Lindow Moss

[SJ 820 805]

Potential GCR site

S. Gonzalez and D. Huddart

Introduction

Lindow Moss was originally an extensive (600 ha), lowland peat bog that accumulated in a kettlehole formed during the Late Devensian deglaciation in Cheshire, but now it is about one-tenth of its former size and covered mainly by birch scrub (Brothwell, 1986). The moss margins were gradually reclaimed for agriculture and the moss cut for fuel (Norbury, 1884; Turner, 1995a). Sandy islands remain rising above the moss and are thought to be windblown dunes formed in a periglacial environment after the ice melted. During the 1980s the moss was the location of a remarkable series of four discoveries of well-preserved human remains. The discoveries of Lindow I (Lindow Woman) in 1983 and Lindow II (Lindow Man) in 1984 have been described by Turner (1986). Lindow I consisted of a skull that retained its outer membrane and some hair. The vault contained a decayed brain and part of the left eyeball and optic nerve were also identifiable. Lindow II was the archaeological discovery of the 1980s according to Turner (1995a), and almost a complete body was excavated from a peat block (Figure 8.66). Subsequent discussions established its antiquity and a wide variety of scientific investigations were undertaken (see Connolly, 1985; Stead and Turner, 1985; Brothwell, 1986; Stead *et al.,* 1986), including pollen analysis (Oldfield *et al.,* 1986), a study of the insects (Girling, 1986), the radiocarbon dating of the peat and the remains (Ambers *et al.,* 1986; Gowlett *et al.,* 1986, 1989; Otlet *et al.,* 1986), an analysis of the man's last meal (Hillman, 1986; Holden, 1986) and chemical analysis of the skin and bone (Pyatt *et al.,* 1991a, b). It was established by forensic investigations that the body was that of a *c.* 25-year-old male, who had been struck twice on the head with an axe-like weapon, garroted and had had his throat cut (West, 1986). In 1987 over 70 pieces of a body (Lindow III) were recovered (Brothwell and Bourke, 1995) and in June 1988 the skin of the buttocks and part of the left leg of an adult male were recovered about 15 m west of where Lindow III was found. In September 1988 the right thigh and ends of the right femur were recovered close to the June finds. Collectively these samples are referred to as Lindow and represent the missing parts of Lindow II. A discussion of the relationships can be found in Turner (1995b). The upper *Sphagnum*-rich peat has all but disappeared from the commercially worked area, substantially reducing the chance of any more finds. However, considerable amounts of this type of peat still survive at the moss, most notably to the east and to the south, where a fragment of the moss is managed by the Cheshire Wildlife Trust as a nature reserve. The locations of Lindow Moss, findspot locations and excavation trenches exposed during 1987 are shown in (Figure 8.67).

Lindow Moss is important because it has provided the most detailed analysis of bog bodies at any site in Britain (Brothwell, 1986, 1995; Stead *et al.,* 1986; Turner and Scaife, 1995). There is a wealth of associated palaeoenvironmental analysis (Birks, 1965b; Girling, 1986; Oldfield *et al.,* 1986; Branch and Scaife, 1995; Dinnin and Skidmore, 1995; Leah *et al.,* 1997) and the stratigraphy and bodies have been dated. There were initial problems with this dating (Ambers *et al.,* 1986; Gowlett *et al.,* 1986, 1989, Otlet *et al.,* 1986) but the site has been important as the work has shown that ^{14}C dating of human bodies from peat bogs presents special problems because of the biochemical processes involved in the interaction between the peat and human tissue. Nevertheless, there now seems to be agreement on the dating (Housley *et al.,* 1995) and both Buckland (1995) and Barber (1995) have presented a variety of mechanisms by which the ^{14}C dates and stratigraphical positions may be resolved. The archaeological significance of the Lindow bog bodies has also been much discussed (Connolly, 1985; Stead and Turner, 1985; Ross, 1986; Ross and Robins, 1989; Buckland *et al.,* 1994; Briggs, 1995; Magilton, 1995; Turner, 1995c). Specialized techniques have been used to obtain detailed information, for example, related to the food eaten (Hillman, 1986; Holden, 1986; 1995; Scaife, 1995) and the significance of the skin geochemistry (Pyatt *et al.,* 1991a, b, 1995; Cowell and Craddock, 1995). There seems no doubt that the studies on the Lindow bog bodies have helped to advance the investigative standards and techniques used on such remains across the world (Brothwell, 1995).

Description

The stratigraphy and pollen analysis

Lindow Moss was first investigated by Birks (1965b) from the south-western moss [SJ 820 807], where the stratigraphy revealed 3.5 m of gyttjas, reed peats, carr brushwood peats, *Eriophoruni* and *Sphagnum* peats. The pollen revealed a segment of vegetational history between *c.* 8000 and 6000 BP and culminating some time in the early 19th century.

Following the discovery of the Lindow II body much interest was focused on the past environment and development of Lindow Moss (Barber, 1986; Oldfield *et al.,* 1986). After the later discoveries, stratigraphical analysis of the peat using plant macrofossils and pollen has been used to give a detailed palaeoenvironmental record for the context of the bog bodies (Branch and Scaife, 1995), although the maximum peat depth proved to be 8 m in trial boreholes. Lateral variation in the peat stratigraphy is marked and a complex of interweaving bands that coalesce to form level horizons is evident, typical of ombrotrophic peat bogs. The pollen diagram (Figure 8.68) has been divided into five recognizable pollen-assemblage zones from the base of the analysed sequence at 190 cm:

	Depth (cm)
LIN:1 *Quercus* (to *35%*)–*Corylus*-type (*50%*)–*Alnus* (27%). There are other tree species present (*Betula* 15%) and lesser percentages of *Pinus, Ulmus, Tilia* and *Fagus.* Herbs include Gramineae (10%), Cyperaceae, *Plantago* species, *Rumex, Chenopodium* and *Urtica*	190–160
LIN:2 *Quercus–Fraxinus–Alnus–Corylus*-type–*Calluna–Sphagnum.* There is some increase in the herb diversity and wetland taxa show some increase	160–120
LIN:3 *Quercus–Corylus*-type–*Gramineae–Plantago lanceolata*–Cyperaceae–Pteridium–*Sphagnum.* There is a marked increase in *Sphagnum* with a dramatic change in peat composition and reduced humification	120–55
LIN:4 *Betula–Fraxinus–Calluna–Sphagnum. Pinus, Quercus, Corylus*-typeand herb values are reduced compared with LIN:3	55–35
LIN:5 *Quercus–Alnus–Corylus*-type*.* Tree pollen becomes dominant	35–20

Leah *et al.* (1997) recorded the peat stratigraphy in the active peat cuttings from 38 cores. The basal organic deposits tend to be composed of reed and sedge peats or fen-carr. In a few places *Scheuchzeria*-dominatedassemblages are prominent. Fen-carr peat follows these initial stages. Following this, many locations show wood peats, succeeded by peats characterized by *Eriophorum/Calluna,* with frequent *Polytrichum, Hylocomium* and *Aulocomnium palustre.* In turn they are succeeded by *S. imbrica*-turn-dominated peats at the top. The deepest peats recorded reached 7.15 m, although this was at a point situated in the peat workings where perhaps *c.* 3 m had been removed, suggesting original depths approaching 10 m. Away from the central area though peat thicknesses typically were between 2 and 5 m.

Insect assemblages

Two peat samples were taken from around the Lindow III body to give information about the condition of the corpse and the details of the immediate environment at the time of burial, and from a monolith through the peat in the location from which the body is believed to have come. The detailed fauna is given in Dinnin and Skidmore (1995).

Radiometric dating

An extensive ^{14}C dating programme was undertaken to date the bog bodies and the associated sediments and detailed discussions related to the techniques and problems are given in Gowlett *et al.* (1986,1989), Otlet (1986) and Housley *et al.* (1995). The radiocarbon determinations are given in (Table 8.12). These indicate differences in age between the bog bodies and the surrounding peat, e.g. Lindow II collagen determinations are about 1800 years BP, whereas the peat surrounding the arm is about 2500 years BP.

Chemical analysis of the skin

As part of the study of the Lindow II and Lindow III bog bodies, geochemical investigations were carried out on skin, bone and associated peat (Pyatt *et al.,* 1991a, b; 1995). The skin samples of Lindow III were obtained from the shoulder region, whereas those of Lindow II were from under the right side of the body. Bone samples from Lindow II were from the upper right orbit. The investigations revealed an excess of aluminium, silica and copper, together with traces of titanium and zinc, although the general pattern of inorganic components differed between the two individuals. Cowell and Craddock (1995) analysed further samples from Lindow III from the left heel, the palm of the right hand, a finger and part of the torso and a sample of peat for copper, initially using X-ray fluorescence and then, once copper had been detected, quantitative analysis using atomic absorption spectrometry. The torso samples had $36 \pm 4\ \mu g\ g^{-1}$, whereas the other samples ranged from under 2 to 10 $\mu g\ g^{-1}$.

(Table 8.12) Radiocarbon determinations from Lindow Moss (data from Ambers *et al.,* 1986; Gowlett *et al.,* 1986; Otlet *et al.,* 1986; Housley *et al.,* 1995; Leah *et al.,* 1997)

Laboratory reference	Sample type	^{14}C age (years BP; ±1σ)reference
Lindow I		
OxA-114	Collagen from bone	1740 ± 80
Lindow II (Lindow man)		
OxA-531	Amino acids from hair	1920 ± 20
OxA-604	Amino acids from bone	1850 ± 80
Ox.A-605	Amino acids from soft tissue	2125 ± 80
OxA-781	Standard amino acids	1940 ± 80
OxA-782	Pre-bleach amino acids	1950 ± 80
OxA-783	Hyroxyproline	1920 ± 80
03(A-784	Standard amino acids	1900 ± 80
OxA-785	Proline	1900 ± 80
OxA-786	Collagen, Oxford preparation	1800 ± 80
OxA-787	Collagen, Harwell preparation	1870 ± 80
03(A-788	Collagen, Harwell preparation	1870 ± 80
OxA-789	Humic (standard amino acids)	2190 ± 100
OxA-790	Humic (bleach)	1970 ± 80
OxA-1040	Stomach contents	1910 ± 60
OxA-1041	Humic from stomach contents	2210 ± 60
HAR-6224	Wrist bone	2420 ± 100
HAR-6235a	Leg bone	1540 ± 100
HAR-6235b	Leg bone	1650 ± 80
HAR-6491	Skin	1550 ± 70
HAR-6492	Rib bone	1625 ± 80
HAR-6493	Skin and hair	1530 ± 110
HAR-6856a	Vertebra	1480 ± 90
HAR-6856b	Vertebra	1610 ± 80
Lindow III		
	Bone (P2255)	
OxA-1S17	Amino acids from unbleached collagen	1740 ± 90
OxA-1518	Amino acids from bleached collagen	1750 ± 90

HAR-9094	Unbleached collagen	2010 ± 80
	Skin (P2256)	
OxA-1519	Amino acids from unbleached collagen	1850 ± 90
OxA-1520	Amino acids from bleached collagen	1700 ± 120
HAR-9092	Unbleached collagen	1880 ± 80
	Skin (P2257)	
OxA-1521	Amino acids from unbleached collagen	1890 ± 100
0xA-1522	Amino acids from bleached collagen	1760 ± 150
	Bone (P2258)	
OxA-152.3	Amino acids from unbleached collagen	2000 ± 100
OxA-1524	Amino acids from bleached collagen	2040 ± 90
HAR-9093	Unbleached collagen	1860 ± 70
UB-3237	Peat 20–22 cm depth	1488 ± 44
UB-3238	Peat 55–57 cm depth	1764 ± 48
HAR-6521	Peat between right arm and head	2300 ± 70
HAR-6562	Peat monolith 125 0–3 cm	2290 ± 90
HAR-6565	Peat, upper body contact (LII)	2280 ± 70
UB-3239	Peat 117–119 cm depth	2345 ± 45
BM-2398	Peat, underside of arm (LII) htunin	2590 ± 170
BM-2399	Peat, underside of arm (LII) humic	2470 ± 250
BM-2400	Peat below recurrence surface humin	2450 ± 80
BM-2401	Peat below recurrence surface humic	2400 ± 80
UB-3240	Peat 119–121 cm depth	2447 ± 43
UB-3241	Peat 188–190 cm depth	3724 ± 55
HAR-8875	Charcoal-rich soil	4980 ± 70
GU-5562	Peat	4060 ± 70
GU-5566	Peat	7780 ± 70

Food residues from the Lindow bog bodies

To investigate the dietary characteristics of the Lindow bog bodies a preliminary analysis of a sample from the fundus and body of the stomach of Lindow II was made by Hillman (1986) and Holden (1986). This indicated that the major part of the last meal was made up of cere al (the bran of wheat or rye and the chaff of barley). Chaff fragments further indicated that both emmer and spelt wheats were present and minor components included fragmentary seeds of several common cultivation weeds. Further samples were taken from the upper part of the intestinal tract and the results again included the bran of wheat/rye and the chaff of barley (Holden, 1995). Several samples were taken from the gastrointestinal tract of Lindow III and although the results were disappointing (Holden, 1995) the food was dominated by fragments of the testa and brown inner layer of the pericarp of the hazelnut and there were smaller quantities of cereal bran. Nineteen samples were examined for pollen analysis from faecal, colonic, gastrointestinal, duodenal and rectal residue from Lindow III (Scaife, 1995) to compare with the results from the stomach and intestinal contents of Lindow II (Scaife, 1986). The results from Lindow III show largely cereal grains, although they were degraded, which contrasts with the good preservation from pollen in Lindow II (Scaife, 1995).

Interpretation

The bog bodies

There seems little doubt that Lindow IV represents the lower limbs of Lindow II cut off by the peat digging machinery in 1984 (Turner, 1995b) and it seems highly likely that the body parts allocated to Lindow III are all from the same adult male, buried close to Lindow IV Both died violent deaths and were buried naked, except for Lindow II's fox fur armband and the cord around the neck (Budworth *et al.,* 1986). Both are much the same age and build and there are suggestions of traces of body painting (Pyatt *et al.,* 1991a, b, 1995) from the geochemistry of the skin. However, although the copper content of the torso sample is higher than the other skin samples and also the peat sample (Cowell and Craddock, 1995), the authors suggest that the elevated skin content may be at least partly explained by the substantial, and possibly selective, loss of organic body weight through decay, leading to a preferential enhancement of the inorganic components. Hence the moderately higher concentrations on the torso could be explained by factors other than deliberate painting. The neatly trimmed hair, beard and fingernails suggest that both were of high status. As there is no evidence for predation by insects or mammals it would appear that both bodies were thrust or buried in the peat bog, a fact confirmed by the same difference in ^{14}C date between the bodies and the layers from which they were retrieved. The cause of death was different, as Lindow II had multiple injuries whereas Lindow III was just beheaded. The depositional environment seems to have been different because Lindow II was found in a layer indicating a bog pool, whereas Lindow III was on a peat surface. The calibrated date range for Lindow II with a 95% confidence limits based on the Oxford ^{14}C dates is 2 BC to AD 119, whereas the equivalent unified Oxford and Harwell date range for Lindow III is AD 25–230, so the two bodies may be broadly contemporaneous, or deposited up to 200 years apart. The date for Lindow III differs from the conclusion by Stead (1986), who then favoured a Middle Iron Age date. Turner (1995b) suggests that the most likely explanation for the presence of the two bodies in the bog is that they represent sacrifices, probably for religious reasons. As such they belong to a well-established practice across northern Europe, Britain and Ireland (Van der Sanden, 1995; Turner 1995c; Ó Floinn, 1995a, b). Much has been made of Lindow II's triple death and tripalism is one of the commonest Celtic religious symbols (Magilton, 1995), but Ross (1986) and Ross and Robins (1989) have gone further in linking the triple death to the appeasement of three Celtic gods by a ritual sacrifice, also suggested by the presence of mistletoe and blackened bread in his gut. Beheading as suffered by Lindow III also is a central part of Celtic mythology and religious practice (Ross, 1967) and has local parallels from Worsley (Garland, 1995), Red Moss (Smith, 1988) and Pilling Moss (Edwards, 1969).

The palaeoenvironment and mire ontogeny

Birks (1965b) interpreted the pollen record post-dating the Elm Decline as representing the effects of seven clearance episodes, but his pollen sampling intervals were wide by modern standards. However, the record demonstrates qualitatively that human impact had a major impact on the surrounding landscape from the Neolithic onwards. This has been confirmed by a detailed analysis of the palaeoenvironment, which was concentrated in the upper 200 cm of peat, which spans the later prehistoric period (Branch and Scaife, 1995). The main stratigraphical feature here is the change from well-humified *Sphagnum* and monocotyledonous peat to fresh, unhumified and largely *Sphagnum imbricatum* peat, which equates with the boundary between the LIN:2 and LIN:3 pollen-assemblage zones. This horizon has been seen across most of the moss and appears to be a major recurrence surface and it has been ^{14}C dated to between 2447 years BP and 2345 years BP (Table 8.12). It probably represents a period of gradual climatic deterioration after 2900 years BP and a reduction of 1°C for *Sphagnum* pools to commence at the recurrence surface (Barber, 1982).

During the lower two pollen zones prior to the recurrence surface, *Sphagnum* was dominant in wetter areas of pools and damper hummocks, with Gramineae and Cyperaceae. *Calluna* and *Erica* probably were growing on drier hummock areas. *Alnus* and *Salix* probably were growing in carr woodland along the nutrient-enriched marginal areas of the bog. The drier, adjacent land was a dominantly wooded environment, with some areas of open agriculture. *Quercus* and *Corylus* were dominant throughout the pollen record, but with many other woodland species. Openness is shown by *Ilex* and *Corylus,* which require light for flowering. Branch and Scaife (1995) suggested that although woodland was dominant in the period pre-dating the recurrence surface, there had been anthropogenic disturbance and secondary woodland (*Fraxinus* peaks and *Calluna*)*.* Agricultural activity is noted by the presence of *Plantago lanceolata* and other herbs. Archaeologically this disturbance has been substantiated by the presence of Neolithic artefacts from one of the sand islands (Turner, 1995a) and these could be contemporary with the ^{14}C date from the charcoal-rich soil (Table 8.12). Charcoal is not restricted to the immediate environs of the sand islands, however, and it has been noted throughout the mire's history; apart from its very earliest growth stages (Leah *et al.,* 1997). Burning was likely to have affected the local vegetation, as in many raised mires in north-west England (Huckerby and Wells, 1993; Hall *et al.,* 1995; Middleton *et al.,* 1995). The numerous pine stumps exposed on the cut surface of the moss also often appear to show signs of burning (Leah *et al.,* 1997).

Above the recurrence surface there was no cessation of peat growth but a rapid environmental change, although dry-land vegetation continued to dominate the tree pollen, with an open-canopy woodland of mixed deciduous type, but with less lime. From 120 cm in LIN:3 there is a marked and progressive increase in the diversity and percentages of many herbs, especially disturbed and open-ground species, which correlates with the Iron Age to Romano-British period (Branch and Scaife, 1995). There also are sporadic but more abundant cereal-type records, which reflect increased arable and possibly pastoral agriculture, adjacent to the moss. Increases in the pollen of Ericaceae and bracken spores may be indicative of soil deterioration, especially on the sandy soils nearby. This phase of human disturbance also has been documented by Birks (1965b) and Oldfield *et al.* (1986) and it is clear that there was a progressive dis turbance from the early Iron Age, which attained a maximum extent during the Romano-British period. Branch and Scaife (1995) suggest that this disturbance was a regional phenomenon and perhaps can be applied to north-west England (Oldfield, 1960a; Mackay and Tallis, 1994; Middleton *et al.,* 1995). The boundary between LIN:3 and LIN:4 pollen-assemblage zones is where there is a reduction in the percentages of herbs and the taxonomic diversity noted in LIN:3, and a late Romano-British date is suggested ((Table 8.12), UB-3238). In LIN:5, *Quercus, Alnus* and *Corylus* regain their earlier importance, showing a return to woodland dominance and reduced agriculture in the region. From the pollen analysis of the Lindow III body Branch and Scaife (1995) suggest that it was placed on the growing bog surface, some 10–15 cm above the recurrence surface and not in a peat cutting and they suggest an age of *c.* 2300–2200 BP.

From the stratigraphical work of Leah *et al.* (1997) the moss began life as an extensive area of reedswamp, fen and fen-carr occupying hollows within glaciofluvial and aeolian deposits, which gradually became carr woodland. The deepest deposits probably go back to the early Flandrian. The fen-carr phase ended with an increase in wetness, evidenced by the flooding indicator *Scheuchzeria* in places. A reversal of edaphic conditions immediately after this phase led to much drier conditions and the establishment of a slow growing mire and trees, notably pine, with several phases of pine forest establishment, rather than one discrete arboreal phase. Radiocarbon dates from a pine layer suggest that the species formed a significant component of the mire flora at various times between 7780 ± 70 years BP and 4060 ± 70 years BP (Table 8.12). This relatively dry, tree-dominated stage was followed by a return to wetter conditions and the establishment of *Eriophorum–Calluna*-dominated vegetation across almost the whole moss. Conditions became even wetter and *S. imbricatum* became the dominant peat-former.

The beetle fauna (Dinnin and Skidmore, 1995) from around the Lindow III bog body suggests that the corpse was deposited in a wet *Sphagnum* bog with pools of acid water, with this water surrounded by a typical oligotrophic bog flora of cotton grass, mosses and heather. The complete absence of any carrion fauna leads to the conclusion that the body was rapidly submerged. This was the same for the Lindow II body (Girling, 1986). Despite the stratigraphical recurrence surface, the insect assemblages above, below and around this feature revealed no appreciable change in the moisture status of the bog, or any indicators of climatic change.

The dates for the Lindow II and III bodies and the peat, the state of decay of the corpses and the insect evidence require some reconciliation. Buckland (1995) suggests that a human body could have been pushed down into a deep pool and never reappeared, but Barber (1995) refutes the deep-pool hypothesis, especially as at Lindow the evidence from the Cladocera and the Chironomidae point to a shallow pool (Dayton, 1986). He suggests that the body was inserted into the upper layers of the bog, where the felted pool peat could be rolled back, the body laid on the exposed surface and the upper peat rolled back over it. This would create minimal disturbance to the stratigraphy and its included biota and would be impossible to detect.

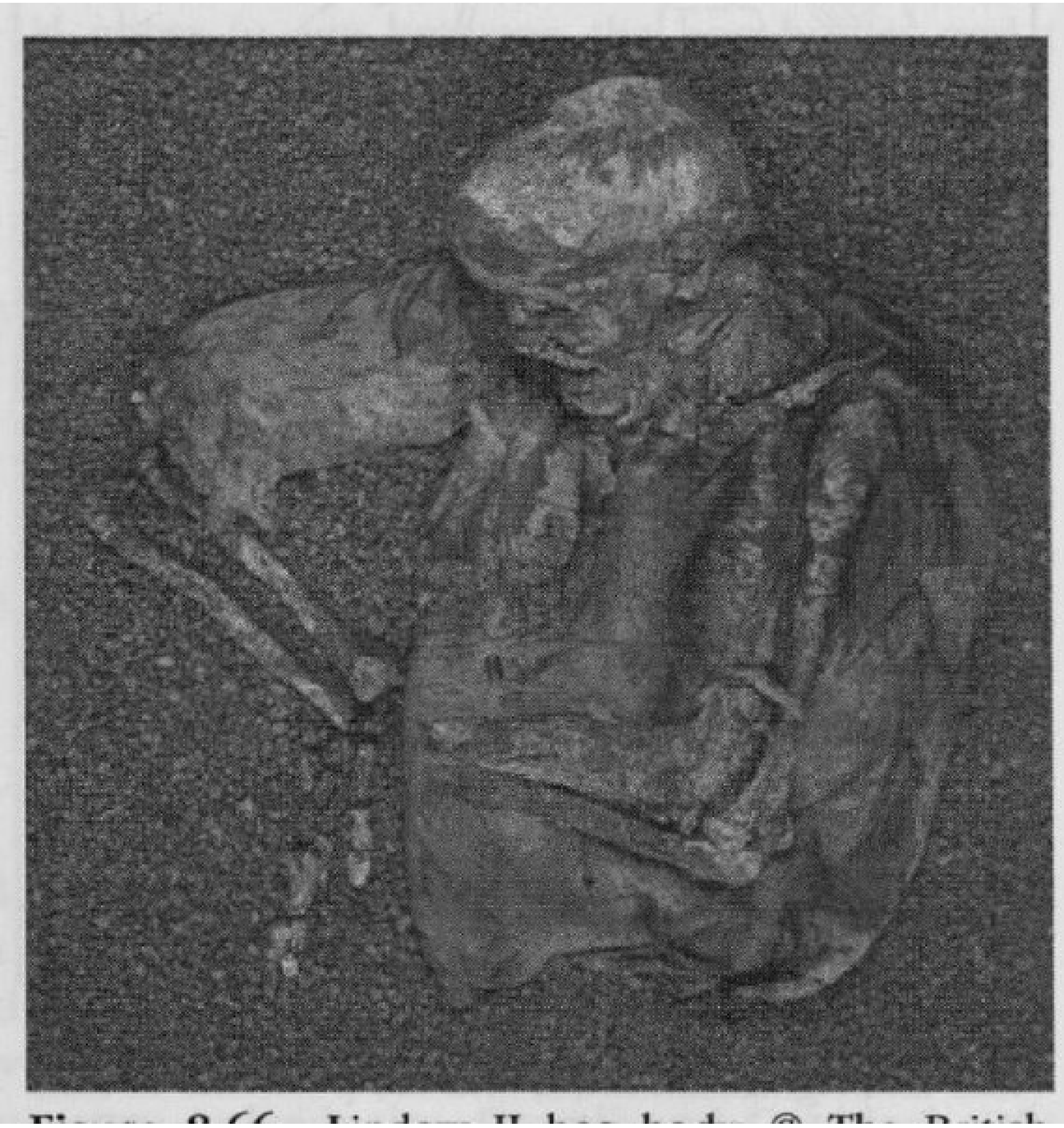
The results of the analysis of the gut contents of the Lindow II body show that emmer and spelt wheats and barley were the main constituents (Holden, 1995), which probably had been prepared as an unleavened bread. The Lindow III body on the other hand seems to have consumed hazel nuts and a smaller amount of wheat/rye. The palynological evidence (Scaife, 1986, 1995) illustrates a diet composed largely of farinaceous products, although the presence of mistletoe gave rise to speculation as to the possible druidical practices. Scaife (1986) suggests it was more likely that mistletoe was used for medicinal purposes.

Although the Lindow bog bodies are the best known British examples, research has illustrated (Briggs and Turner, 1986; Turner, 1995b, d) that northern England is particularly rich in such remains (Figure 8.69). For example, they have been documented from Austwick Common (Denny, 1871), Scaleby Moss (Turner, 1988), Seascale Moss (Turner, 1989), Whixall Moss (Turner and Penney, 1996), Grewelthorpe Moor (Turner *et al.,* 1991), Red Moss (Smith, 1988), Pilling (Edwards, 1969) and Worsley (Garland, 1995).

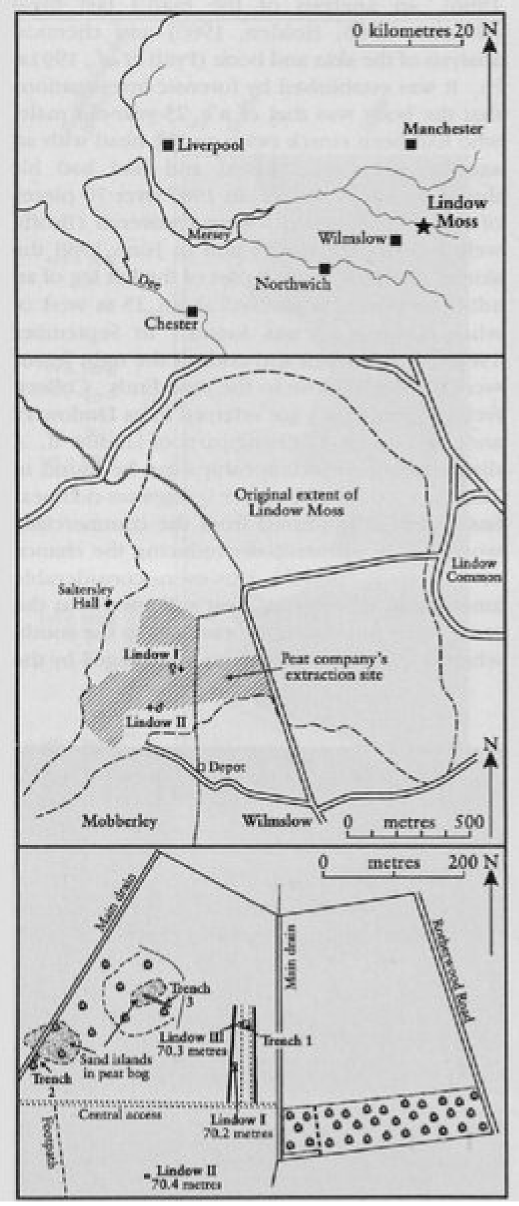
Conclusions

Lindow Moss has proved to be the best-documented site for bog bodies in Britain and has provided a stimulus for new research on these remains elsewhere. The palaeoenvironment of the bog throughout its history has provided much information on mire ontogeny and the influence of humans on the vegetation in the later prehistoric period. The stratigraphy and the bog bodies have been dated extensively and the problems associated with ^{14}C dating of such remains discussed in detail. The archaeological significance of such bog bodies has been debated extensively. Owing to the extensive commercial working of Lindow Moss and landfill development it is unlikely that further bog body remains will be found, but the site, especially the nature reserve, is important as a representative type locality of the large lowland moss in northwest England.

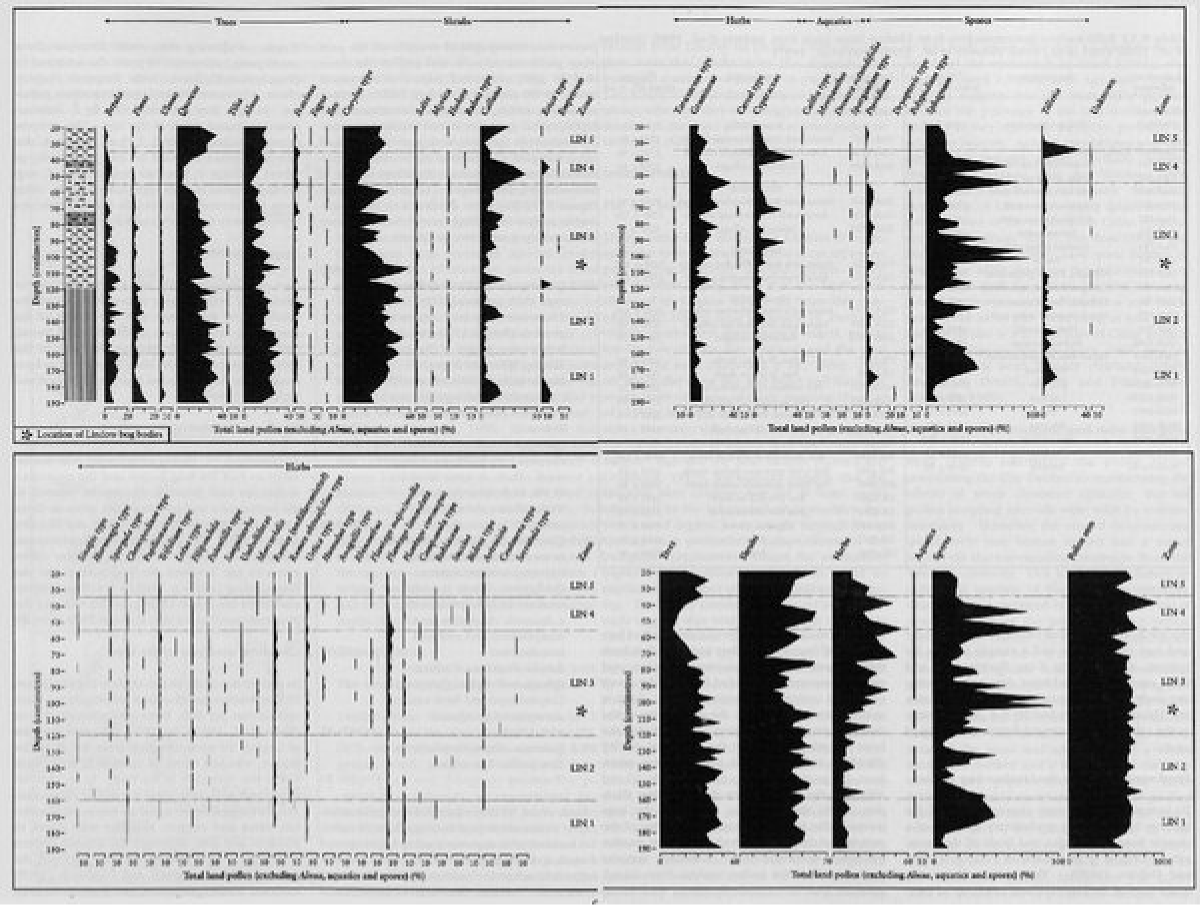
References



(Figure 8.66) Lindow H bog body. © The British Museum



(Figure 8.67) Map showing the location of Lindow Moss and significant finds, and the positions of sand islands in the peat and excavation trenches during 1987 (after Turner, 1986, 1995a).



(Figure 8.68) Pollen diagram for the in-situ peat section at Lindow Moss (after Branch and Scaife, 1995). See (Figure 8.1) for key to the stratigraphical log.

Laboratory reference	Sample type	^{14}C age (years BP; $\pm 1\sigma$)
Lindow I		
OxA-114	Collagen from bone	1740 ± 80
Lindow II (Lindow man)		
OxA-531	Amino acids from hair	1920 ± 20
OxA-604	Amino acids from bone	1850 ± 80
OxA-605	Amino acids from soft tissue	2125 ± 80
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OxA-782	Pre-bleach amino acids	1950 ± 80
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OxA-785	Proline	1900 ± 80
OxA-786	Collagen, Oxford preparation	1800 ± 80
OxA-787	Collagen, Harwell preparation	1870 ± 80
OxA-788	Collagen, Harwell preparation	1870 ± 80
OxA-789	Humic (standard amino acids)	2190 ± 100
OxA-790	Humic (bleach)	1970 ± 80
OxA-1040	Stomach contents	1910 ± 60
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HAR-6224	Wrist bone	2420 ± 100
HAR-6235a	Leg bone	1540 ± 100
HAR-6235b	Leg bone	1650 ± 80
HAR-6491	Skin	1550 ± 70
HAR-6492	Rib bone	1625 ± 80
HAR-6493	Skin and hair	1530 ± 110
HAR-6856a	Vertebra	1480 ± 90
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Laboratory reference	Sample type	^{14}C age (years BP; $\pm 1\sigma$)
Lindow III		
	Bone (P2255)	
OxA-1517	Amino acids from unbleached collagen	1740 ± 90
OxA-1518	Amino acids from bleached collagen	1750 ± 90
HAR-9094	Unbleached collagen	2010 ± 80
	Skin (P2256)	
OxA-1519	Amino acids from unbleached collagen	1850 ± 90
OxA-1520	Amino acids from bleached collagen	1700 ± 120
HAR-9092	Unbleached collagen	1880 ± 80
	Skin (P2257)	
OxA-1521	Amino acids from unbleached collagen	1890 ± 100
OxA-1522	Amino acids from bleached collagen	1760 ± 150
	Bone (P2258)	
OxA-1523	Amino acids from unbleached collagen	2000 ± 100
OxA-1524	Amino acids from bleached collagen	2040 ± 90
HAR-9093	Unbleached collagen	1860 ± 70
UB-3237	Peat 20–22 cm depth	1488 ± 44
UB-3238	Peat 55–57 cm depth	1764 ± 48
HAR-6521	Peat between right arm and head	2300 ± 70
HAR-6562	Peat monolith 125 0–3 cm	2290 ± 90
HAR-6565	Peat, upper body contact (LII)	2280 ± 70
UB-3239	Peat 117–119 cm depth	2345 ± 45
BM-2398	Peat, underside of arm (LII) humin	2590 ± 170
BM-2399	Peat, underside of arm (LII) humic	2470 ± 250
BM-2400	Peat below recurrence surface humin	2450 ± 80
BM-2401	Peat below recurrence surface humic	2400 ± 80
UB-3240	Peat 119–121 cm depth	2447 ± 43
UB-3241	Peat 188–190 cm depth	3724 ± 55
HAR-8875	Charcoal-rich soil	4980 ± 70
GU-5562	Peat	4060 ± 70
GU-5566	Peat	7780 ± 70

(Table 8.12) Radiocarbon determinations from Lindow Moss (data from Ambers et al., 1986; Gowlett et al., 1986; Otlet et al., 1986; Housley et al., 1995; Leah et al., 1997)

(Figure 8.69) Bog body remains in Britain. Note the predominance in northern England (after Turner, 1995b).