

8. FLAT, FLATTER, FLATTEST – THE ENGLISH HERITAGE WETLAND SURVEYS IN RETROSPECT

by Robert Van de Noort

Abstract

Since 1973, English Heritage has supported four major regional surveys of England's wetlands – in the Somerset Levels, the Fens of Eastern England, the wetlands of the northwest of England and the Humber wetlands. Each of these projects developed a range of methods and techniques particular to the landscape that was studied and the results from the surveys reflect this diversity of approach. This paper compares and contrast these approaches, and evaluates their effect on the overall results of each of these surveys.

Introduction

The story has been told by John Coles on many an occasion how David Hall introduced students from Cambridge to the Fenlands. From a distance, David pointed at the 'hills', sometimes not more than a few inches high, where archaeological finds were likely to be found. And on arrival, the 'hill' produced Mesolithic flint or Roman pottery, to the amazement and awe of the students.

The little anecdote of David Hall and the 'hills' of the Fenland serves to illustrate two important aspects of archaeological surveys of wetlands in general.

First, that the waterlain sediments that characterise wetlands are flat and that any undulations, or 'hills', represent either a landscape that predates the wetlands but protrudes through the waterlain sediments, or exists as a consequence of human action and may be a prehistoric barrow, a Roman period mound of briquetage or the result of more recent drainage work. Wetland surveys are limited by the burial of landscapes by younger peat, riverine or marine sedimentation. Many archaeological sites remain, therefore, undiscovered, until peat extraction, erosion or excavation removes this natural overburden.

Second, that the array of methods and techniques available to identify archaeological sites and finds is limited and that the extent to which any technique is successful depends on the thickness of the overburden. David Hall fieldwalked whole landscapes and discovered many sites (Hall 1992), many of these on the 'hills' within the wetlands. Aerial photography has proved highly successful in areas where little or no overburden was present (Hall and Coles 1994). However, the applicability of fieldwalking and aerial photography in wetlands varies with the thickness of the overburden and other survey techniques, including geophysical surveys (David 1995), have limited application only.

The title of this paper, 'flat, flatter, flattest', is the imaginative boasting of one wetland archaeologist to another. The flatter the wetland landscape, the more difficult the discovery of archaeological sites becomes, and the archaeologist working in the flattest landscape is faced with the greatest challenge. A 'hill' within wetlands or on the wetland margin, regardless of height, is more likely to produce archaeological remains than the flat land surrounding it – a paradox recognised by all wetlanders. In the same spirit, Francis Pryor has repeated (again on many an occasion) the tale told to Harry Godwin by a Fenlander that 'any fool can appreciate a hill', but that it takes a more sophisticated mind to appreciate flatness.

This paper is not intended to decide which of the large wetlands in England is the flattest. Rather, it will explore the methods and techniques used during the four wetland surveys commissioned by English Heritage – in the Somerset Levels, the Fenland of eastern England, the peatlands in the northwest of England and the Humber wetlands (Fig. 1). The aim of this paper is to compare and contrast the different methods and techniques of these surveys, and to assess how the overall results of each of the surveys were affected by the chosen approaches.

The Wetland Surveys

English Heritage and its predecessor within the Department of the Environment have been closely involved with wetland archaeology since 1973. Its support for the archaeological research in the Somerset Levels was followed by the survey of the

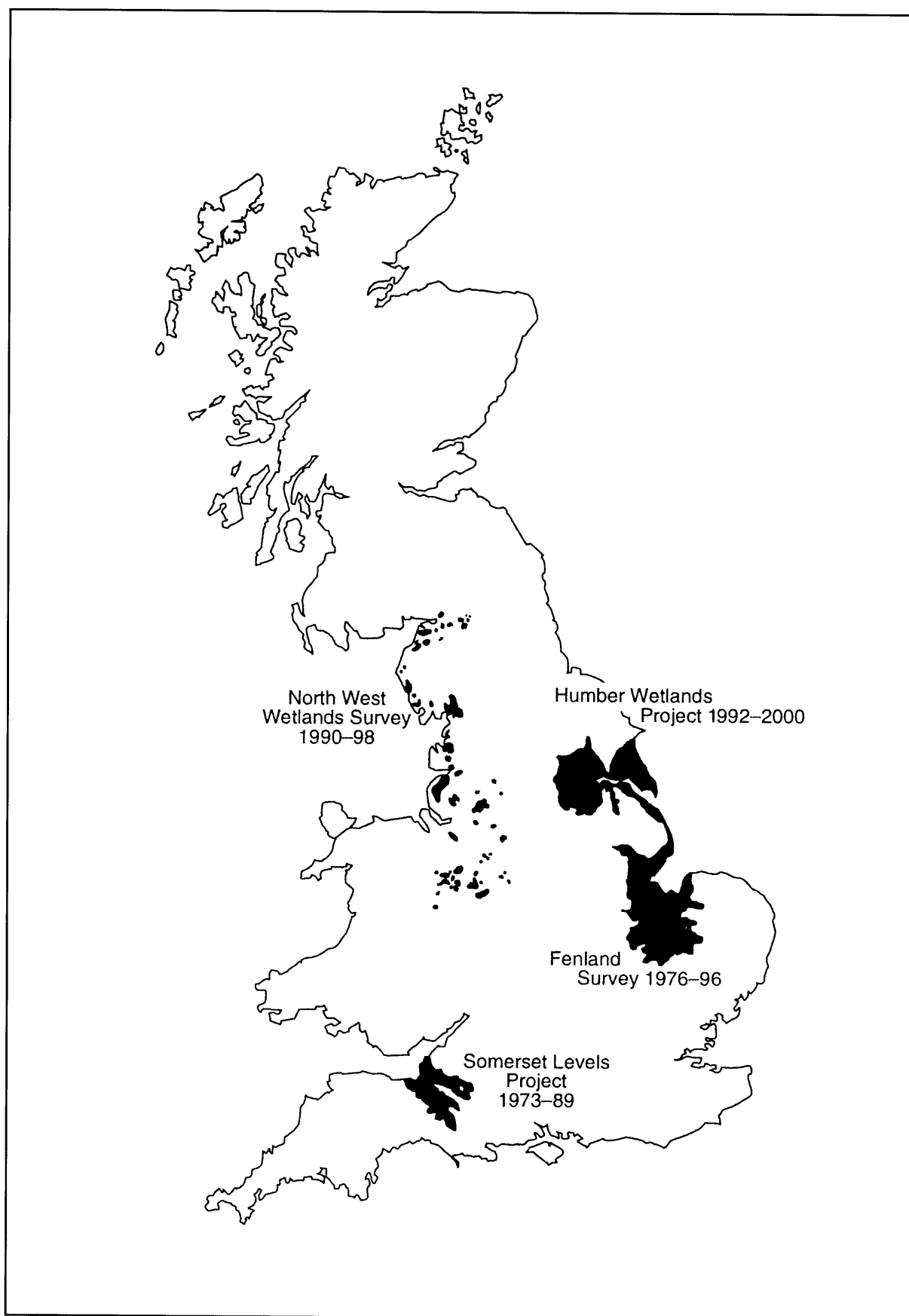


Figure 1 English Heritage-funded Wetlands Projects

Fenland in eastern England, the wetlands of the northwest of England and most recently by the survey of the wetlands in the Humber lowlands in northeast England. Together, these surveys constitute a programme of research that in terms of scale has few parallels in Europe. They also constitute a national strategy towards wetlands, matched by few archaeological research programmes in England or beyond.

The surveys have a number of common features. All four surveys were commissioned by Geoffrey Wainwright, formerly English Heritage's Chief Archaeologist, and Professor John Coles was closely involved in the running or management of the surveys. The wetland surveys also have a common rationale. This is based on the high preservation potential of waterlogged sites in wetlands combined with extensive threats to the wetlands and the archaeological remains contained within them – peat extraction, drainage and desiccation, the intensification of agriculture and urban and industrial development being the most prominent (Coles 1995). The publication record of the surveys is also remarkable, with the overwhelming majority of discoveries published – as articles in twelve volumes of the Somerset Levels Papers, in eleven monographs from the Fenland Project, six (to date) county-based monographs of the North West Wetlands Survey and seven monographs of the Humber Wetlands Project.

Nevertheless, each of the wetland surveys was distinctive in terms of organisation, management and the methods and techniques used to find sites, and the extent of exploration of the sites identified.

The Somerset Levels Project (1973-1988) was the first of the four wetlands surveys. It developed from strong concern about the physical destruction of archaeological sites through peat extraction. Peat extraction on the Somerset Levels was centred on the river Brue valley to the north of the Polden Hills, and in the decades of the Somerset Levels Project, it was mainly concentrated in the area to the south of the 'islands' of Westhay, Meare and Burtle. The most famous sites from the Somerset Levels – the Sweet Track, the Abbot's Way, Walton Heath Track, the Meare Heath track – are all from this area. The 'lake settlements' of Meare (East and West) and Glastonbury lie outside this area of peat extraction, but these sites had been discovered by Arthur Bulleid at the end of the nineteenth century (e.g. Coles and Coles 1986).

The Somerset Levels Project was essentially concerned with rescue archaeology. The peat

extraction produced many more sites and opportunities for research than the project could handle. Therefore, all the sites identified and investigated were 'proper' wetland sites, that is sites that had been preserved within the anoxic, waterlogged matrix that also preserved the palaeoenvironmental context of the archaeological remains. The Project is recognised for its pioneering role of integrating archaeological objectives with palaeoenvironmental techniques to a level rarely seen at that point, especially the archaeological use of entomological and dendrochronological methods (e.g. Girling 1976, Morgan 1976).

Apart from the close integration of archaeological and palaeoenvironmental techniques, the methodology employed by the Somerset Levels Project was based around the peat extraction. Repeated walking of areas of surface peat milling and repeated survey of the cut faces of the peat formed the main method. The repetition formed an essential aspect of the methodology, as the continuous peat growth in prehistory could completely bury archaeological sites, leaving no clues on the modern surface until the removal of peat made identification possible (Coles 1975). In addition, the peat extractors themselves were increasingly used as sources of information; their number and everyday presence on the level greatly increased the chance of (early) discovery of sites. The rescue nature of the Project made excavation of the sites necessary, before their otherwise inevitable destruction. Few other methods and techniques were applicable for the research on the Levels and fieldwalking of arable or pasture fields, aerial photography, geophysical survey and the analysis of historical data were not developed.

The seasonal nature of much of the work resulted in the employment of large numbers of people on the Project. This is not only true for the field officers who walked the ditches and fields, as can be noted from the changing lists of field officers in each of the *Somerset Levels Papers*, but also for the excavators, who would join the project for several weeks at a time. As a consequence, the Somerset Levels Project is known by many in the archaeological profession.

To return to the title of this paper, the Somerset Levels was the flattest landscape among the English wetlands. The intrusive and destructive peat cutting provided the opportunities to develop methods for the identification of archaeological sites beneath and within the peat. Nearly all prehistoric sites were identified as a consequence

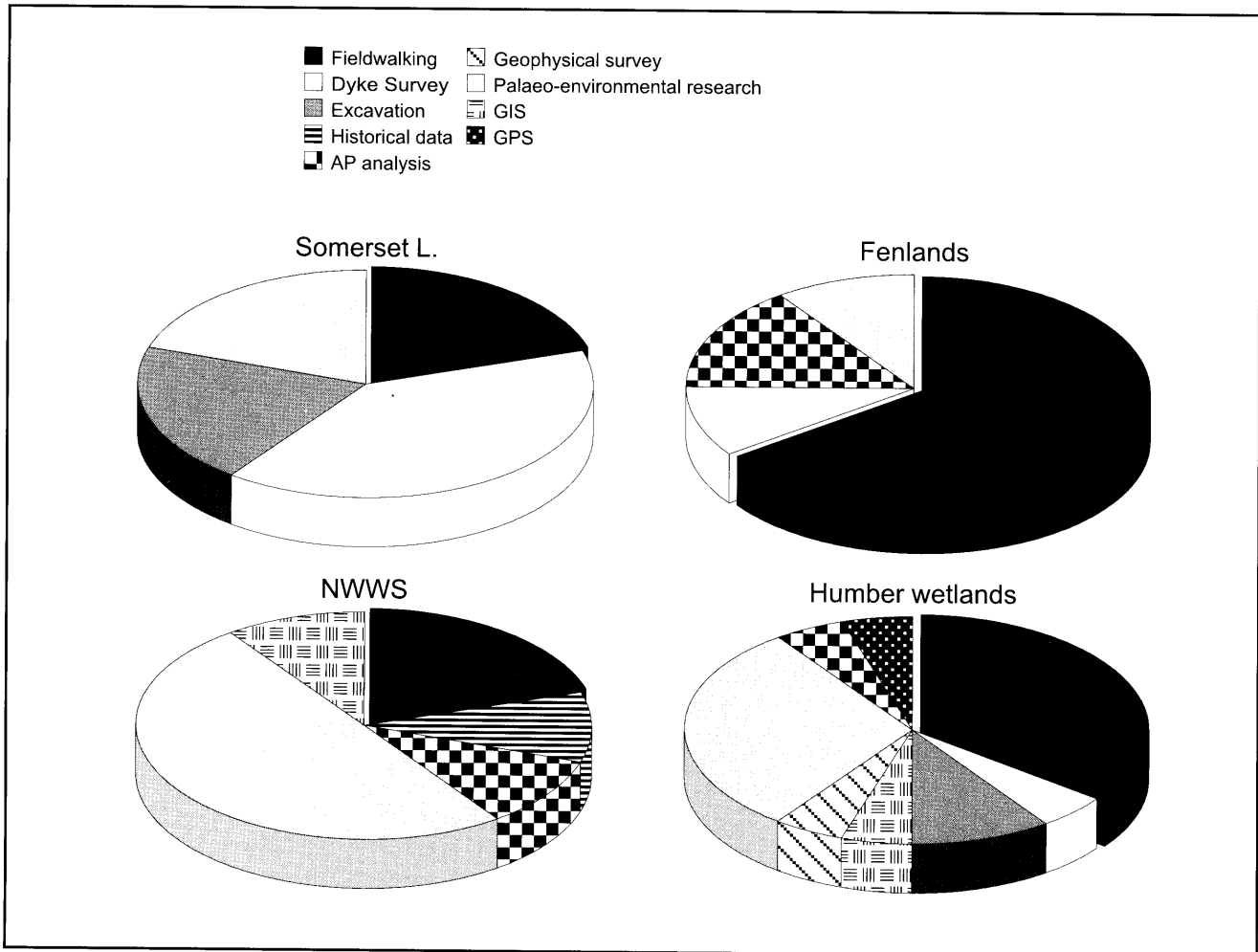


Figure 2 Pie diagrams of field-based methods and techniques for the four English Heritage commissioned wetland surveys – estimates, rounded to the nearest 5%

of peat cutting, either by the Project or the peat cutters themselves. The main exceptions to this are the 'lake settlements' of Meare and Glastonbury. The latter was discovered by Arthur Bulleid in the late nineteenth century, who noted the (not so flat) undulations in a field (Bulleid 1894, Coles and Minnitt 1995). These undulations existed as a consequence of differential desiccation of the organic and minerogenic sediments, the latter representing the clay brought in from outside the levels to form the house platforms. The Meare lake villages were discovered when a ditch was dug through one of the villages, and the finds were brought into Glastonbury Museum where they were recognised as dating to the Iron Age. The effects of continuing drainage have enhanced the effects of differential desiccation, and many of the unexcavated platforms can now be recognised in the micro-topography (Chapman and Van de Noort 2001).

The Fenland Project (1982-1988) was the second wetland survey in England, and it continued the work of the Fenland Research Committee (1932-1940). At the time of the appointment of David Hall as the Fenland Field Officer in 1976, little systematic archaeological research had been undertaken since 1940. Unlike the Somerset Levels, the main threat to the archaeological resource was not (or no longer) peat extraction, but the rapid desiccation of peat, erosion and the conversion of pasture land to arable land, bringing many archaeological sites within reach of ploughing activity (Hall and Coles 1994). These threats affected the whole of the Fens, and in particular the Fenland edge in Norfolk, Suffolk, Cambridgeshire and Lincolnshire.

The aims of the Fenland Survey, that ran from 1982 to 1988, were to be most ambitious and in line with the threats identified – to survey 420,000 ha through fieldwalking. At the close of the project, nearly 240,000 ha (or 60%) had been fieldwalked, with

impressive results – over 2500 sites had been discovered by the Field Officers, who included Bob Silvester, Tom Lane and Peter Hayes in addition to David Hall. The sites range in date from the Mesolithic to the Medieval period (Hall and Coles 1994, 10). The survey was based on parishes, and fields were walked systematically according to their nature and condition, first set out by David Hall (1992) and shown in the 'Fieldwalking Intensity maps'.

The majority of sites identified were not waterlogged sites, although some included waterlogged components (Coles and Hall 1997). Past people's presence in the Fenland, essentially a lowland basin that had become gradually wetland as a result of sea-level change (*cf.* Shennan 1982), had through time been focused on the Fenland edge and on the 'islands' within the basin. From here, both the wetlands and the drylands could be exploited, a practice that has been described in greatest detail for the Fens landscape (*e.g.* Pryor 1991). Additional human activity was encountered on the 'roddons', the minerogenic sediments making up the levees of tidal rivers and creeks. The majority of archaeological sites, therefore, were dry sites, that were covered and protected by peat growth or marine silts. The many small-scale excavations in the Wissey embankment undertaken prior to the survey illustrate this point most clearly – most finds came from within the peat, but rested directly on top of the pre-Holocene surface (Healy 1996).

Apart from fieldwalking, the Fenland Project developed several other methods. Most notably dyke survey; that is the examination of recently cleaned ditch faces that offered a third dimension to the survey and resulted in the discovery of the Flag Fen site and many other sites (Pryor 1991; French and Pryor 1993). The contribution of aerial photography cannot be understated. The large collection of the Cambridge University Committee for Aerial Photography, enhanced by targeted work by Rog Palmer and Chris Cox, not only allowed for the old rivers and creek systems to be recorded on maps, but also contributed significantly to the identification of archaeological sites and landscapes. The contribution of aerial photography to the project was determined environmentally by the advanced drainage and intensive agriculture of the Fens, allowing for soil marks to be readily noted from the air. The Fenland Project did not include excavations as a technique of recording – this was to be reserved for the Fenland Management Project.

Palaeoenvironmental research was undertaken by a fifth Field Officer, Martyn Waller, whose remit was to investigate the Holocene natural history on a Fenland-wide basis (Waller 1994). His task was enormous, despite the earlier work of the Fenland Research Committee, and the integration of archaeological with palaeoenvironmental research on the ground could not be achieved.

In terms of flatness then, the Fenlands are often perceived as a 'flat unpromising wilderness' (Hall and Coles 1994, 1). However, it was not the flatlands where the majority of archaeological remains were found, but the low 'hills' seen from a distance by David Hall, on the Fen edge or on the roddons.

The North West Wetlands Survey (1988-1997) was the third of the large-scale wetland surveys. The North West Wetlands Survey (NWWS) focused on the 37,000 ha of lowland peat in the counties of Cumbria, Lancashire, Greater Manchester, Merseyside, Cheshire, Staffordshire and Shropshire (Middleton and Wells 1990). The threats to the wetlands of northwest England included peat extraction, drainage and desiccation and the conversion of pasture land into arable (*e.g.* Leah *et al.* 1998). Nevertheless, throughout the area much pasture remains. In the areas of Greater Manchester and Merseyside, waste disposal, urbanisation and industrial development must also be recognised as significant threats to the wetlands. The Field Officer for Greater Manchester, David Hall, must have experienced this as a culture shock (Hall *et al.* 1995). The project was largely based at the Lancaster University Archaeology Unit with additional support, and unlike the Fenland projects, the NWWS integrated archaeologists and palaeoecologists in a single team. The NWWS was also the first wetland survey that worked within English Heritage (1991) management framework 'MAP2', although this was produced during, rather than prior to, the survey (LUAU 1993).

Fieldwalking was the main method employed for the identification of archaeological sites. In view of the relatively small acreage of wetland to be covered (*i.e.* less than 10% of the acreage of the Fens), and of the anticipated low artefact densities in northwest England, the peatland fringes were systematically fieldwalked at 10 m interval. This was at a higher density than employed in the Fenland, where systematic fieldwalking was conducted at a 30 m interval. Only areas of deep peat in the northwest and west midlands were walked at this resolution. Although a final synthesis has yet to be produced, it seems fair to suggest that the number of sites, and the quantity of finds, does not

	Somerset Levels Project	Fenland Project	NWWS	Humber Wetlands Project
Fieldwalking	20	65	20	35
Dyke survey	40	10	0	5
Excavation	20	0	0	10
Historical data	0	0	10	0
AP analysis	0	15	10	5
Geophysical survey	0	0	0	5
Palaeoenvironmental research	20	10	50	30
GIS	0	0	10	5
GPS	0	0	0	5

Table 1 Percentage of field-based methods and techniques for the four English Heritage commissioned wetland surveys – estimates, rounded to the nearest 5%.

match those from the Somerset Levels or the Fenland. I hasten to add that this is primarily a reflection of the distribution of past activity, rather than methodology.

Few other methods for the identification of archaeological sites were employed by the survey. Dyke survey was not a feasible systematic method of research, as large scale dyke-cleaning was not undertaken in the northwest. No excavations were undertaken as part of the survey. Aerial photography and remote sensing work was commissioned for the identification of peatlands, rather than for the identification of archaeological sites. Similarly, the often extensive documentary studies that accompanied the county-based surveys produced most valuable information on the location and extent of former and present wetlands, but less so on archaeology. As in any generalised statement, important exceptions exist (e.g. Stebbing Shaw's late eighteenth century discovery of Roman remains at Pipehill in Staffordshire [Leah *et al.* 1998, 115-7]).

The role of palaeoecology within the NWWS deserves additional attention. Palaeoecology, and in particular palynology and plant macrofossil analysis combined with high-resolution radiocarbon dating was used extensively during the project. Its role has been portrayed as an 'archaeological survey tool in its own right'. The (palaeo-)environmental archives contained within the peatlands were considered as 'sites' and their state of preservation and any light they might shed on past people's activity, either within or outside the wetlands, were assessed as part of the survey.

The NWWS was the first major survey in England to develop a Geographic Information System (GIS) as an integrated part of its work (Middleton and Wells 1990). The GIS functioned as a basis for the project's archive and as a tool that enabled data manipulation and rapid publication of the results. The use of a GIS is also indicative of the increasing role of archaeology in the planning process, following the publication of Planning Policy Guidance 16 (PPG16), Archaeology and Planning (Department of the Environment 1990). Within the planning system, it is crucial that data on sites and finds can be rapidly transferred to Sites and Monuments Record offices, where they will form the basis for future planning decisions.

How about the flatness of the northwest wetlands then? Overall, the retrieval of archaeological sites and finds from the wetland edge or the land surrounding the mires was good, but few finds were made from the peatlands themselves, and no new waterlogged sites such as trackways were discovered during the survey. The peatlands may be flat, but the archaeological survey relied on the surrounding hills and undulating land for the identification of archaeological remains.

The Humber Wetlands Project (1992-2001) was the final regional wetland survey commissioned by English Heritage. The Humber wetlands, a lowland basin in the Humber catchment in Yorkshire, Lincolnshire and Nottinghamshire, comprise some 330,000 ha. These represent, overwhelmingly, a landscape that became paludified and was silted up as a consequence of Holocene sea-level change, similar to the development of the Fens. Following a desktop assessment that established the need for such a survey (Van de Noort and Davies 1993),

English Heritage commissioned the survey in 1994. The survey was undertaken by a team of archaeologists and palaeoenvironmentalists, based at the University of Hull.

The aim of the Humber Wetlands Project was the systematic but selective survey of the area in six years. Each year was dedicated to the survey, analysis and publication of one physiographic region within the Humber wetlands. The surveys were undertaken within 'mapviews', areas measuring 5 x 4 km that were centred on wetlands, and within these mapviews, the different techniques employed by the Project were as closely integrated as possible (e.g. Van de Noort and Etté 1995).

The methods and techniques employed by the Humber Wetlands Project were by design multifaceted, and included on the archaeological side fieldwalking along the system developed in the survey of the Fenland, dyke survey whenever possible, systematic analysis of aerial photographs in archives, the selective deployment of English Heritage's geophysical survey team and small-scale excavations. The methods and techniques addressing the palaeoenvironmental aspect of the work included extensive coring programmes for lithostratigraphic analysis, and pollen analysis linked to selective but high-resolution radiocarbon dating programmes. Obviously, such a multifaceted approach reduced the actual acreage researched considerably.

The role of excavation of selected sites was recognised as an important tool, not only to enhance our understanding of the state of preservation of waterlogged archaeological sites and to raise the profile of the project, but specifically to link the finds from the surface found during fieldwalking to actual sites. Several excavations showed that the surface finds were all that was left of the archaeological resource, but on other occasions, important sites were discovered, for example two Roman roads with the foundations of their bridges across the river Idle at Scaftworth, on the Nottinghamshire-South Yorkshire border (Van de Noort *et al.* 1997).

The use of geophysical survey, both magnetometry and resistivity, was successful on the sandy 'islands' within the wetlands, but more notably on Roman period sites sealed within the alluvium as well. The mapping of the very extensive riverside-settlement at Trent Falls, at the confluence of the rivers Trent, Don and Ouse, showed the potential of this survey technique for wetlands (Fenwick *et al.* 1998).

However, the identification of features was dependent on the presence of 'industrial' waste, dumped in the ditches. The application of this technique on prehistoric sites was, in general, less successful.

The Humber Wetlands Project followed the NWWS in the early adoption of GIS. Its application was extended into the field, with palmtop computers available for data input. The Humber Wetlands project was the first survey to apply differential Geographic Positioning Systems (dGPS), which provides a new method to analyse the micro-topography that may reflect wetland sites through the process of differential desiccation (Chapman and Van de Noort 2001).

The dGPS was also used extensively in the Humber estuary and the coast. The part-erosive nature of the tides offered unparalleled opportunities for the discovery and excavation of many archaeological sites, many of these being waterlogged in nature (Fletcher *et al.* 1999).

In all the Humber Wetlands Project identified over 400 archaeological sites, including 40 waterlogged sites, and many more finds and 'find scatters'. The majority of these were found on the hills and islands within the wetlands, but a significant proportion was found on the flat wetlands through the stubborn application of a system by the project's Field Officers.

Discussion

In the presentation of the methodological frameworks of the four large-scale wetland surveys commissioned by English Heritage, I have attempted to show the main characteristics of each of these projects. Without intensive analysis of costs, timetables and work sheets, it is not practicable to determine which strategy was the most effective and efficient. Such an assessment would have to include many other parameters, such as the natural history of each of the areas, the landuse, infrastructure and many other in a broader socio-economic context, ranging from rates of pay and changes in employment law to health and safety considerations.

Without the resources or time available to undertake such an exhaustive analysis, I have, therefore, estimated the percentage of time expended on the different activities by the four survey projects. The results are presented in Table 1. All percentages are rounded to the nearest

(estimated) 5%, and some of the techniques used only occasionally have, therefore, not been recorded. The same information is presented in Figure 2 which gives four 'pie diagrams' showing the methodological components of the four wetland surveys. Several points of interest can be observed.

First of all, the methodology of the four wetland surveys varied greatly, and while these surveys may form a national strategy of wetland research, the characteristics of each of the wetlands, including their natural history and landuse, demanded pragmatic solutions. Peat cutting in the Somerset Levels, and cleaned dykes in the Fenland provided the essential third dimension to the survey required for the discovery of buried sites. These opportunities did not exist in the northwest and only to a small extent in the Humber wetlands.

Second, we notice an increase in the number of techniques employed by the surveys over time. The Somerset Levels Project and the Fenland Project employed four basic methods of research, the NWWS five and the Humber Wetlands Project eight methods. This reflects developments in the archaeological world in general, with a demand for an ever increasing number of specialists and specialist techniques and more multidisciplinary research. It also reflects, I believe, an increasingly critical approach to the inherent biases and difficulties in wetland surveys, with a greater emphasis on the integrity of the data rather than on the area of land covered.

Third, the wetland surveys have a number of common methodological characteristics. Most important is the integration of archaeological with palaeoenvironmental specialists within the projects, although the degree of integration varied between the different surveys. Another, but rather obvious commonality is the need for a third dimension to be added to the fieldwork in wetlands, either in the form of visiting peat cuttings, examining cleaned dykes, coring or excavation.

Finally, the first and last surveys, in the Somerset Levels and the Humber wetlands, included excavation within the survey methodology. Apart from its significant contribution to the survey itself, the function of excavation in increasing public appreciation of a particular wetland survey or wetland archaeology in general must be emphasised.

Conclusions

The four large-scale wetland surveys commissioned by English Heritage constitute a body of research that in terms of scale has few parallels in Europe. However, in order to appreciate fully the value of each of the constituents of this body of research, the methodologies must be appreciated. In this paper, I have argued that the methods and techniques applied by each of the surveys varied from its immediate predecessor. This should be seen as progress against a background of changes in landuse, archaeological practices and the development of more sophisticated techniques (such as geophysics, GIS and dGPS). The role David Hall played in this process is indisputable.

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