Skipsea Bail Mere

[TA 158 558]

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Introduction

Skipsea Bail Mere is a drained former freshwater mere to the west of Skipsea village in northern Holderness, East Riding of Yorkshire. Its importance lies in its Late Devensian to mid-Holocene sequence of sediments, and their palaeoenvironmental data resource. The history and drainage of the mere have been discussed by Sheppard (1956, 1957), Dinnin and Lillie (1995a, b) and Head *et al.* (1995a, b), who also conducted an archaeological survey of the mere area and its environs. Major wetland archaeology sites have been preserved around Skipsea Bail Mere (Smith, 1911) and reassessed by Van de Noort *et al.* (1995). Flenley (1984, 1987) and Dinnin (1995) have discussed litho- and pollen stratigraphical data from the site. Flenley *et al.* (1975) and Flenley and Maloney (1976) have reported pollen and macrofossils of *Trapa natans.* Dinnin and Lillie (1995a, b) have published a survey of the surviving sediments at Skipsea Bail Mere. Lillie (1995) has studied the association of colluvial sediments with alluvial mere deposits at the site margins.

Description

The site of Skipsea Bail Mere lies in an area of extensive former wetlands. Classified as the llornsea Member' by Lewis (1999), the undulating hummocky till and outwash plain in this area (Catt and Penny, 1966) contains many depressions, some of which are kettleholes. The confined drainage within these features has led to the formation of meres during the Late Devensian and the early Holocene. Drainage of this landscape was naturally to the west and the River Hull, by low-gradient, flat-bottomed stream valleys, although the streams of the Skipsea area have been artificially diverted to the coast since about 1800 (Head *et al.,* 1995a, b). These stream valleys were also inclined to poor drainage, their low altitude enhancing this ten dency after the mid- to late Holocene establishment of high sea level. These valleys supported extensive wetlands, with major deposition of organic and alluvial sediments, until their drainage and reclamation for agriculture in historic times. Many of the small meres had naturally silted up by the mid-Holocene, but many larger examples survived until drained during the medieval period (Sheppard, 1957). Dinnin and Lillie (1995a, b) examined several of the possible Holderness mere sites recorded by Sheppard, however, and were unable to find Holocene mere wetland deposits. These were either never true meres, or their sediments have not survived. Skipsea Bail Mere was one of a chain of a few larger meres in deep depressions in the valley of the Skipsea Drain, in which at least seasonal open water persisted until late medieval times. Skipsea Low Mere and White Marr were the other main examples (Dinnin and Lillie, 1995a, b). It is possible that these deeper, linear depressions represent former valleys in the underlying chalk bedrock, masked by glacial deposition (Valentin, 1957). Some meres to the south and east of Skipsea have been breached and drained by coastal erosion, Skipsea Withow Mere being the best known (Gilbertson, 1984b; Head *et al.,* 1995a, b). Skipsea Bail Mere is separated from the Withow Mere valley by an elongated sand and gravel ridge, which may be an esker (Head *et al.,* 1995a, b), and so was never joined to the Withow wetland system. Bail Mere is almost certainly within the same large depression as the nearby Skipsea Low Mere, however, and the two became separated in antiquity as a result of sedimentation infilling a narrow section of the valley and dividing the water body. Skipsea Bail Mere probably ceased to be open water during increased drainage activity in the period after its last recorded documentary mention in 1367 (Sheppard, 1956; Head *et al.,* 1995a, b). The present-day flat land that represents the extent of the former mere is well defined and much prehistoric and later archaeological material has been recovered from survey of the ground around the margins of the old wetland (Head *et al.,* 1995a, b). As part of this survey, within a test pit, a wooden stake was found that apparently was driven into the underlying glacial material through the basal organic deposits (Head *et al.,* 1995a, b). Pollen analysis showed these to be early Holocene and a radiocarbon date on the wooden stake was 9080 ± 100 years BP Similar stakes had been reported by Smith (1911) in an earlier study of the land around the mere edge. The former mere surface is under arable land use with a low water table, and is actively being degraded by drainage, ploughing and erosion (Dinnin and Lillie, 1995a, b).

Flenley (1984, 1987) recorded about 5 m of fine-grained lake sediment at Skipsea Bail Mere, which comprised alternating horizons of grey clay-silts and organic limnic muds. The grey clay-silts occupy the lower 1.3 m of the profile and are interrupted by a thin lower band of organic clay up to 5 cm thick, and a higher band of similar organic clay about 50 cm thick. Above the uppermost clay-silt lies about 2.7 m of highly organic limnic mud (gyttja), which is covered by a surficial layer of minerogenic, probably col-luvial, material. Flenley (1984, 1987) published outline pollen diagrams for these lake sediments, which showed that the lower clay-silt and organic mud intercalations formed during the Devensian Late-glacial period. The highly organic limnic sequence represents the beginning of the Holocene Epoch to a point in the later Holocene after the *Ulmus* Decline, which marks the end of the mid-Holocene Flandrian II chronozone about 5000 years BP The main Late-glacial clay-silt is dominated by Gramineae and Cyperaceae. The more organic layers also contain high Gramineae and Cyperaceae pollen values, but *Betula* also is significant. Pollen of more thermophilous trees, such as *Alnus* and *Corylus,* also occur in these very early levels. The Holocene gyttja shows the typical post-glacial succession through *Betula* and *Corylus* stages to a deciduous forest with *Quercus* and *Ulmus* and then high *Alnus.* Post *Ulmus* Decline levels show large-scale forest clearance in the upper sampled metre, with high Gramineae, *Rumex* and *Plantago lanceolata.* A peak of *Plantago lanceolata* also occurs lower in the Holocene record, at the level of the mid-Holocene rise of *Alnus* pollen. *Trapa natans* (water chestnut) pollen and macrofossils were found in the *Alnus–Quercus* pollen zone postdating the *Ulmus* Decline. They were also found in the equivalent zone at nearby Skipsea Low Mere. Seven pollen assemblage zones were recognized on the pollen diagram (Figure 8.23).

Dinnin and Lillie (1995a, b) completed a tran-sect of cores across the site (Figure 8.24) as part of a recent survey of the Holderness meres and their deepest record contained 6.75 m of wetland sediments, overlying coarse sand. They identified a tripartite Late-glacial stratigraphical succession, but with only a single warm phase organic mud deposit, unlike Flenley's core. Nearly 5 m of highly organic gyttja and woody fen peat overlay the lower clay-silt and organic clay intercalations. Up to 50 cm of fine inorganic clay-silt overlay the organic sequence in all the transect cores, interpreted by the authors as colluvium and as evidence of substantial catchment clearance and erosion. Pollen data were not collected during this lithological study. Work by Lillie (1995) on the colluvial sediments on the slopes around the old mere demonstrates that the onset of colluviation at Skipsea Bail Mere post-dates the mere sediments. Dinnin and Lillie (1995a, b) show that the lake sediments at Skipsea Bail Mere are being affected by dessication, particularly those adjacent to the Skipsea Drain, much of the upper metre being disturbed and oxidized, although the deeper organic sequence appears well preserved.

Interpretation

Although only preliminary palaeoenvironmental studies have been completed at Skipsea Bail Mere (Flenley, 1984, 1987; Dinnin and Lillie, 1995a, b), enough is known to show that the site is clearly one of very high potential for further research. A major significance of the site is the presence of the thin organic mud very low in the Late-glacial stratigraphy. This layer may well be evidence of a warm phase pre-dating the main interstadial (i.e. pre-Allerød) episode of climatic amelioration, equivalent to the dual *Betula* peaks recognized in a few key sites from northeast England, such as Tadcaster (Bartley, 1962), Thorpe Bulmer (Bartley *et al.,* 1976), and close by in Holderness at The Bog, Roos (Beckett, 1981). This early part of the Late-glacial record is becoming better understood through focused research at sites with a high quality lithostratigraphical record, such as Gransmoor (Walker *et al.* 1993; Lowe *et al.,* 1995a, b), which is only a few miles to the west of Skipsea. Although the existence of brief warm oscillations in the early Late-glacial climate record is becoming well established through these studies, the dating of these warm phases remains uncertain owing to difficulties in the radiocarbon dating of samples of low organic content and 'hard water' complications. Correlation of these early warm phases on only lithostratigraphical grounds is very insecure, and existing radiocarbon dates on early thin, often near basal, organic clays vary somewhat. Flenley's (1984, 1987) lithology itself has not been replicated by the later survey of Dinnin and Lillie (1995a, b), and the resolution of his preliminary pollen record from Skipsea Bail Mere is too low to allow secure interpretation of the lithology. There are very few pollen counts in the Late-glacial clays, and none between the putative early warm phase mud and the higher interstadial organic mud. Although *Betula* does occur in the early thin organic mud, it is not in high values and grasses and sedges dominate, although less than in the inorganic cold-phase clays. The initial sampling design, as a student teaching exercise, was not intended to produce close interval results and new, higher resolution, studies are needed to better evaluate the Late-glacial record at the site, including a more extensive lithological survey. The presence of Late-glacial and early Holocene *Alnus* pollen is interesting, especially in light of alder macrofossils of similarly very early age at Willow Garth in the Great Wold Valley not far to the north (Bush and Ellis, 1987). The Late-glacial records of thermophilous shrub taxa at Skipsea Bail Mere perhaps should not be disregarded as evidence of the local presence of those taxa. Further research is required.

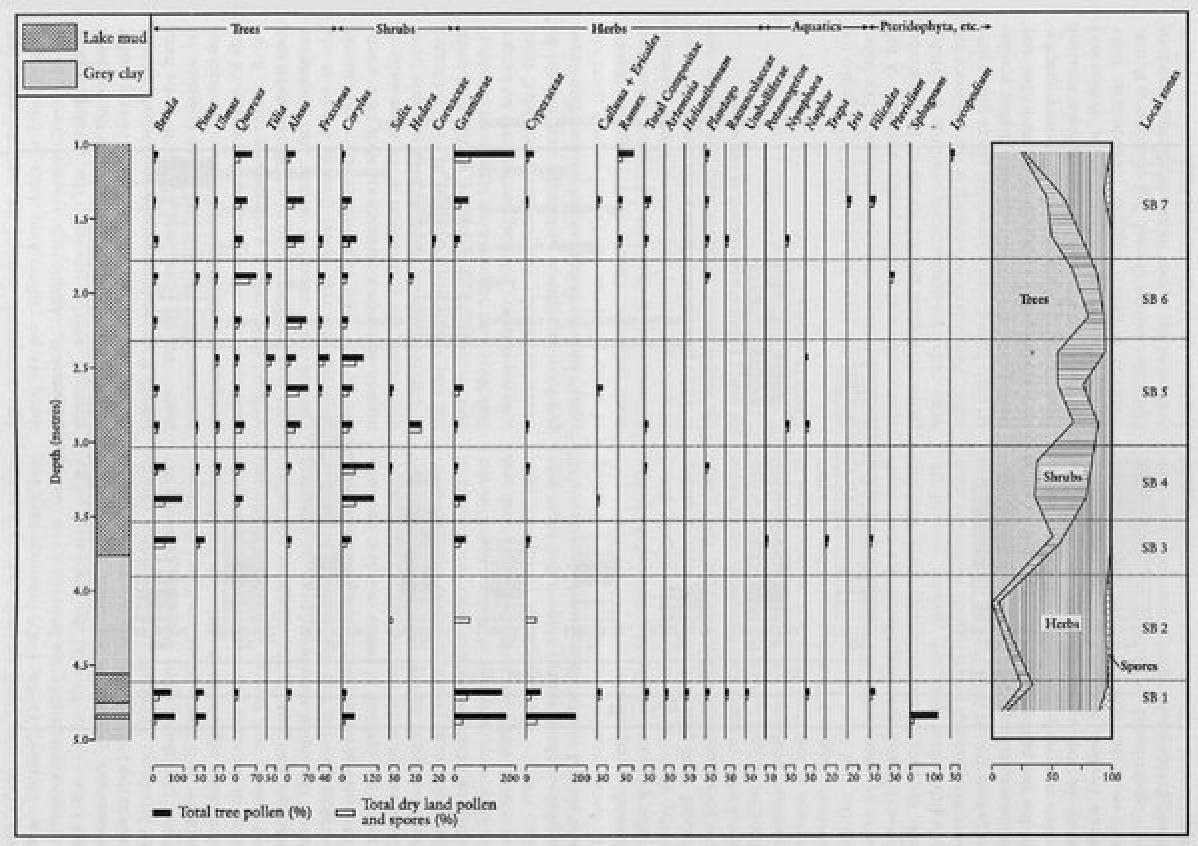
The presence of *Plantago lanceolata* pollen at the time of the *Alnus* rise, usually dated around 7000 years BP, although with considerable local variation (Bush and Hall, 1987), may be evidence of some Late Mesolithic disturbance of the woodland around the mere. There is considerable evidence for similar environmental impacts at this time from several other sites in northern England (Simmons and Innes, 1987) and the Bail Mere *Plantago* is accompanied by peaks in Compositae and *Corylus.* Natural factors may have been responsible for this small-scale opening of the woodland cover, but Late Mesolithic flint sites are present around the mere margins and on till islands within the mere sediments (Head *et al.,* 1995a, b) and represent circumstantial support for a hunter–gatherer origin for the pollen evidence. Higher resolution pollen analyses are needed. The pollen stratigraphy in the upper profile, post-dating the *Ulmus* Decline, is also of low resolution but it does seem that quite extensive forest clearance and agricultural activity were continuous, although this could merely reflect the wide sampling interval. Clearance evidence could well be linked to the Neolithic and, particularly, Bronze Age occupation around the wetland edge, but there are no radiocarbon dates to confirm this association. Again, new research needs to be directed at this topic. The archaeological remains found within and around the wetland sediments at Skipsea Bail Mere are of very major significance, and potentially of national importance. Van de Noort and Ellis (1995a, b) have recommended that the Bail Mere complex be designated a Site of Special Wetland Archaeological Interest. Dewatering and wastage of the wetland sediments is a continuing threat, however, and the destruction of organic material and cultural sites stratified within the geological sequence is a real threat (Van de Noort *et al.,* 1995a, b). The near-surface later prehistoric organic sediments themselves, with their scientific record, are also subject to the same danger.

The recovery of *Trapa natans* remains from the lake sediments (Flenley *et al.,* 1975; Flenley and Maloney, 1976; Tallantire, 1976) at Skipsea Bail Mere and Skipsea Low Mere is of considerable importance. This aquatic plant is no longer extant in Britain but has been recorded from previous interglacial sediments and is held to signify summer temperatures warmer than those of today (Godwin, 1975) and so is a good climatic indicator. Flenley (1987) suggests that its presence at a site with extensive lake-edge Bronze Age activity and settlement may associate it with cultivation. There is no direct dating of the *Trapa* levels, however, and any Bronze Age or other cultural association is unproven.

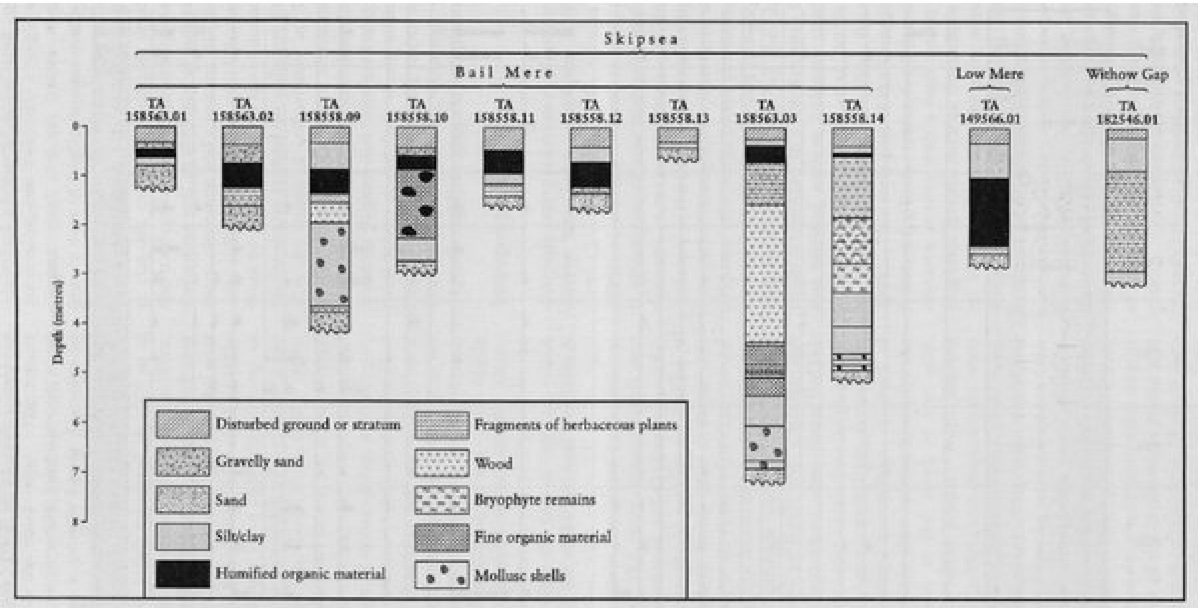
Conclusions

Skipsea Bail Mere has considerable potential for palaeoenvironmental study, established by lithostratigraphy and outline pollen analyses. A full palaeoecological record seems to be preserved from early Late-glacial times until the late Holocene. Particularly interesting is the evidence for an early Late-glacial interstadial warm phase preceding the Older Dryas, although higher resolution analyses are required to confirm this and other features of interest in the biostratigraphy. The recovery of Holocene *Trapa natans* remains makes this site nationally important. Pollen and colluvial evidence suggest considerable later Holocene human impact, but continuing deterioration of the upper sequence through modern land use makes this record liable to loss before it is researched properly.

References



(Figure 8.23) Outline pollen diagram from Skipsea Bail Mere.



(Figure 8.24) Sediment successions from Skipsea Bail Mere.