A probable Bronze Age mound on the King’s Ridge, Frensham Common

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A trial trench cut into a newly located low circular mound on Frensham Common produced a pedo-sedimentary sequence indicating that it is of probable turf stack construction and, on that evidence, is likely to be of Bronze Age date. It is probably an outlier of the known barrow group situated 350m to the south, on the King’s Ridge between the Great and Little Ponds. The severely eroded mound only became visible following heather cutting in 2002.

Introduction

In 2003, a previously unrecorded mound at the north end of the King’s Ridge on Frensham Common was noted during a landscape survey led by Christopher Currie (Currie 2003, 1, 15). The long heather overlying the mound had recently been cut, as part of a programme of environmental work, thus exposing the probable earthwork. Given the proximity of the new mound to a known Bronze Age barrow group slightly to the south (fig 1), it seemed possible that it might be of a similar date. In order to test this, the authors obtained permission to excavate a trial trench to record the pedo-sedimentary sequence of the mound and to allow samples to be taken for pollen analysis. Teams from Surrey Archaeological Society and ArchaeoScape at Royal Holloway, University of London, carried out the excavation in October 2003.

Previous evidence

While four, recently restored, scheduled barrows still remain clearly visible on the King’s Ridge, between Frensham Great and Little Ponds, it has been claimed that a number of others once existed on the common. Work on a mound on Warren Hill, on the western side of the common supports this supposition (Graham & Graham 2002). A description of the 19th century evidence can be found in that report.

Location, topography and geology

The newly discovered circular mound (SU 85305 41311), now overlooks Frensham Little Pond and lies on the eastern edge of the northern end of the King’s Ridge on Frensham Common, which is located c 6.5km south of Farnham in the south-west corner of Surrey (fig 1). The mound is situated c 350m north of the known barrow group on the high north–south ridge that divides the Great and Little Ponds. Frensham Common is a typical west Surrey heathland, with heather, birch and pine growing on the poor acidic sands of the Folkestone Beds, part of the cretaceous deposits of the Lower Greensand series. River Terrace Gravel caps the ridge itself. Because of its position at the edge of the ridge (figs 2–3), the mound is badly eroded on the downhill side. It nonetheless remains c 0.6m high, but would originally have been higher, and is now in the region of 11m in diameter. There is no visible sign of a ditch and the mound appears to have been disturbed, possibly by an earlier excavation, on its north-east and south-west sides (figs 2 and 3).

The excavation

Following a contour survey (fig 2), a 6 x 1m trench was excavated on the western side of the mound, deliberately sited to avoid any possible central burial. In the event, no burial was
found and the trench was excavated to the underlying natural sand and gravel. Two possible ditches were present in the western half of the trench, but neither appeared to be connected with the mound itself. The sections from which the samples for laboratory analysis were taken are described below, but broadly consisted of discontinuous bands of organic material in a light grey sandy matrix resting on a continuous band of black organic gravelly material – presumed to be the turves and the remains of the original ground surface respectively. There was no evidence for any structural features, other than the probable turves, and no artefacts of any sort were recovered. The anthropogenic origin of the mound therefore depended entirely on the analysis and interpretation of the pedo-sedimentary and pollen records.

**Analysis of the pedo-sedimentary sequence**

The excavation revealed a shallow but highly variable pedo-sedimentary sequence consisting of ‘alternating’ light (low organic matter content) and dark (higher organic matter content) sand-rich layers (fig 4, layers, 2, 3 and 5) that were spatially discontinuous. An organic-rich layer composed of gravelly sand (4), and a reddish-yellow iron-rich sand and gravel layer (10) underlay these. These field-based observations were interpreted as indicating a probable pre-mound soil (palaeosol – original ground surface) overlain by the fill of the mound, with the light and dark contexts representing stacked turves. Column (monolith) samples were recovered from the excavated sections, and from locations representative of the main spatial and temporal variations in the soil sequence, with the aim of testing the above hypotheses using appropriate laboratory-based analyses, namely detailed soil/sediment descriptions and pollen analysis (fig 4).

**METHODS**

The pedo-sedimentary sequences captured within column samples 1, 2 and 3 were described using standard procedures for recording unconsolidated sediment, noting the physical properties (colour), composition (gravel, sand, clay, silt and organic matter), context (unit) boundaries and inclusions (eg artefacts). All the descriptions are based on examination of the
A PROBABLE BRONZE AGE MOUND ON THE KING’S RIDGE, FRENSHAM COMMON

Fig 2 King’s Ridge, Frensham. Contour plan of mound and setting showing location of trench (grey). Contour heights in metres OD and facing uphill. North is at the top.

Fig 3 King’s Ridge, Frensham. Digital terrain map showing side view of mound from south. Heights in metres OD.
soil/sediment in the laboratory (fig 5). The descriptions are summarised in tables 1–3 (supplement S19–S20, see Endnote).

The pollen was extracted from column sample 1 as follows (acelolysis, involving oxidation of unwanted organic matter using a mixture of sulphuric acid and acetic anhydride, was omitted because of the fragile state of preservation of many pollen grains and spores found in soils):

1 Sampling a standard volume of sediment (5ml)
2 Deflocculation of the sample in 1% sodium pyrophosphate
3 Sieving of the sample to remove coarse mineral and organic fractions (>125µ)
4 Removal of finer mineral fraction using sodium polytungstate (specific gravity of 2.0g/cm³)
5 Mounting of the sample in glycerol jelly

Each stage of the procedure was preceded and followed by thorough sample cleaning in filtered distilled water. Quality control was maintained by periodic checking of residues, and assembling sample batches from various depths to test for systematic laboratory effects. Although a pollen count of approximately 300 pollen grains and spores was attempted for each sample, because of the poor preservation and low concentration of pollen, four samples produced counts of less than 100. The results are presented as a percentage of total pollen grains and spores (trees, shrubs, herbs, aquatics and spores). Pollen grains and spores were identified using the Royal Holloway (University of London) pollen type collection and the following sources of keys and photographs: Moore et al (1991) and Reille (1992). Plant nomenclature follows the Flora Europaea as summarised in Stace (1997). The results are summarised in table 4.

RESULTS AND INTERPRETATION OF THE SOIL/SEDIMENT DESCRIPTIONS

The results of the descriptions indicate spatially and temporally variable physical properties and composition (tables 1–3). Each layer is dominated by sand but with varying amounts of organic matter and occasional gravel. In column samples 1 and 3, for example, a black organic-rich layer (layers 1 and 10) overlies the reddish yellow sand with gravel (layer 9). Overlying these layers are four grey layers with a low organic matter content (labelled layers 2, 4, 6, 7, 11, 13 and 15 in tables 1 and 2), and two black organic layers (labelled layers 3, 5, 12 and 14 in tables 1 and 2) that vary in thickness. The site formation processes are therefore clearly complex. Two hypotheses are proposed for the presence of this pedo-sedimentary sequence at King’s Ridge:

1 Deposition of sand-rich material by natural, aeolian processes and subsequent modification (transformation) by soil formation processes causing translocation of organic matter; with layers 1 (iron and aluminium rich horizon) and 2 (organic rich horizon) representing the pre-burial soil profile.
2 Deposition of sand-rich material and organic matter by human activity, probably as a single event (mound construction), and subsequent modification (transformation) by soil formation processes causing translocation of organic matter; with layers 1 (iron and aluminium rich horizon) and 2 (organic rich horizon) representing the pre-burial soil profile.

Hypothesis 1 is rejected, however, because the local geomorphological context suggests that the accumulation of sand as a discrete mound on King’s Ridge is unlikely, and there is no evidence to suggest that the mound has formed by preferential erosion of the surrounding deposits. If natural processes caused the mound formation, then subsequent soil formation should have led to podzolisation, with a distinctive profile consisting of bleached sand grains.
A PROBABLE BRONZE AGE MOUND ON THE KING'S RIDGE, FRENSHAM COMMON

Fig 4  King's Ridge, Frensham. Mound plan and sections. The sections show the locations of monoliths 1–3.
(Ea horizon) caused by the downward movement of soluble organo-metal complexes (Al$^{3+}$ and Fe$^{3+}$ cations), and a Bs horizon rich in precipitated iron (ferrihydrite) overlain by an iron enriched horizon (BFe) and a horizon containing translocated organic matter (Bh). This profile is not present in the deposits overlying the possible pre-burial soil profile. However, the Bs, BFe and Bh horizons are present in the possible pre-burial soil suggesting that podzolisation occurred before the mound formation. Therefore, hypothesis 2 is accepted because of the absence of a distinctive podzol profile, which is attributed to the complex composition of the mound fill and the nature of the mound formation processes, and the presence of redeposited humic (organic rich) horizons and Ea horizons (bleached sand grains), with each ‘couplet’ probably representing an individual turf. In addition to this evidence, the morphological mapping suggests that the mound has undergone extensive surface erosion and down slope movement of deposits, probably causing lowering of the mound height and loss of most of the stratigraphic sequence. Based upon the descriptions, therefore, the stages of site formation were: (1) a pre-burial podzol profile, with the Ea and humic horizons missing, possibly because of the removal of turves; (2) mound construction consisting of re-deposited Ea and humic horizons; (3) site transformation as a consequence of natural erosional, hydrological and biological processes. The only reason for rejecting the above interpretation is the absence of other direct evidence for anthropogenic activity, e.g. the presence of a cremation. Further excavation of the mound at King’s Ridge may resolve this issue.
RESULTS AND INTERPRETATION OF THE POLLEN ANALYSIS

The results of the pollen analysis of column sample 1 were very disappointing, with either low concentrations or an absence of pollen in most of the samples analysed. For these reasons, a pollen diagram has not been constructed and the results have simply been tabulated as an archive of the research findings for future reference (table 4). These results were surprising given the acidic nature of the pedo-sedimentary sequence and the associated low levels of microbial activity. Pollen is often well preserved under these conditions and has provided a valuable insight in the composition and structure of the local vegetation cover (Dimbleby 1985; Bradshaw & Millar 1988). However, many variables affect the stratigraphic integrity and preservation of pollen grains and spores in soils, including chemistry, particle size and organic matter content, and faunal activity (Havinga 1967; Branch & Canti 1994; Tipping et al 1994). These variables often result in differential preservation of pollen in favour of those grains and spores having higher sporopollenin content. Therefore, at King’s Ridge, the pollen data provide only a very tentative insight into the former vegetation cover, and suggest the local presence of oak (*Quercus*) and birch (*Betula*) woodland with hazel (*Corylus*), lime (*Tilia*) and heather (*Calluna* and *Erica*) shrubland, and alder (*Alnus*) growing in close proximity. The presence of small amounts of lime pollen in three samples may provide an indication of the approximate age of construction of the mound. The decline in lime woodland from the Early Bronze Age onwards, and its direct association with clearance, is now well-established (Drummond-Murray et al 1994; Sidell et al 2000; 2002). A Bronze Age date for the King’s Ridge mound therefore seems probable. Further radiocarbon-dated pollen studies from suitable nearby sites, such as peat bogs, are required, however, to test and significantly enhance this picture.

**Table 4 Results of the pollen analysis (column sample 1)**

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Key:
Pollen expressed as % of total pollen
* = Pollen present
0 = Pollen absent

**Discussion**

Excavation of the probable Bronze Age circular mound at King’s Ridge, and subsequent laboratory analysis of the pedo-sedimentary sequence, suggest that natural aeolian processes are unlikely to have led to the mound formation. Instead, a three-stage process of site formation, resulting from human activity, has been proposed, involving the removal of the humic and Ea horizons of the pre-burial original ground surface, probably due to the removal
of turf. This was followed by the mound construction consisting of redeposited Ea and humic horizons (stacked turf), and finally transformation of these layers because of natural processes. However, further excavation of the mound is desirable to provide other direct evidence (e.g. a burial) of human activity.

Owing to the disappointing results of the soil pollen analysis, it has not been possible to reconstruct the precise composition of the vegetation cover of King’s Ridge at the time of mound construction. Pollen-stratigraphic studies in the Thames Valley may provide some insight into the Bronze Age vegetation cover of the site, although any reconstruction would remain highly speculative until tested against pollen data from sites proximal to King’s Ridge. These distal studies suggest that oak, hazel and lime would have been the dominant tree and shrub taxa growing in the hinterland of the Thames Valley, and therefore probably also the main tributary valleys (e.g. river Wey), during the early Bronze Age (Branch & Green 2004). However, these data indicate a progressive decline in woodland cover during the Bronze Age, which apparently involved the clearance of lime and later oak, hazel and alder following the intensification of human activities associated with changing land use and settlement practices (Sidell et al 2000; 2002; Branch & Green 2004). Archaeological evidence for field systems, and bioarchaeological records for mixed farming, involving animal husbandry (cattle, sheep/goat and pig) and cereal cultivation, supports these data. (Bird et al 1989; O’Connell 1990; Serjeantson et al 1991-2; Bird et al 1996). Recent pollen-stratigraphic studies of turves associated with Bronze Age mounds on Frensham (Wiltshire 2002) and Thursley Commons (Graham et al 2004) provide a complementary picture, indicating an open woodland cover comprising varying amounts of ivy (Hedera), holly (Ilex), hazel (Corylus), oak (Quercus), alder (Alnus), and lime (Tilia) together with heather (Calluna) and grasses (Poaceae). The presence of heather at both sites is particularly interesting, because it indicates that heathland, and probably podzolic soil, was becoming established at the time of mound construction. This interpretation is supported by the new pedo-sedimentary and pollen data from King’s Ridge, and from Ockley Bog (Thursley Common), where the evidence indicates two phases of clearance, cultivation, abandonment and woodland regeneration on podzolic soil (Moore & Wilmott 1976). Similarly, Bradley and Keith-Lucas (1975) recorded evidence for Bronze Age cultivation on podzolic soil at Ascot. These studies undoubtedly provide an accurate indication of the changing landscape of parts of Surrey during the Bronze Age, and therefore provide a context in which we can better understand the events recorded by the King’s Ridge excavation. This landscape model for the Bronze Age is not robust however owing to the paucity of archaeological, palaeoenvironmental and palaeoeconomic data, especially from areas of Lower Greensand, and requires testing and enhancing by further collaborative archaeological and environmental archaeological investigations across the county in general.

Conclusions

It seems likely that the circular mound, though apparently of very loose turf stack construction, is Bronze Age in date. Final confirmation of the purpose of the mound will require further excavation, but it does seem certain that it is not a natural formation and a Bronze Age barrow seems the most likely interpretation on the present evidence. The two ditches exposed at the western end of the trench remain enigmatic as neither could be dated and neither appeared to be related to the mound.

Endnote

The tables listed below are available on the Archaeology Data Service website (http://ads.ahds.ac.uk/catalogue/library/syac/v94.cfm). Copies of this material will also be deposited with the Society’s library, Guildford and the Historic Environment Record, Woking. Photocopies can also be supplied by post – enquiries should be addressed to the Hon Editors, Surrey Archaeological Society, Castle Arch, Guildford GU1 3SX.
ACKNOWLEDGEMENTS

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