollen grains from early to mid-Holocene deposits (see, for example, Williams 1985), and this could be linked with Clarke's (1976) hypothesis that flint artefacts could be related to cereal-based activities as well as to skinning animals. No one, however, has produced evidence other than the ubiquitous hazelnut shells for usage of plants, let alone cereals. This probably reflects the lack of investigation of macrofossils other than fruits and seeds. The starchy roots and tubers of many plants are edible and were probably collected, but they are not likely to have been preserved other than by charring, and suitable sites have not been found, let alone excavated, sampled or analysed.

The Neolithic period

Environmental evidence for the Neolithic has taken great strides forward in the last 20 years, although the region still contains only four well-

sampled sites (Fig 8.1). Pollen evidence again suggests moderate clearance phases throughout the region during this period. Animal bone studies show that there was probably quite a rapid adoption of the three main domesticated species (cattle, sheep/goat and pig), but that there was still a heavy reliance upon wild resources such as aurochs and red deer. Metrical data from cattle bones throughout eastern Yorkshire suggest at least three broad size categories, generally ascribed to aurochs (the larger bones), domesticated cattle (the smaller bones) and an intermediate category (Manby 1988). The species exhibit sexual dimorphism, however, with the result that female aurochs are indistinguishable from domestic bulls on size grounds, and the possibility of domestic castrates being present simply adds further complication. The nature of domestication itself remains unclear. What seems reasonable is that size reduction in domesticated cattle is likely to have taken several generations to stabilise, and that the early domestic forms may be expected to be larger and more variable in size than the so-called 'Celtic shorthorn' typical of the Iron Age.

With respect to plant remains all of the evidence is from charred assemblages from the east of the region (Fig 8.2). Wild plant resources are the most important, and include mostly hazelnuts and apples; this is in accord with evidence throughout most of Britain (Moffett *et al* 1989; Robinson 2000). Where cereals are present, emmer wheat and barley are recorded, and at Marton-le-Moor both hulled and naked barley occurs (Huntley 1994a). Whilst numbers of grains can be significant (over 1,000 each at Marton-le-Moor and Caythorpe; Huntley 1993; 1996), their occurrence is limited to about 10% only of the Marton-le-Moor samples (only one Neolithic sample was available from Caythorpe). Cereals may not, therefore, have been a major contributor to the diet of the people. Recent stable isotope work on material from central and southern England also suggests that plants were of considerably less importance than animal-derived foods (Richards 1996). However, the suggestion by Richards that 'sites where grain has been found generally seem to have been used for ritual purposes and it is possible that... cereal was grown... only for ritual purposes' is debatable in that most of the excavated sites have been ritual in nature; few settlement sites have been excavated and extensively sampled. Evidence from such sites, for example Balbridie in Scotland (Fairweather and Ralston

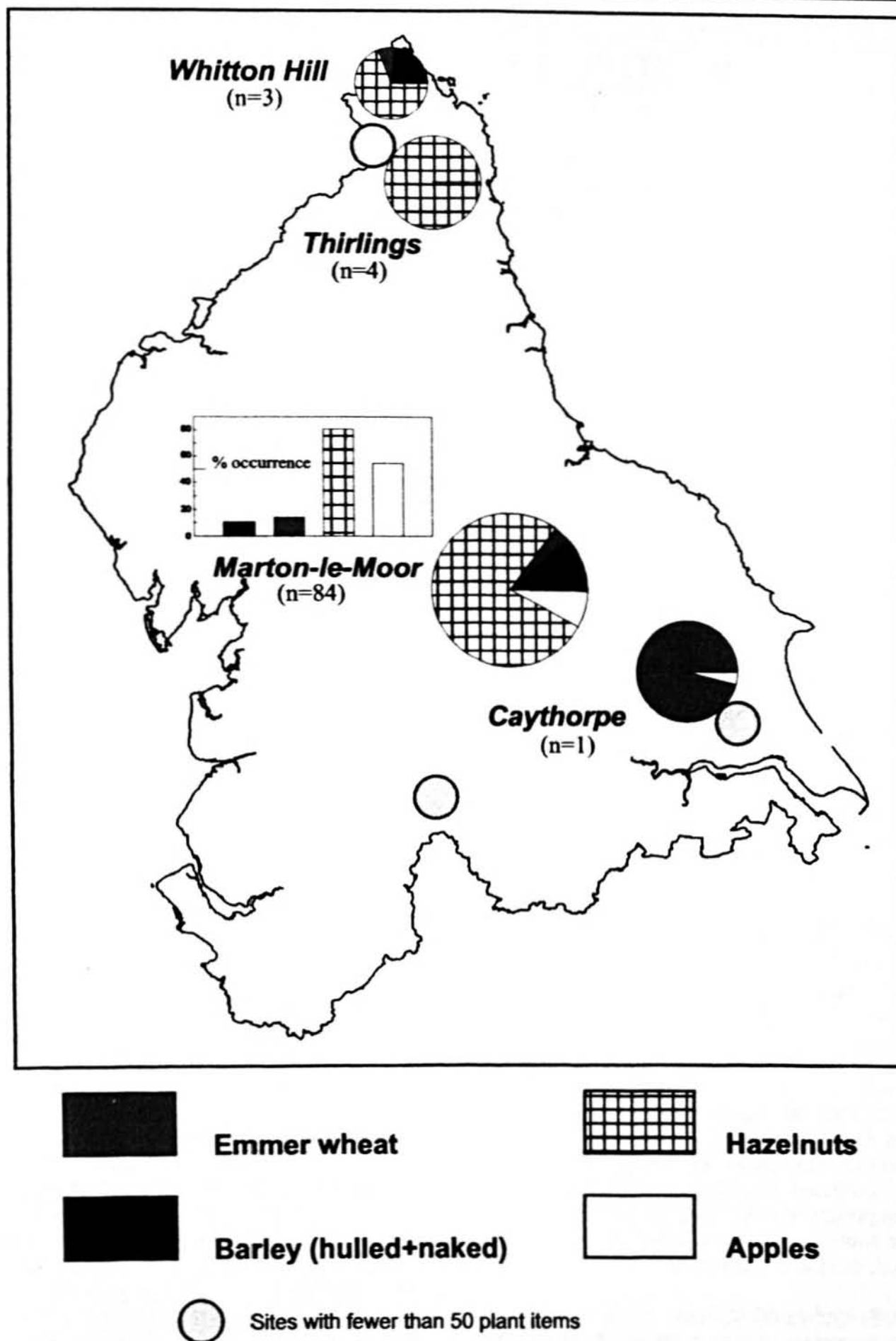


Fig. 8.2 Neolithic sites with plant remains. *n* = number of samples. Size of circles gives an indication of overall numbers of 'seeds' found, but circles are not to scale. Data after Huntley 1993 (Caythorpe); 1994a (Marton-le-Moor); van der Veen 1982 (Thirlings); 1984 (Whitton Hill)

1993) and Lismore Fields, Derbyshire (G Jones, pers comm), do demonstrate almost certain local cultivation of considerable amounts of cereals by inference from the associated chaff and weed assemblages, representing considerable effort on the part of the population.

Very few chaff remains have been recovered from the north, and the implications are that the cereals recorded represent either a fully cleaned crop or discard. Given that much of the grain is emmer wheat, a glume wheat, chaff would perhaps be expected, since the species is typically stored in the spikelet and is only parched and pounded to loosen the grains themselves at the time of use. Weed seeds are likewise not common, most representing grassland communities with some evidence for more nitrophilous vegetation. This, however, would not be too surprising given that cultivation was in its early stages.

The Bronze Age

Considerably more Bronze Age sites have been excavated and, indeed, sampled (Fig 8.1). Disappointingly few have produced even reasonable amounts of data, however. This must partly be due to the nature of the sites, burial cairns, which are unlikely to produce much in the way of plant remains, but also due to the adverse burial environments, acidic soils, precluding animal bone survival. The best bone assemblages, not surprisingly, have been recovered from sites on the Carboniferous limestones of the region. Thwing (Manby 1980) and Caythorpe (Stallibrass 1996) are the only two settlement sites to have produced bone; both sites are in North Yorkshire. Cattle, sheep and pig bones are present in almost equal proportions at Thwing, with a wide range of other animal bones and marine shellfish shells, although the material has never been fully published. Caythorpe produced bones from mature cattle but young sheep – a contrast to the Neolithic material from the same site – but the assemblage was very small.

Material from burial cairns gives indications of perhaps funerary feasts, but has also provided detailed evidence for local small mammal populations (and by implication local environments) because large-scale sieving programmes were undertaken. Hardendale (Stallibrass 1991a) and Manor Farm, Borwick (Jones *et al* 1987), both produced considerable numbers of bones from frogs, toads, watervole, fieldvole, all three British shrew species, fieldmouse and bank vole. In addition, Hardendale produced large numbers

of small immature bird bones showing signs of acid etching (Allison 1988). These were interpreted as the remains of pellets from a diurnal raptor rather than owls. What is clear is that the sieving programme enabled small bones to be recorded, which added considerably to the overall interpretation of the site (Stallibrass 1991b).

Only three sites have produced moderate amounts of plant material (Fig 8.3). Hallshill, Northumberland (van der Veen 1992), has the most samples, and shows that emmer wheat was dominant in terms of both numbers and frequency of occurrence. Spelt wheat was recorded, as was a small amount of both hulled and naked barley. Thwing likewise produced evidence for emmer, spelt, bread-type wheat and hulled barley (Carruthers 1993). Chaff suggested that emmer was, again, the most commonly used cereal. Measurements of both spelt and emmer glume bases indicated large, well-grown plants, perhaps benefiting from the warm chalk soils of the area. Ewanrigg in Cumbria produced a different picture, although only three samples were available. One particular pit was full of hulled barley grains with moderate numbers of culm nodes, possibly reflecting a storage pit lined with straw. Spelt glume bases were also quite common, although no wheat grains were recorded (Huntley 1988; Bewley *et al* 1992).

In terms of the weed seeds present, grassland communities are, as for the Neolithic, the most commonly represented. Surprisingly few weeds overall have been recovered; only 7% of the grain/chaff/weed seeds from van der Veen's (1992) Hallshill data are from weed taxa, for example. Whilst this may, of course, relate to context types analysed, it could represent well-cleaned crops, or low levels of cultivation in terms of manuring and so on – the traditional weeds of intensively farmed fields having not yet invaded.

The Bronze Age, therefore, may be seen as an intensification of the Neolithic in terms of both domesticated animals and crop plants. Emmer and barley remain most common, but spelt occurs at several sites. What is clearly different is that the cereals are more commonly represented by their chaff than their grains. This probably reflects the different natures of the archaeological sites, with settlements from the Bronze Age but storage/disposal features (pits) from Neolithic sites. Cereals have certainly taken over from natural food resources such as apples and nuts.

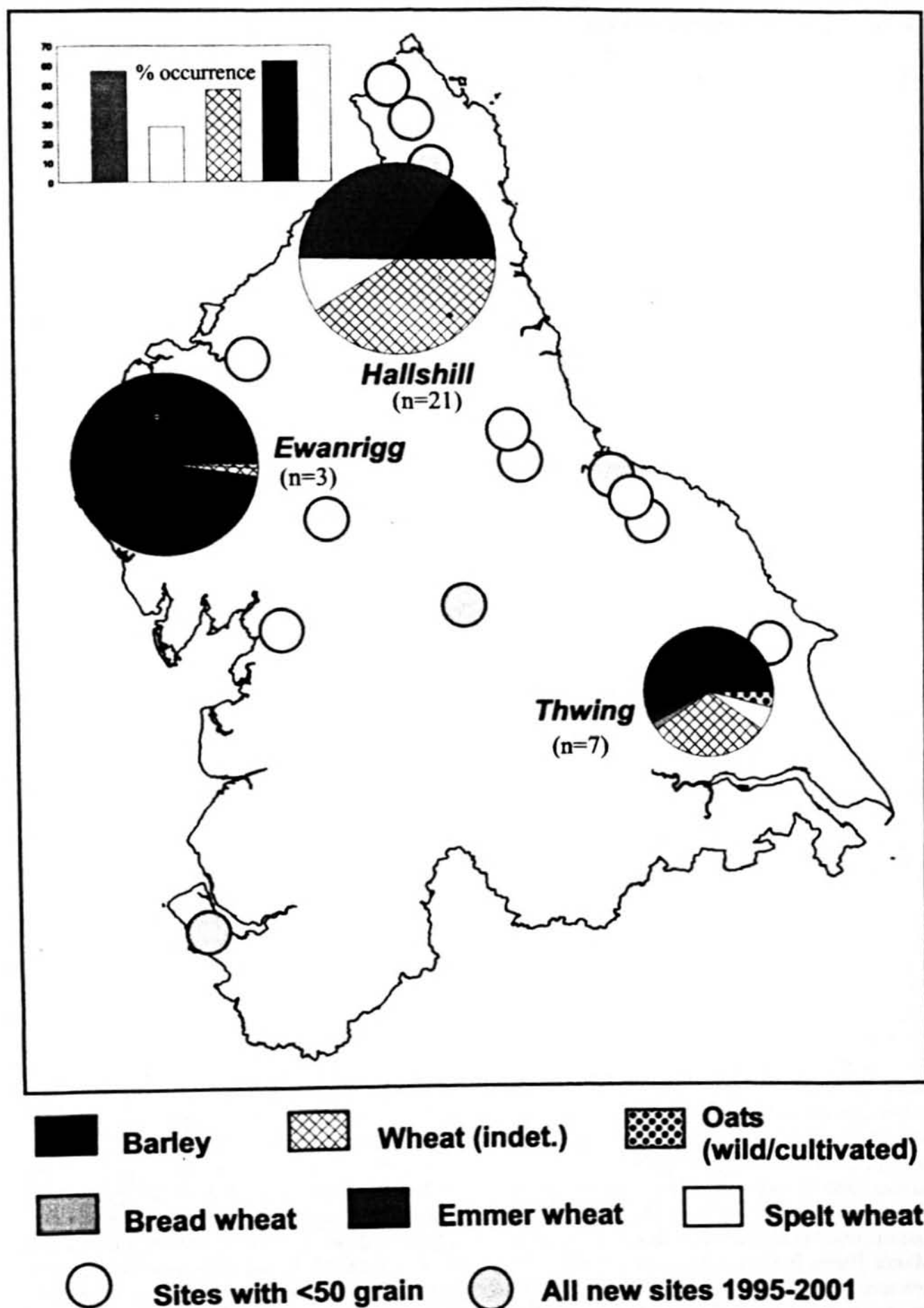


Fig. 8.3 Bronze Age sites: proportions of cereal grains (excluding indeterminate). *n* = number of samples. Data after Carruthers 1993 (Thwing); Huntley 1988 (Ewanrigg); van der Veen 1992 (Hallshill)

The Iron Age

From the botanical point of view the Iron Age is the best represented, with major assemblages analysed, although only from the east of the region. Animal bone assemblages, too, are only from the east and south of the region, soil status precluding bone preservation at many of the upland and northern sites (Fig 8.1).

Sites are largely settlements, and at least some have their origins in the Bronze Age, as well as continuing in use through to the Romano-British period. Comparisons of occupation between these cultural periods are therefore possible.

Animal bones are predominantly from the three main domestic species; wild animals as an economic resource have become considerably less important. Whilst cattle seem to have been the major animal at all sites, at least at Thorpe Thewles in Cleveland there is a greater emphasis on sheep in the later deposits (Rackham 1985; 1987). Ageing data also suggest a change from a dairy- to a beef-based economy during the second phase of activity, which is nonetheless still pre-Roman conquest. Occasional cattle bones indicate particularly large animals; whilst these may simply represent bulls, Rackham notes that they are comparable with some of the largest bones from Romano-British sites and bigger than the Thames Valley material. He therefore suggests that regional differences may have been present during the later Iron Age.

Several sites, notably Thorpe Thewles (*ibid*) and Kennel Hall Knowe in Northumberland (Rackham 1977), have produced bones from domestic fowl. These are early records, and the sites are not clearly 'Romanised'.

Ironically, evidence for the main areas within the region, the uplands, is minimal, and this is perhaps the area where the greatest effect of the Romans upon the natives may have been felt. As Stallibrass states, '...yet we are still almost totally ignorant of the pre-existing Iron Age economies and faunal environments for the region' (Huntley and Stallibrass 1995, 131).

Evidence for crop husbandry practices is considerably greater, due to the work of van der Veen (1992). Whilst her data were originally collected as a result of predominantly rescue-funded excavations, she used the individual site data to investigate regional-scale patterns of variation. Analyses of the charred plant remains and environmental parameters led her to conclude that it was, in fact, cultural parameters between populations north and south of the Tyne which had probably determined the different

cultivation regimes, and not the environmental parameters themselves. She concentrated upon the wheat remains, which showed species differences, although from the cereal grains alone, barley was almost always the most common species. Figure 8.4 shows this well.

Although the emphasis above has been upon the cereal grains themselves, it is without doubt the cereal chaff, the ear and straw fragments, that can provide the detailed evidence for crop husbandry practices. Presence of grain simply reflects usage of that crop, not how it was grown and harvested, the nature of soils in which it grew, and so on. Figure 8.5 shows a very different picture from that of the grain in that wheat chaff of one sort or another overtakes the importance of barley, although the latter remains common on the more northerly sites. Such an implication, however, overrides in particular differences in processing which could affect the proportions of the various cereals. For example, the product of threshing glume wheats is spikelets, which traditionally are supposed to require fire to parch them to separate out the grain, leaving spikelet and rachis fragments which survive in the archaeological record. Whilst barley lemmas too are tightly adpressed to the grains, threshing removes grains+lemmas leaving behind complete rachis units (ears), that is to say that barley acts more like a free-threshing wheat. The grain+lemmas are then ground, thus producing the barley flour or meal plus a coarse bran element. Interpretation must therefore take into account a wide variety of taphonomic factors as well.

Nonetheless, of the wheats, spelt is the more common in the south and emmer in the north. Bread wheat and rye have appeared in the south of the region too during the Iron Age, but with an early occurrence of rye at Thornbrough Scar.

The Roman period

The occupation by the Roman military left a considerable structural mark on the landscape in the form of forts, roads and, not least, Hadrian's Wall. Whilst excavation has been undertaken at such sites for a very long time, surprisingly few have had well-sampled assemblages recovered. The animal bones from military sites suggest a diet of beef more or less throughout the occupation, but with some greater emphasis upon mutton at South Shields, for example (Stokes 1996).

Many of the cattle bones were from aged females, suggesting a long life for breeding and dairy purposes. However, several of the forts

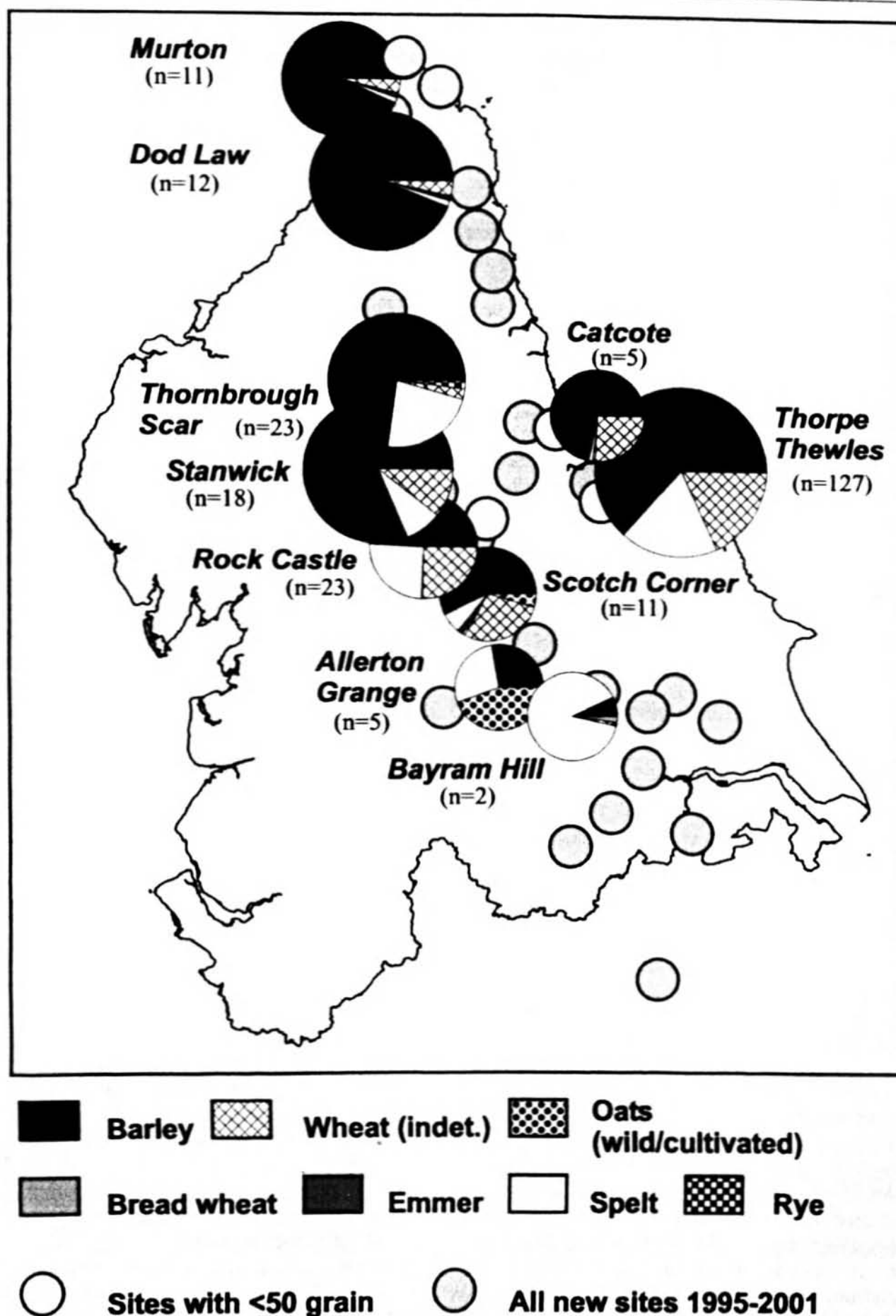


Fig. 8.4 Iron Age and Romano-British sites: proportions of cereal grains (excluding indeterminate). *n* = number of samples. Data after Huntley 1989b (Catcote); 1994b (Bayram Hill); 1994c (Allerton Grange); 1995 (Scotch Corner); van der Veen 1992 (Murton, Dod Law, Thornborough Scar, Thorpe Thewles, Stanwick and Rock Castle)

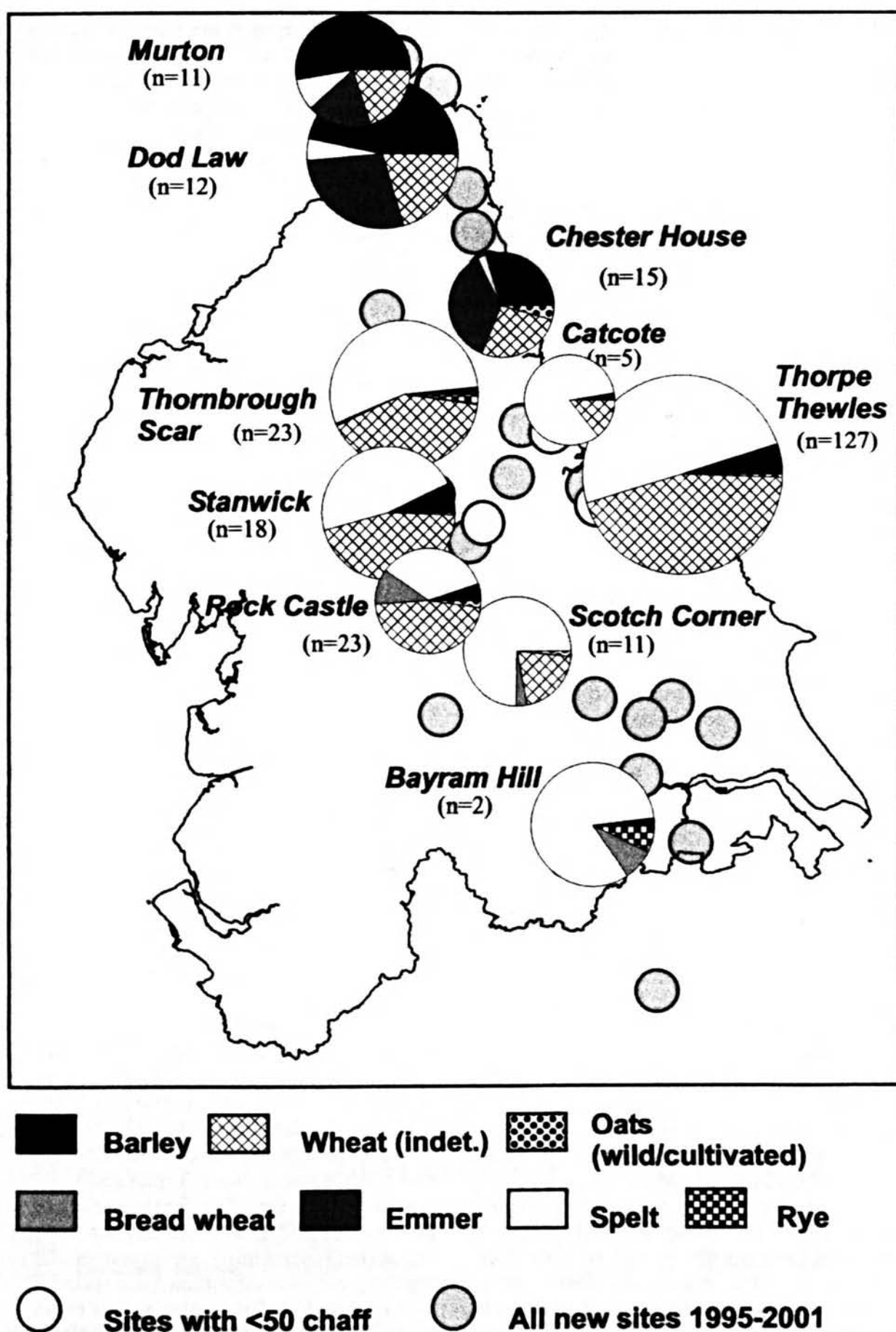


Fig. 8.5 Iron Age and Romano-British sites: proportions of cereal chaff. *n* = number of samples. Data as for Fig 4, plus van der Veen 1992 (Chester House)

clearly bought in joints, judging from the numbers of 'extra' shoulder bones, and prime beef certainly found its way to the officers' tables (Stallibrass 1991c). There is very little evidence for eating fish, or indeed wild fowl or other hunted species. With respect to the plant remains, barley remains the most commonly occurring cereal, with spelt wheat also being important. Many sites have produced very small amounts of either emmer or bread wheat, although bread wheat was being stored in quantity in one of the South Shields granaries (van der Veen 1988). The majority of the military sites have produced only grain or very small amounts of chaff, perhaps one or two contexts only with much chaff, usually spelt glume bases. This may partly relate to the fact that Roman deposits are often waterlogged, and the sampling procedures have been such as to sample inadequately the charred material, which is only ever at relatively low concentrations.

Waterlogged data show that exotic taxa are commonly recorded at some sites but rare at others; for example, vast quantities of fig seeds, grape pips and olives occur at Carlisle (Goodwin and Huntley 1988; Huntley 1989a) but very few at Ribchester (Huntley 1996b; Huntley in Buxton and Howard-Davis 2000). This could relate to the different origins of the men garrisoned there, and may suggest that Roman soldiers retained their ethnic origins, at least in part. This does not seem to have happened with the meat side of their diet, though, since beef remains dominant throughout the occupation at both sites.

Samples from native sites of the Roman period are disappointingly rare, and have only been collected in the east of the region. In general they show similarities with both the Iron Age and Roman military occupation, but further work is clearly needed.

The future

Excavation in the foreseeable future is, I believe, going to continue as relatively small-scale developer-funded work, rarely passing beyond assessment level. It is to be hoped that research excavations can attract funding, and no doubt some developer sites will be fully excavated (as was the Marton-le-Moor site in advance of projected improvements to the A1), but project designs will need to be both concise and precise in order to succeed. There will be continuing pressure to produce results in less time, but this must not equate to less quality.

Given that many sites are likely to receive only assessment funding, what the environmentalist produces as an assessment will almost certainly need to contain more information than at present; it will become, in effect, the archive. Not only will qualitative data be needed, but short statements regarding the location and nature of the site should be included. Although not necessary for the client, the latter are essential for other specialists in order to make the reports usable. To ensure that adequate levels of data are recovered, excavation specifications must become more precise, although not prescriptive, which would prevent the subject from advancing. Statements such as 'environmental evidence must be considered' are academically inadequate in what is essentially a money-led exercise.

The sites themselves will rarely produce enough data for statistically significant interpretation, and therefore the major analyses of individual sites possible in the past, for example Thorpe Thewles (Heslop 1987) and Carlisle (McCarthy 1991), will become rare. Group value will become far more important and will force environmentalists to look at a broader scale, perhaps more than was possible and certainly more than was favoured before, itself allowing wider interpretation of changing economic practices. Such assessment work should also enable research proposals targeting specific problems to become more focused and, it is to be hoped, enable them to attract what is a very limited resource – money.

An example of potential group value can be seen from a study of plant remains from Roman to Romano-British sites in the east of the region (Fig 8.6). It is unclear when oats were cultivated, and this is not made easier by the inability to distinguish reliably the cultivated from wild grains. The chaff is identifiable, but rarely preserved. Oat grains do, however, regularly appear in deposits of the first century AD in North Yorkshire, but it is not until the third century that they become apparent in the Tyneside region, or indeed abundant in North Yorkshire. A combination of detailed sampling from a variety of sites, plus morphometric work on modern oat grains, could help determine the status of oats – arguably the most important local species by the medieval period. This is also a clear example of how the relatively small assessment sites (all of these except Rocliffe) have great potential to develop research questions.

Investigation at a population level rather than

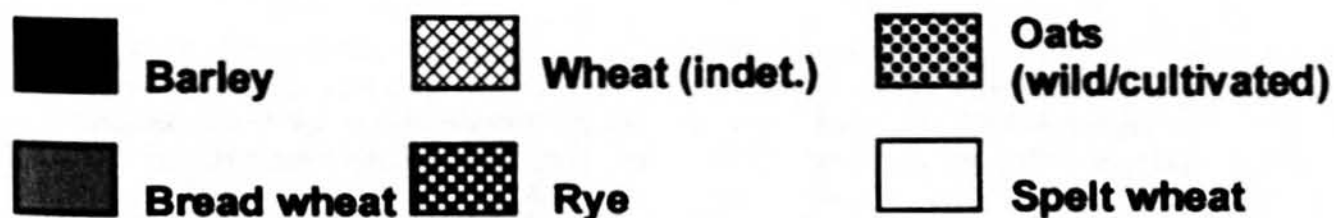
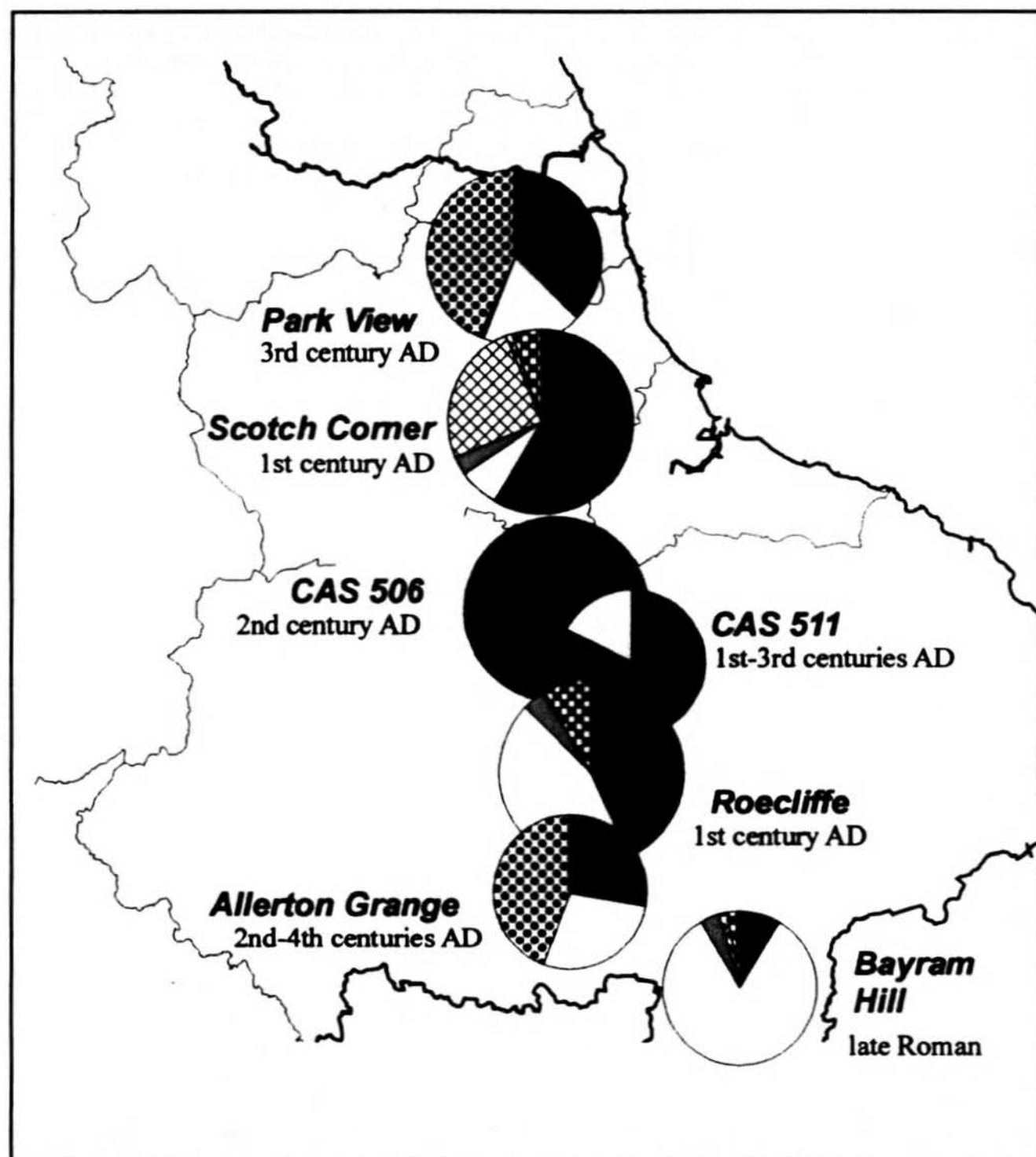


Fig. 8.6 Proportions of cereal grains (excluding indeterminate) from Roman sites, predominantly military, in County Durham and North Yorkshire, demonstrating increasing importance of oats in the third century AD. Data after Huntley 1994b (Bayram Hill); 1994c (Allerton Grange); 1994d (Park View); 1994e (CAS 506 and CAS 511); 1994f and forthcoming (Roeccliffe); 1995 (Scotch Corner)

the individual grain level could considerably improve interpretation as well. For example, at Bayram Hill metrical analysis of wheat grains indicated that a third of the material was probably bread wheat (Huntley 1994b).

A second example of group value suggests the possibility of different crop husbandry practices in the North Yorkshire area by the regular occurrence of achenes of *Anthemis cotula* (stinking mayweed), a species characteristic of heavy clay soils, on Romano-British sites. It has not been recorded from any of van der Veen's sites on Teesside and northwards (Iron Age or Romano-British), irrespective of their soil status. Such group value is again leading to the generation of hypotheses, themselves the subject of testing. Environmental questions can therefore lead excavation for a change.

More emphasis will need to be placed on the charred plant remains and the smaller animal bones. The former in particular are the only categories of plant remains to be preserved in the majority of both urban and rural sites. These are not visible during excavation, and sampling still needs to be undertaken more widely. The days of 'I can't see it so it isn't there' must disappear, and it is clear that the environmentalists must become more pro-active. Selling ourselves becomes the name of the game.

In more specific terms: Mesolithic evidence from flints suggests that the Cumbrian coast around Eskmeals has equally high potential for investigation as the North York Moors, and pollen sites are present too. Such an area would compare well with the upland work. Sites such as Star Carr, where macrofossil, pollen and bone evidence all survive, must be examined in detail, but their discovery is likely to be by chance, although potential areas are being suggested through survey work – the North West Wetlands Project, for example.

Neolithic settlement sites need targeting to investigate the nature of domestication of plants and animals, and to test the hypothesis that Neolithic culture spread rapidly through Britain, but not necessarily from north to south (witness the fact that Balbridie has more similarities to mainland European sites than to other British sites). Synthesis of existing pollen work, as well as new fine-resolution work, would also assist this debate. Metrical analyses of bones and modern DNA work could assist too.

For the Bronze Age, more work needs to be carried out at an archaeological level on a variety of site types which may or may not be

Bronze Age; this would aid investigation of the changing nature of agriculture. For example, we have both naked and hulled barley from this period, but by the Iron Age nearly all barley is hulled; when did this transition occur, and how? It is, indeed, a nationwide transition, and there are surely potential sites in the region to address the questions. However, sites need to be well-dated as well as excavated and sampled in order for this question to proceed. From surveys it is clear that field systems still survive from the Bronze Age, and the region therefore has high potential to investigate sites within their landscape. Given that seed concentrations are low in many cases, particularly large samples should be taken in order to produce statistically significant results.

The Iron Age has the most well-analysed data, but only from the east of the region. Such analyses show very well what can be done with palaeobotanical data in terms of crop husbandry in relation to environmental parameters. It is probably the only prehistoric period so far where specific sites could be targeted in order to address detailed environmental questions. For example, further comparative work between high status sites, such as Stanwick, and local farms, such as Scotch Corner and Rock Castle, is needed. Landscape studies remain important, not only for comparison with the Bronze Age material, but also to investigate the effect of the later Roman military occupation on the area's agriculture. As for the Bronze Age, a series of different types of sites should be fully investigated from the environmental point of view; whilst their typology has been well studied, their biological remains have largely been ignored.

Weed assemblages from all periods provide the potential to investigate changing usage of local vegetation: when particular types of soil were (could be) cultivated, for example. There are clear differences in a north-south transect through the east of the region for the Iron Age to Romano-British periods.

In geographical terms, what was going on in the west of the region for any of the periods discussed above? Pollen evidence demonstrates that people were present and clearing woodland, but what they were then doing is almost completely unknown; environmental evidence from excavation of any type of site is very rare.

Conclusions

Environmental archaeology has been accepted (more or less) as a routine part of excavation,

and has achieved a great deal, particularly with regard to the plant remains for certain limited periods and parts of the region. However, given that we do not actually know even what the main cereals were or the favoured meat was in the west of the region, we cannot rest on our laurels. We need to be more focused and pro-active to march into the twenty-first century; the first aspect is already being addressed by producing reviews of existing material (Huntley and Stallibrass 1995), as well as developing research frameworks for the region. It is time for excavation to be led by environmental questions. It is also time to integrate more with the traditional palynologists working on material not directly related to excavation. 'Landscape archaeology' is a popular concept; environmentalists in the broad sense are essential to its investigation. Perhaps it is even time to forget the pottery and relegate it to the spoil heap for once; after all, its potential for dating has largely been superseded by radiocarbon and other independent means. It is certainly time to concentrate on the environmental evidence, to put archaeology in its place and to see how people were living in all the marvellous sites we have in our region.

Future (Im)Perfect?

The above was written in 1996 and has not been changed other than to update the bibliography and to add dots on the maps to show where new sites have been at least assessed. Whilst this is not the place in which to update fully the data and the story itself, it does provide an opportunity to look back five years.

It has proven true that the majority of excavations are a result of the planning process and thus developer-led. In addition, they are, by and large, small sites with relatively small-scale sampling (Fig. 8.7). This figure presents the post-1995 sites which have samples that have at least been evaluated, compared with those pre-1995 sites which were either evaluated or, in many cases, went straight to full analysis without detailed assessments – as was the norm at that time. 50% of recent sites have fewer than five samples investigated compared with thirteen samples for the earlier sites, with only 5% producing more than 25 samples compared with more than 200 samples for the earlier sites. Thus the group value of sites has, indeed, become the most important aspect since, at this level of sampling, hardly any sites are producing statistically valid data-sets of themselves. There has, however, to be more than "adding dots to the

map", and time is needed to look at sites in more detail with respect to numbers of samples taken on site as opposed to those being evaluated, to the numbers and types of context, the area/nature of excavation, and the data obtained. Such an overview may allow targeting of some site types or periods, thus making more effective use of limited resources. It may also allow us to demonstrate whether the present level of sampling is appropriate or not. Group values should also lead into the Regional Research Frameworks which are, at last, actively being developed for the North-East, the North-West and, separately, for the Hadrian's Wall World Heritage Site, although this latter should draw heavily upon, and integrate with, the others. English Heritage is providing some funds to enable these to progress but they are being managed by, and will belong to, the Regional Community as a whole. Such frameworks should, we hope, then provide impetus to design research projects as well as act as a formal background against which funding bodies can judge project designs.

The pressure to produce more in less time (ie money), but with no concomitant loss in quality, is being addressed through the implementation of a series of posts, funded by English Heritage, of Regional Advisors in Archaeological Science. The Advisors (North-East Region plus Hadrian's Wall based in Durham, and North-West in Liverpool) provide impartial and free advice on scientific matters to Local Authority curators, EH Inspectors and independent contractors. They are also developing, at the national level, "Model Briefs and Specifications" for scientific work to assist curators in providing a level playing field against which contractors tender – another area into which the overview of sites and sampling would feed – although these may need fine tuning to specific regional criteria. The advisors are contributing, as appropriate, to the English Heritage guidelines for specific materials in collaboration with staff from the Centre for Field Archaeology at Fort Cumberland. Provision of training for local archaeologists in a variety of materials is proving both popular and useful as well as an effective means of keeping people up-to-date with recent techniques and advances. Such sessions also demonstrate what specialists do 'behind the scenes' in the laboratory thus demystifying the specialist areas and, one hopes, demonstrating value for money.

Synthetic research was suggested as one way

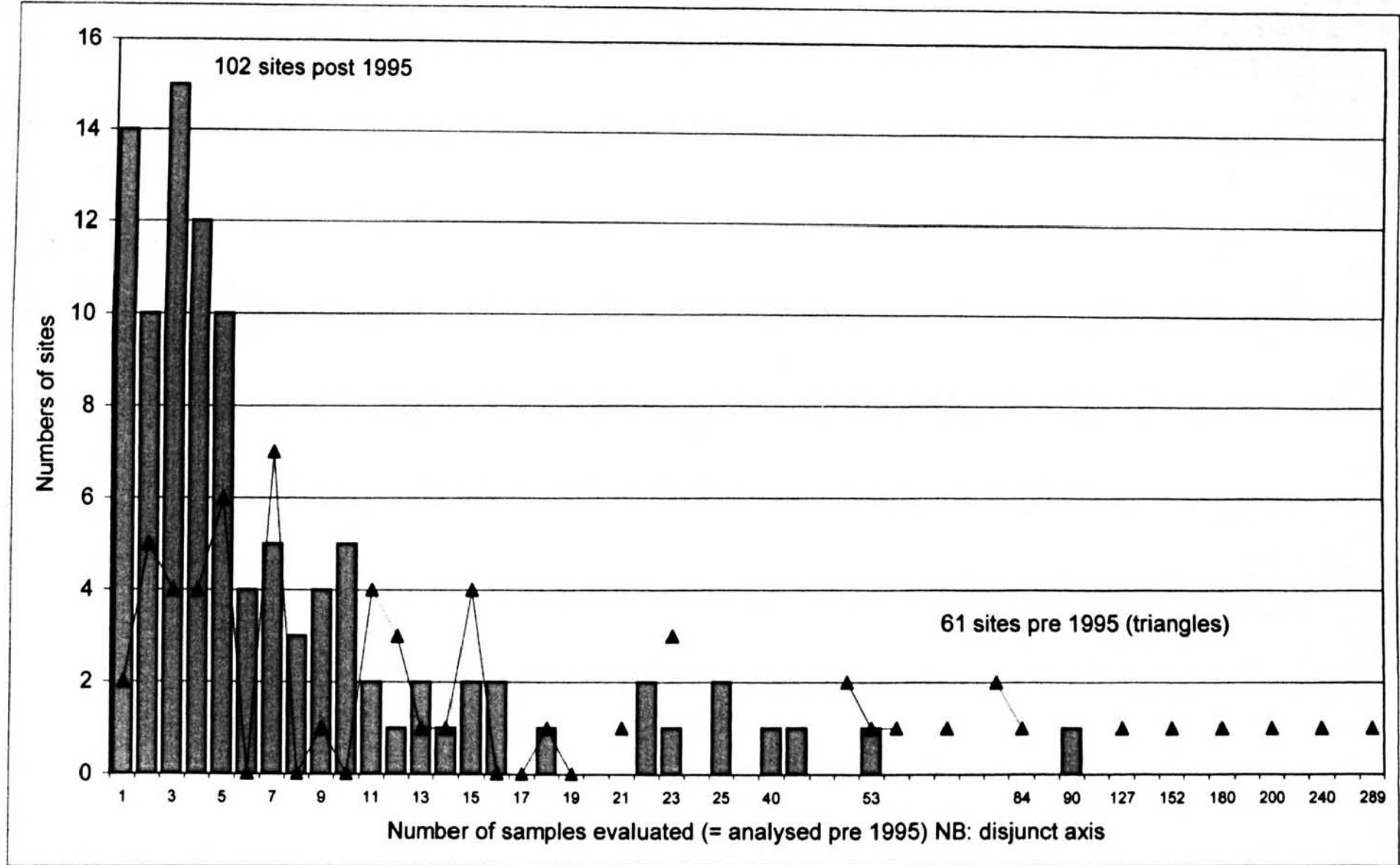


Fig. 8.7 Numbers of samples evaluated/analysed by site pre- and post-1995

forward in 1996. Some has been completed, notably that of Pratt (1996) and demonstrates the potential for such work, although it was not, in reality, associated with any aspect of the planning process. As well as looking at archaeological data, she extracted pollen data at 500 year intervals, from the many published pollen diagrams for the Tyne-Tees region, presenting the latter as a series of maps. She demonstrated intriguing changes in cereal pollen, for instance, suggesting intense cultivation in the north-east of the region during the early part of the Neolithic, with a subsequent retreat and then expansion from two discrete directions, north-east and south-east, during the Bronze Age. These sort of patterns challenge considerations of cultural or social change or of environmental parameters, and are beginning to be tied in with charred plant remains too.

Other data requiring synthesis are probably now available and suggestions would include the macroplant and animal/fish remains from excavations in both Berwick and Durham. Such syntheses would feed into the Urban Database projects and, again, inform the better use of limited resources in future developments.

However, for such syntheses to be undertaken, comparable data need to be available and we return to the details given in curatorial briefs and specifications. Inevitably in the market-led world some specialists will simply say "charred cereals present" rather than identify to species unless that level of detail is required from the outset and monitored adequately. Even presence/absence data can be acceptable, but, more usefully, identifications need to be made and the criteria used for those identifications presented. Without them data can be unreliable as witnessed by some recent blind tests using fish bone (Gobalet 2001). Here, experienced specialists were given an assemblage for analysis and their results compared. The conclusions indicated that a specialist with narrow expertise was more reliable than the often more favoured "general environmentalists", that local knowledge and experience reduced a regional bias, that access to (and use of) good reference collections is critical and that methods and criteria plus the data themselves must be presented. The latter would enable other workers to judge for themselves if necessary. The reports clearly need also to be in the public domain.

In terms of the 1996 'dark hole of the west', one large assemblage has now been studied – that from Irby on the Wirral by the author

(archive reports in preparation) – and inevitably has raised more questions than it has answered. The site dates from perhaps 400 BC to 400-500 AD and is essentially an extensive rural settlement. The economy is dominated by emmer wheat and naked barley until perhaps the 3rd century AD when it switches to hulled barley with bread wheat and oats. Spelt is minimal although it would be expected given the well-attested Roman military activity in the area. Were these farmers actively conservative, ignoring or being allowed to ignore the Romans, or were there other reasons why they didn't adopt a Roman economy? Were they typical of the area or simply an 'odd bunch'?

So, in summary, we have moved on in that there are rather more sites, albeit small with few samples and little data, than there were in 1996. We have started the process of synthesising existing data and are just about starting production of the Regional Research Frameworks. We have developed a system to try to improve quantity and quality of work from developer-led interventions, where this is appropriate. Perhaps the most important aspect is that we have recognised, dare I say accepted, the changed fate of the majority of archaeological funding, have recognised many of the potential problems that that has brought and are now trying to address those problems in order to take our subject forward.

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