2061

Ancient Monuments Laboratory
Report 167/88

THE CHARACTER AND CONTENTS OF PEAT DEPOSITS FOUND AT STINSFORD, DORCHESTER.

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Summary

Valley/topogenous peat deposits were located at Stinsford Slot during construction of the new Dorchester by-pass. These peat deposits were sampled and analysed for plant macrofossils with the aim of providing seeds for radiocarbon dating by the Oxford accelerator. Seeds were scarce but those recovered suggest a flora typical of lowland nutrient rich herbaceous fen. This vegetation comprised largely grasses and sedges with a group of typically associated fen plants. These included Gipsy-wort and yellow flag. Seeds of the latter were submitted for radiocarbon assay.

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1) INTRODUCTION

Peat deposits of approximately 1 metre thickness were discovered (Dr John G Evans) at Stinsford during construction of the new Dorchester by-pass (SY 705907). The sequence was exposed in a long section from which it was apparent that the peat accumulation filled a narrow drainage channel or stream course. Fortuitously the section exposed the peats orthogonally to the line of this watercourse. Underlying the peat was a layer of coarse sand and gravel wich contained a small number of wood fragments. Above the peats and extending for the length of the section, was a relatively homogenious grey silt which effectively sealed the peat. This lithostratigraphical unit also contained occasional wood remains. The peats were sampled at the request of Dr John G Evans (Department of Archaeology, University College, Cardiff) with the intention of obtaining samples for radiocarbon dating and to provide a picture of the environment of accumulation/deposition.

2) THE CHARACTER OF THE PEAT

The peat found at Stinsford is typical of such deposits from southern England. The peat is dark brown in colour and very well humified with little structure. There is a high detrital content. The organic component is made up largely of monocotyledonous (grass, sedge and rush) remains. This comprises both leaf material but predominantly rootlet remains penetrating from higher levels within the peat. The only identifiable leaf remains were those of *Phragmites communis (reed)*which is typically found in lowland peat sequences. It was hoped that these peats would be rich in plant macrofossils (seeds) because a number of seeds of *Iris pseudacorus* were noted in the open section. A substantial inorganic fraction is also present consisting of fine silt and clay. This is also typical of lowland topogenous valley peats.

3) THE PLANT MACROFOSSILS

As noted above, it was expected that the peats would be rich in well preserved seeds. This was, however, not the case. Samples of 1.5 kilos were initially disaggregated using only water. This proved unsuccesful in breaking down the silty/clayey peats. Standard hydrogen peroxide techniques were also used and this allowed the mechanical breaking of any remaining 'lumps'. The disaggregated material was washed though a 'nest' of sieves of 1000, 600 and 300 microns mesh size. The plant material which was recovered was sorted using a Wild M5 stereo-microscope.

The number and diversity of seeds recovered from the four samples prepared was extremely small. These are therefore discussed as a whole.The following taxa were recovered.

Ranunculus a/r/b

cf Viola

Filipendula ulmaria

Polygonum convolvulus

Rumex sp.

Urtica dioica

Mentha aquatica

Lycopus europaeus

Cirsium sp.

Iris pseudacorus

Lycopus europaeus (gipsy-wort). was the most common component (22 seeds). ***Iris pseudacorus*** was expected to be more frequent because it was noted in the open section. This was not, however, so and 8 seeds were extracted. The remaining taxa were individual examples. The wood remains taken from the underlying sand and gravel and overlying silts comprised:

Basal gravel: 1 fragment of root wood.

1 fragment *Quercus* (oak)

Upper silts: 1 fragment of *Alnus glutinosa* (alder)

Because of nature of this peat, that is comprising numerous rootlets penetrating from higher levels, it was decided (J.G. Evans) to use the extracted seeds of *Iris*

for radiocarbon dating. This might be expected to produce meaningful dates. Problems with temporal resolution are often encountered when dating humified peat sequences. Such sequences may have accumulated over time spans greater than the normal radiocarbon assay counting errors. Individual seeds are likely to be contemporaneous with the peat from which they were obtained-rootlets are not.

4) THE ECOLOGY OF THE SITE

Although few seeds were recovered, a number of observations can be made. This peat appears to be typical of those organic deposits occurring in lowland fen and river channel deposits. These fens fall into the category of mires which have a high base status. This is caused by the presence of ground water and surface 'run-off' containing nutrients. Such nutrient input results from the low topographical position of channels in relation to the surrounding interfluves. They are thus often referred to as valley mires. Such mires are trophicated (nutrient rich) systems and which consequently, usually exhibit a rich fen type flora which contrasts to those acidic communities found in upland areas or on raised bogs. The taxa listed from this site are typical of fen communities or plants which fringe slow flowing streams/rivers found today in areas on, or adjacent to calcareous lithologies (chalk, and limestone). In larger valley systems, such herbaceous fen communities may become alder carr woodland if surface water is present for not more than 2-3 months during the winter.

The Stinsford channel was a narrow valley mire of high base status. This is of course due to the proximity of the chalklands. The vegetation would have comprised a rich herbaceous fen flora indicative of constant water supply. Bearing in mind the relatively small dimensions of the channel geometry it is not surprising that there is no evidence that alder carr had developed. The alder wood recovered from the overlying silts may have been transported from further up the catchment at a time of higher fluvial discharge.

It is unfortunate that there is no evidence in the peat for the character of the vegetation growing on the interfluves. The presence of silts within these peats is again typical of the stratigraphy of lowland valley mires. Such inorganic constituents are frequently associated with relatively open (grassland or arable habitats) areas adjacent to streams or mires. These areas are the source of inorganic materials washed into the valley bottoms. It can only be vaguely postulated that the areas surrounding Stinsford had an environment similar to that of today; that is, pastoral or arable land with a valley fen but with a slow stream traversing the area. It is also clear that the peat channel is overlain by relatively homogeneous silts. It may be postulated that for these silts to have been deposited over such a relatively large area, a substantial change in land use may have taken place. For example, a much increased use of the local catchment for arable purposes may have initiated this sediment influx. It will be interesting to see if the radiocarbon date obtained from the oak fragment taken from this lithostratigraphy corresponds with any known phases of increased land pressure.

ACKNOWLEDGEMENT

I am grateful to Alan Clapham for his assistance with identification of the seeds.