

## 16: Thorne Moors: a contested wetland in north-eastern England

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**Abstract:** *This paper explores the past, present and future of Thorne Moors. First, the paper addresses the landscape context of the Moors within the Humberhead Levels, and the archaeological and palaeoenvironmental resource. It also explores the management and protection of the archaeological and palaeoenvironmental resource of the Moors. Finally, it looks at the future with reference to the opportunities provided by its possible designation as a Ramsar site.*

### Introduction

Thorne Moors is a high-profile wetland site in England (fig.16.1). It is the largest remaining example of a remnant lowland raised bog in England (Lindsay *et al.* 1992), and its national and international importance to nature conservation, archaeology and natural history are beyond doubt (pl.16.1). Peat extraction continues and although this is not necessarily considered an impediment to future, long-term restoration of this wetland, the archaeological and palaeoenvironmental resource diminishes rapidly. This paradox has been highlighted on several occasions in the national press and Thorne Moors is the principal focus of political lobbying and activity by a wide range of organisations, including the Council for British Archaeology, the Peatland Conservation Consortium, Earth First!, Friends of the Earth and the Thorne and Hatfield Moors Conservation Forum. English Nature, the government's statutory nature conservation advisor, has maintained an approach based on 'partnership' with the peat producers, with a view to mire restoration in the long term (eg Kohler 1997).

Thorne Moors can be regarded as an unfortunate but 'classic' example of nature conservation legislation failing to protect the archaeological and palaeoenvironmental resource of the area (eg Eversham *et al.* 1995), and of archaeological legislation unable to extend its terms of reference to include important landscapes that have strong nature conservation value. The editors requested that this paper would address the issue whether this dichotomy could have been overcome if Thorne Moors had been designated a Ramsar site. This matter is pertinent and also timely - after many years of debate, the United Kingdom government recently announced its intention to purchase Thorne Moors and declare it a Special Protection Area or SPA (Department of the Environment, Transport and the Regions press release of 16 September 2000). Although the matter is unlikely to be resolved speedily, this change in government policy provides new opportunities for integrated management and protection of the archaeological and nature conservation aspects of Thorne Moors.

In this paper, I will explore the past and future of Thorne Moors. First, the paper addresses the landscape context of the Moors within the Humberhead Levels, and the archaeological and palaeoenvironmental resource. It then explores the management and protection of the archaeological and palaeoenvironmental resource of the Moors. Finally, it looks to the future with reference to the opportunities provided by its possible designation as a Ramsar site.

### Thorne Moors in the Humberhead Levels

Thorne Moors lies within the Humberhead Levels, (fig.16.2) a region recognised by English Nature as one of its 'Natural Areas' and by the Countryside Commission as a 'Character Area' (English Nature & the Countryside

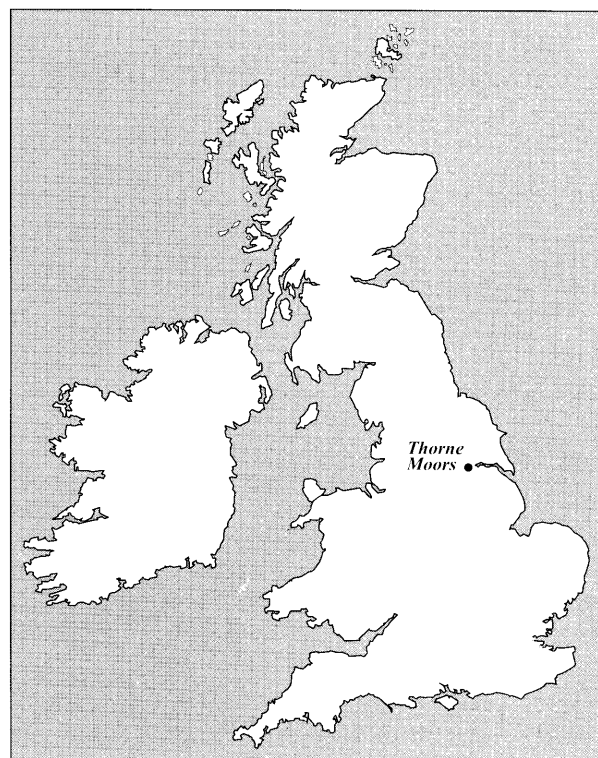


Fig.16.1: Location of Thorne Moors.

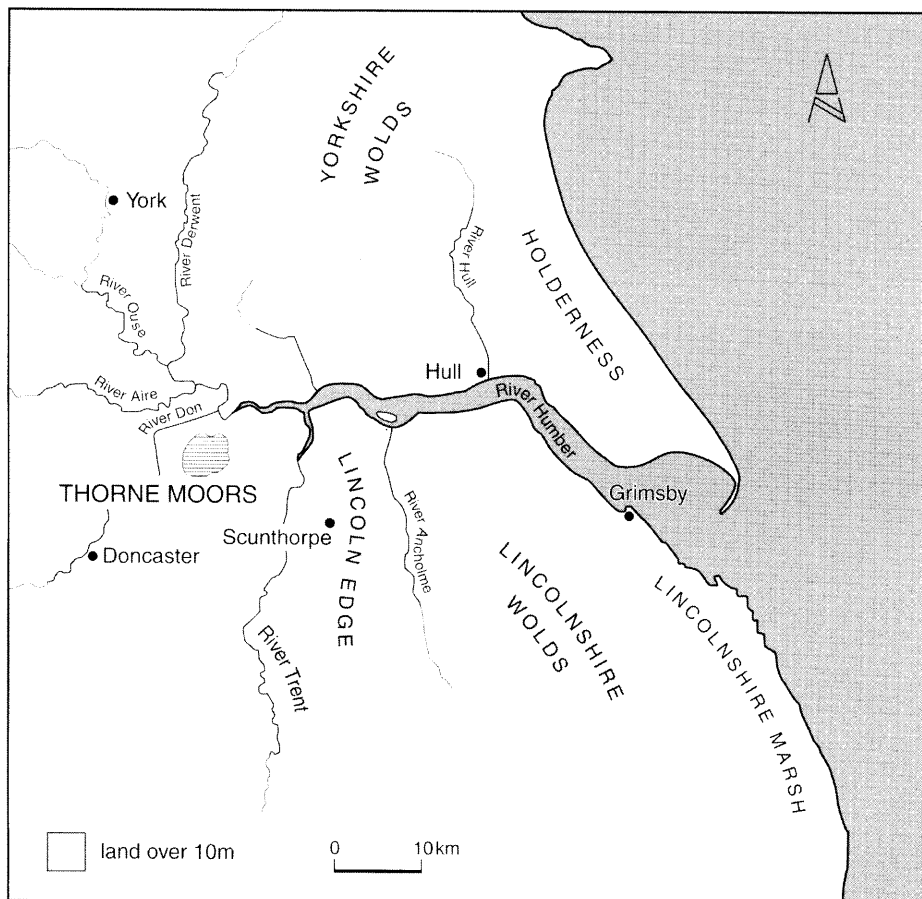


Fig.16.2: Location of Thorne Moors in the Humberhead Levels, in the Humber wetlands.

Commission 1996). This area is predominantly flat and lies at or below current high-water mark in the Humber estuary. The Levels occupy an area of the pro-glacial Lake Humber, that existed around 11,000 BC (Gaunt 1987), and several major rivers developed at the end of the existence of Lake Humber, when melt water drained through the Humber Gap (Van de Noort & Davies 1993). These rivers, including the Trent, Ouse, Don and Idle, incised deeply in the gently undulating bed of the silted-up Lake Humber but did not provide effective drainage to the surrounding landscape. The rise in sea level during the Holocene resulted in the development of extensive wetlands in the Humberhead Levels. This development affected initially only the river channels, but from c.3200 cal BC the natural drainage of the Levels was impeded by the continuing sea level rise and, through the process of paludification, peat development commenced on Thorne Moors (Buckland & Dinnin 1997).

Given the gently undulating nature of the bed of the silted-up Lake Humber beneath Thorne Moors, paludification would have been localised, with the developing areas of peat subsequently combining to ever-larger areas of peatland (eg Buckland 1979; Smith 1985; Buckland & Dinnin 1997). On Thorne Moors it is possible that this process followed the development of a series of smaller mires, mesotrophic (ie mires with an intermediate nutrient status because water is received from both precipitation and groundwater) and ombrotrophic (ie mires that are rain-fed and therefore receive few nutrients) in

character. The time-transgressive nature of peat development suggests that a mosaic of wetlands including carr woodland, together with deciduous forest containing oak, and pine forest with heath, may have grown on the area that is now Thorne Moors. The rise in water levels effectively drowned the forest on Thorne Moors (Dinnin 1997), and these woodlands were preserved in the peat.

Evidence for burning has been found on Thorne Moors. No stratigraphic evidence for more than one fire event was found and the burning was not necessarily contemporaneous. Research to date has been unable to establish whether the burning is anthropogenic or natural in origin (Dinnin 1994). There is evidence for a short-lived and perhaps localised phase of pine colonisation of the mire surface following the fire or fires (Buckland & Dinnin 1997). Thereafter, essentially ombrotrophic mire developed until mire hydrology was irreversibly disrupted during the later Middle Ages.

The extent of Thorne Moors around 1000 AD is thought to have been much greater than what survives today, extending northwards towards the River Ouse and eastwards towards the River Trent. Between 1100 AD and 1400 AD, *Sphagnum imbricatum* disappeared from Thorne Moors, having formed the bulk of moss peat up to then (Smith 1985). This suggests either climate changes or increased pollution. The 'Inclesmoor map' of early fifteenth century date shows Thorne Moors as being partially drained and parcelled up along its northern

margins (fig.16.3). Peat cutting, for fuel, was mainly undertaken by monastic centres with the earliest evidence dating back to the thirteenth or fourteenth centuries (Beresford 1986).

However, the demise of Thorne Moors only commenced after the drainage of the Humberhead Levels in the first half of the seventeenth century. The drainage work undertaken by the drainage engineer Cornelius Vermuyden and the Participants under royal patronage saw the diversion of the Rivers Don, Went and Idle, and the large-scale conversion of waste land into pasture in the Humberhead Levels (eg Dinnin 1997). Later, in the eighteenth and nineteenth centuries, the northern half of Thorne Moors was 'warped', a system whereby floodwater from the Rivers Ouse and Trent was used to raise the level of the land through sediment accretion (eg Gaunt 1994; Lillie 1997).

Peat cutting by hand commenced on Thorne Moors no later than the thirteenth or fourteenth centuries and continued until the early 1960s, when mechanised peat cutting replaced hand digging (Limbert 1986). Both the manual and the mechanical methods of peat cutting exploit the peat over relative small areas to a considerable depth, but the subsequent peat milling method, introduced on Thorne Moors after 1985 (fig.16.4), removes the top layer of peat over very large areas (eg Eversham 1991). This is illustrated in the following example - peat production was greatest around 1910, when 70,000 tonnes of peat for

animal litter were cut from an area of c.500 hectares. In 1985, the c.25,000 tonnes of peat milled for compost were taken from an area in excess of 1000 hectares (Eversham 1991, p.9).

**The archaeology of Thorne Moors**

The archaeological resource of Thorne Moors is threefold, finds and sites from within the peat, sites and finds from the pre-peat surface, and the palaeoenvironmental evidence. The evidence has been collated and published in Van de Noort *et al.* (1997).

Only one archaeological site has been reported from within the peat from Thorne Moors this century, a short trackway of Bronze Age date (Buckland 1979). Compared to other extensive peat workings in England and elsewhere, for example the Somerset Levels or the Midlands of Ireland, such a dearth of archaeological finds is surprising. Nevertheless, when we explore antiquarian reports of discoveries from Thorne Moors the dividend is greater. Perceptions of wetlands in the past have resulted in the deposition of people and valuable objects in deep peatlands throughout north-western Europe (eg Van der Sanden 1996). The votive or ideological basis for this practice can be traced back into the Neolithic period and continued into the Roman period and beyond (Bradley 1990).

The antiquarian discoveries are without exception associated with drainage activities, peat cutting and

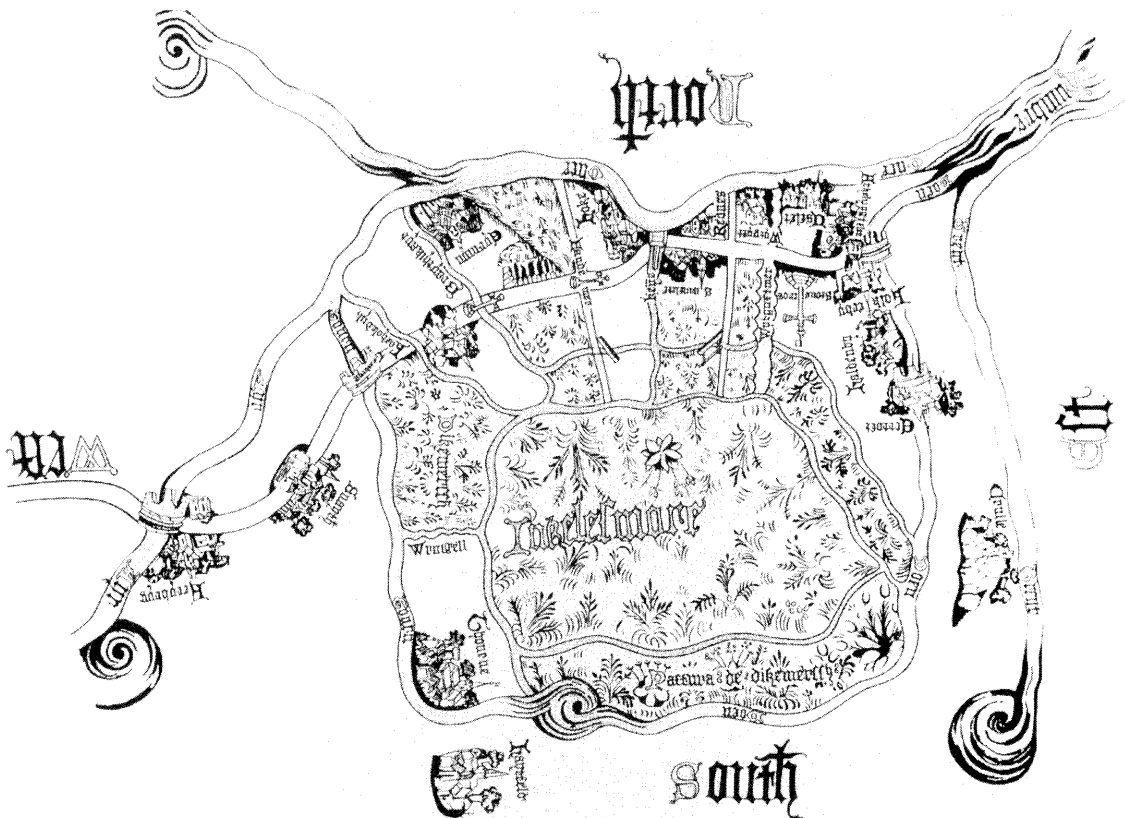


Fig.16.3: The 'Inclesmoor map' map c.1407, showing Thorne Moors, surrounding villages and rivers. Redrawn by the Humberside Archaeological Unit.

excavation of buried trees, the latter used for firewood, fence staves and ships' masts (Stovin Ms 1882). These intrusive works provided opportunities for the identification of archaeological remains such as worked timbers and bog bodies, which are not achieved by modern archaeological techniques, such as field walking, aerial reconnaissance or geophysical survey (Coles & Coles 1996).

Archaeological discoveries from what was Thorne Moors include at least two bog bodies, both reported by Stovin (1747, cf. Turner & Scaife 1995) in a letter to the Royal Society:

Abut sixty years ago, or seaventy, the servants of Mr James Empson, of Goole, was digging turff in this great Waste, and one of them cutt a man's arm off by the shoulder, which he carried home to his master, who took the bone out and stuff'd it, and made a present of it to Dr. Johnson, of York, an antiquarian.

At Thorne, in these moors, about ten years ago, as one William Bidy, of Thorne, was digging turff, he found the entire body of a man with his teeth firm in his head; the hair of his head firm and fast on, and of a yellowish colour, either naturally so or dyed by the water of this moor. His skin like a peece of tanned leather. He took the body up intire, after having lay there some hundred years.

The antiquarian literature offers an additional number

of bog bodies and archaeological observations. However, provenancing these antiquarian sightings remains difficult. What were newly constructed drains in the seventeenth century (eg Dutch River, Three Rivers, Hatfield Waste Drain) relate mostly to areas outside the limits of the present Thorne Moors, although they were considered to be part of the pre-drained Thorne Moors or the nearby Hatfield Moors. Bog bodies from Hatfield Chase have been reported by de la Pryme (1699) and Hunter (1828), and a pair of sandals from Amcotts, in the lower Trent valley was recently dated to the late third to fourth centuries AD on stylistic grounds (Turner & Rhodes 1992), implying the former existence of a bog body of Roman date.

Other antiquarian observations on the peatlands of the Humberhead Levels concern the buried trees. Once again, the provenance of many observations remains unsecure, but the following quote from de la Pryme's letter to the Royal Society (1699) illustrates the importance of this resource:

It is very observable, and manifestly evident, that many of those trees of all sorts have been burnt, but especially the pitch of fir trees, some quite through, and some all on one side; some have been found chopped and squared, some bored through, others half split with large wooden wedges and stones in them, and broken axe-heads, somewhat like sacrificing axes in shape, and all this in such places, and at such depths, as could never be opened, since the destruction of the forest, till the



*Fig.16.4: Thorne Moors during peat extraction. The tree-stumps littering the ground are of prehistoric date and provide a valuable archive of environmental data.*

time of drainage. Near a large root in the parish of Hatfield, was found 8 or 9 coins of some of the Roman emperors, but exceedingly consumed and defaced with time.

The discovery of Roman coins seems unambiguous and whether the broken axe heads were found associated with the worked timbers or from somewhere else in Hatfield Chase remains unclear. Nevertheless, natural cracking of waterlogged pine and oak following desiccation produces characteristics which are clearly distinct from the anthropogenic splitting of green or weathered wood, and the recognition of axe marks and the remains of axeheads and wedges must reflect actual working of timber.

The most recent archaeological site from the peat on Thorne Moors is the prehistoric trackway, discovered in 1971 by William Bunting during drain clearance and subsequently partly excavated. It concerns a site of several large trees with charred surfaces, where a limited excavation revealed 'a short stretch of a rough trackway, constructed of timbers of various sizes, orientated approximately south-east to north-west' (Buckland 1979, pp.10–11). The bark from one of the timbers provided material for a radiocarbon date of 1510–910 cal BC (2983±110 BP; Birm-358), and although several timbers appeared to show oblique chop marks, detailed investigations could not establish if and what artefacts had been used to modify the wood. No artefacts were found on the site. The trackway lay close to the base of the peat, over Lake Humber silts. It could not be traced over any length, and may have formed a temporary crossing place over a wet area.

From the area known as Nun Moors, between Thorne and Thorne Moors, several prehistoric finds are recorded. These include a Mesolithic tranche axe, a Neolithic polished stone axe, and flint flakes nearby and a possible Neolithic flint flake (Magilton 1977). Apparently, all finds came from sand ridges beneath the peat, exposed through peat wastage after Nun Moors was effectively drained. An undated sword is mentioned in the Yorkshire Philosophical Society Annual Report of 1862, having been found in Hatfield Chase, but is further unprovenanced. A hoard of Middle Bronze Age equipment was alleged to have been found in 1747 near Crowle (Dudley 1949), but a recent examination of sources suggests that the hoard comes from Burringham, on the east bank of the River Trent (Buckland 1979).

The palaeoenvironmental value of the peat itself, and the buried trees contained within the peat, must be considered the greatest asset of Thorne Moors (Buckland & Kenward 1973). As a receptacle of pollen from a wide region, Thorne Moors can inform on vegetation history, climate change and human impact on the environment in northern England for a near-uninterrupted period of five millennia. The macrofossil remains that constitute the

greater part of the peat hold a detailed history of wetland development on Thorne Moors, as described above. Furthermore, the remains of trees that represent the landscape immediately predating the development of peat on Thorne Moors offers important insights into the wider landscape of the Humberhead Levels before paludification changed its character. It may also hold evidence of human activity within the forest, but to date this remains unproven (Buckland & Dinnin 1997).

### Management and protection

The appreciation of the nature conservation and archaeological value of Thorne Moors has developed only slowly over the last 50 years. While for some, such as William Bunting, the Moors always represented an outstanding asset to nature conservation, the use of the moors as a dumpsite for urban waste, or as the location of a regional airport was still considered by the local authorities in the 1970s.

Thorne Moors has been described as a unfortunate but 'classic' example of nature conservation and archaeological legislation failing to protect the archaeological and palaeoenvironmental resource of the area (eg Eversham *et al.* 1995). The whole of Thorne Moors was notified as a Site of Special Scientific Interest (SSSI) in 1981. Part of Thorne Moors was purchased in 1985 and designated as a National Nature Reserve (NNR). This area, of some 73 hectares, represents the peat workings dating from 1890s to the 1920s, with important examples of mire and fen habitat (Roworth 1991; 1997).

The NNR within Thorne Moors has been managed to the benefit of the biodiverse vegetation in the former canals which were used for shipping cut peat, and the strips of peatland that remained (largely) uncut. The archaeological resource within this area is most likely to have benefited considerably from the nature conservation actions, with a full protection of the peat itself. The management regime was aimed at containing water within the NNR through a system of pumped recharging of the water table (Meade 1992). Any waterlogged archaeological and palaeoenvironmental remains contained within this area would have benefited from continued high water tables and good quality water within the NNR, ie water with low oxygen and nutrient levels. Any archaeological sites predating the peat have also been preserved. It is worth noting at this point, however, that the preservation of archaeological and palaeoenvironmental remains within the NNR was not considered within the management plans.

The SSSI status bestowed in 1981 upon the remaining 1845 hectares of Thorne Moors provided little more than a notional protection to the archaeological and palaeoenvironmental resource. Peat extraction continued more or less unhindered and neither archaeological remains within the peat, or below the peat were offered any protection. Existing planning permissions and

decisions were unaffected by the SSSI designation. On Thorne Moors, as is the situation on many other wetland sites in England, the licenses and planning permissions for peat extraction date in majority to the 1950s (ie the post-war revival in the peat industry).

An agreement announced in 1992, but not signed until 1994, saw the transfer of the ownership or freehold of Thorne Moors from the peat producers (then Fisons plc Horticulture, later Levington Horticulture and now The Scotts Company (UK) Ltd) to English Nature. This transfer was on the basis of a leaseback agreement, whereby the peat producers are to continue peat extraction but an average of 0.5m of basal peat must remain for future restoration and conservation (Roworth 1997). Following the announcement in 1992, nearly 1000 hectares of peatland was transferred to and has since been managed by English Nature.

Central to this agreement is the concept that the raised mire of Thorne Moors can be restored after peat extraction has been completed. The main focus of this management was based on published recommendations on mire restoration (eg Wheeler & Shaw 1995), and the prevention of the loss of water from the area became the priority. The management plan, however, failed to acknowledge the fundamental need for protection of the archaeological and palaeoenvironmental resource.

In 1995, parts of Thorne Moors together with nearby Hatfield Moors were declared the Humberland Peatlands NNR. The NNR totals 1,381 hectares and is situated within the SSSIs, which for both Moors measures 3,318 hectares. The enhanced status of Thorne Moors reflected the fact that its ownership had been transferred from the peat producers to English Nature. Nevertheless, peat extraction has continued on Thorne Moors, although a rolling programme of handovers of land where peat extraction has ceased has resulted in a growing control by English Nature of the remaining peat. As was the case within the area designated earlier as NNR, maintaining water levels and controlling vegetation, in order to limit evapotranspiration, formed the core management issues (Roworth 1997), but the archaeological and palaeoenvironmental issues were not explicitly addressed by English Nature.

In 1997, English Nature put out to consultation recommendations to reduce the SSSI of Thorne Moors by 5%, and of Hatfield Moors by 35%. This was met by a storm of protest, most notably from Friends of the Earth, and following the consultation the recommendations were withdrawn.

The benefit of nature conservation management to the archaeological and palaeoenvironmental resource has undoubtedly been positive. The advantages of retention of water and the cessation of peat extraction for parts of Thorne Moors undoubtedly outweigh the disadvantages

of building dams of peat, with or without archaeological supervision, forming part of the nature conservation management (cf. Cox *et al.* 1995). However, the archaeological and palaeoenvironmental resource were never part of the considerations, other than as a matter to be 'mitigated'.

Legislative controls available to the archaeological community were also found to be ineffective in the case of Thorne Moors. Scheduled ancient monuments are defined as man-made structures and remains, and prehistoric landscapes and woodland that may or may not have been managed or modified by people in the past do not qualify for inclusion in the schedule.

More recent archaeological guidance that operates within the planning framework, for example *Planning Policy Guidance 16, Archaeology and Planning* (Department of the Environment 1990) has had little effect on the impact of peat extraction and drainage because planning permission generally predates this guidance. However, a review of the planning permissions resulted in new conditions added to the renewal of the planning permission by the authorities of Doncaster Metropolitan Borough Council, North Lincolnshire Council and East Riding of Yorkshire Council. This included, for the first time, requirements for archaeological work aimed to identify archaeological remains to be undertaken on behalf of the peat extractors.

More recently, the need for holistic and larger-scale work has been recognised. This is in part based on the recognition that Thorne Moors forms part of the Humberhead Levels landscape that has been extensively drained, and that the rewetting of the Moors cannot be achieved without addressing the wider issues of water in drained landscapes (eg Meade 1999). The Countryside Agency-led programme 'Value in wetness', which is focused on the Humberhead Levels (Pasley 1999), addresses this wider issue. The programme includes many facets, but is essentially aimed at developing practical solutions to the problems of water shortage during the summer months and water excess in winter months, in partnership with the local rural communities.

In all, the archaeological and palaeoenvironmental resource of Thorne Moors has become increasingly better protected over the last three decades. In particular land where commercial peat extraction has ceased is well-protected. Nevertheless, the statutory protection of the archaeological and palaeoenvironmental resource of Thorne Moors has yet to be achieved and remains a main goal for the archaeological community.

### **The future of Thorne Moors**

Designating Thorne Moors as a SPA under the European Birds Directive, as recently announced, will provide the highest level of protection available to wildlife conservation sites in the United Kingdom. All new

developments and activities will need to be assessed for their impact on the interests for which the site has been classified. If and when the United Kingdom government's announcement regarding the future of Thorne Moors is effected, it is likely that it will also be designated as a Ramsar site. Thorne Moors has been listed as a candidate Ramsar site since 1991.

This designation will provide the planning authorities, for the first time, with the opportunity and obligation to review existing consents for mineral extraction that may impact on these interests (ie Regulation 50 of The Conservation (Natural Habitats, &c.) Regulations 1994). Any proposal that will adversely affect the integrity of the SPA can only be permitted in the overriding public interest and in the absence of alternatives. However, it is not clear whether this opportunity will be used to address the archaeological and palaeoenvironmental resource of the Moors alongside the ecological considerations. It is also unclear whether peat extraction falls within the definition of 'overriding public interest'. A recent parliamentary subcommittee report states that no viable alternative for peat as a growing medium is currently available, and that the market for peat has grown strongly in the last decades (Department of the Environment, Transport and the Regions 1998).

So, what advantages would the designation of Thorne Moors as a Ramsar site bring to the archaeological and palaeoenvironmental remains? The designation of Thorne Moors within an international treaty would undoubtedly raise the profile of the site further, but in terms of implementation, compliance, enforcement and effectiveness of the treaty, the greatest benefit would be derived from the requirement to *conserve* wetlands as habitats of distinctive ecosystems. This requirement challenges directly the concept currently held by the landowner, English Nature, that the raised mire of Thorne

Moors can be restored after peat extraction has been completed. Conservation of the wetlands, rather than future regeneration, will provide a basis for the protection of the archaeological and palaeoenvironmental resource of Thorne Moors. Ramsar designation would challenge the rationale of the current management of Thorne Moors, to the benefit of the archaeological and palaeoenvironmental resource. Furthermore, it is undeniable that nature conservation would also benefit from a holistic approach to preservation.

Whether or not Ramsar designation would exclude further peat extraction from the Moors remains to be seen. After all, the Ramsar Convention permits 'sustainable wise use' of listed sites, but it seems likely that the present arrangements would be reviewed following the designation of Thorne Moors as a Ramsar site (Farrier & Tucker 2000).

## Conclusion

Thorne Moors is recognised as a site of national and international importance to nature conservation and archaeology. Over the last three decades, the ecological and archaeological value of the site has been diminished by peat extraction and drainage of the site. Attempts and approaches to manage and protect the Moors have failed to integrate the protection of the ecology with the protection of the archaeological resource, although it is recognised that in practical terms the ecological management increasingly contributes to the protection of the historic environment. However, the designation of Thorne Moors as a Ramsar site requires conservation of the wetlands habitats, rather than the future regeneration of the raised mire that forms the main focus of the current management regime. Such a change in emphasis will contribute to the future protection of the archaeological and palaeoenvironmental resource.

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