
The Chains

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Highlights

The Chains GCR site provides a detailed pollen record, calibrated by radiocarbon dating, of mid- to late Holocene vegetational and environmental changes on Exmoor. It permits comparisons with other upland sites in South-West England and demonstrates the impact of humans on the landscape from Neolithic times onward.

Introduction

The peat mires of the Chains provide an important record of the changing vegetation cover on Exmoor during the last 5000 years or so. Radiocarbon dating of the deposits has allowed the pollen record to be correlated with periods of human activity in the area, thereby throwing light on the problem of anthropogenic activity in the initiation of blanket peat. The site was studied in detail by Merryfield and Moore (1974), and its evidence has been reviewed by Moore (1973), Crabtree and Maltby (1975), Bell *et al.* (1984) and Moore *et al.* (1984).

Description

The Chains is an upland plateau ridge running approximately 10 km from Radworthy [SS 700 435] in the west to Raven's Nest [SS 780 406] in the east, at an average height of 475 m. The ridge acts as the major watershed for north Exmoor, with streams running off the highest area (487 m) to form the River Bade in the south and the West Lyn in the north.

The Chains GCR site [SS 732 424] comprises an area of rough moorland and peat bog some 200 x 150 m. The site lies c. 600 m north-west of Chains Barrow and 1 km east of Pinkworthy Reservoir on a gentle north-west-facing slope. The GCR site coincides with the deepest blanket mires (up to 3 m thick) so far found on Exmoor. Merryfield and Moore (1974) cut a monolith from the mire for pollen analysis and radiocarbon dating. Selected results of these analyses are shown in (Figure 7.25) which also illustrates local pollen assemblage biozones. However, no lithological details of the succession are given by Merryfield and Moore (1974).

Interpretation

Local pollen assemblage zone EC1, identified from the basal layers of the peat, is characterized by relatively high values of *Ulmus* (elm) and *Pinus* (pine) pollen. Merryfield and Moore (1974) take this to indicate the undisturbed state of local woodland prior to the arrival of farming cultures. The succeeding zone (EC2) demonstrates a decline of pine and elm and an increase in *Alnus* (alder) at the expense of *Quercus* (oak). It also shows an increase in *Pteridium* and the consistent presence of *Plantago lanceolata* (ribwort plantain). Merryfield and Moore (1974) suggest that these changes denote the arrival of farming cultures and the response of local woodlands to their activities. Based on the radiocarbon date of 4170 \pm 75 BP (UB-821) and the assumption of a constant rate of peat formation, Merryfield and Moore have suggested that this biozone covers the period between 5000 to 3800 BP (Neolithic).

Zone EC3 demonstrates a gradual recovery of elm to its maximum representation at the end of the zone. In contrast, there is no recovery in pine and both *Pteridium* and *P. lanceolata* appear sporadically. According to Merryfield and Moore (1974), the pollen evidence indicates an unsettled period between c. 3800 and 2300 BP, with no permanent human settlements being established (Bronze Age).

A sudden decline in the values of elm pollen and an increase in *Betula* (birch), *Pteridium* and *P. lanceolata* characterize Zone EC4, and are taken to indicate increased farming activity, wood land clearance and settlement between c. 2300 and 1500 BP (Iron Age to Roman) (Merryfield and Moore, 1974). An abrupt decline in *Pteridium* and *P. lanceolata* and a

further increase in birch characterize Zone EC5, and indicate reduced human activity from about 1500 BP (end of Roman times) onward. A gradual recovery of *Pteridium* and *P. lanceolata* to their maximum values are key features of Zone EC6, which also shows a decrease in alder and a rise in elm and pine. Merryfield and Moore have argued that these changes indicate increased settlement and deforestation, especially of the lowlands and valleys. The duration of the biozone is uncertain, but may have culminated in the Napoleonic Wars about 180 years ago. The final biozone identified (EC7) shows a decrease in *Pteridium* and *P. lanceolata* with pine reaching its maximum value, perhaps reflecting the reduced intensity of farming during the last 180 years or so (Merryfield and Moore, 1974).

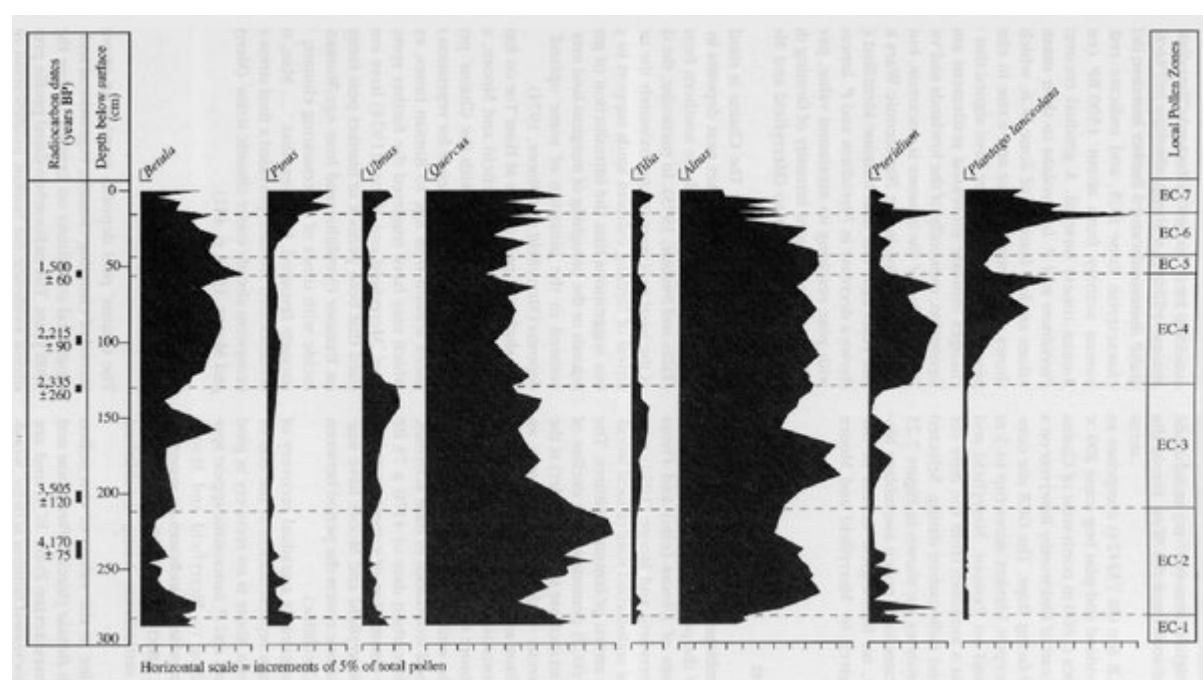
The pollen record for The Chains is similar to others derived from blanket peat deposits in mid-Wales (Moore, 1968) and the southern Pennines (Tanis and Switsur, 1973). In particular, the dating of the basal peat layer to approximately the time of arrival of farming cultures lends support to previous suggestions that the introduction of grazing animals or the ploughing of marginal land may have assisted in the initiation of some upland peat deposits (Merryfield and Moore, 1974).

A shallower peat profile at Hoar Tor on Exmoor was correlated by Merryfield and Moore, using pollen biostratigraphy, with the Chains' profile. Both showed marked evidence for vegetation clearances around Iron Age to Roman times, events which may have triggered the further spread of peat. Merryfield and Moore (1974) have emphasized that both periods of blanket peat formation on Exmoor (Neolithic and Iron Age/Roman) coincide with times of deteriorating climate. They strongly favoured, however, that ... Man, or his domesticated animals, provided a final stress on an ecosystem already under climatic strain' (Merryfield and Moore, 1974; p. 441).

Conclusion

The Chains' peat deposits provide an important record of changing climatic, vegetational and environmental conditions on Exmoor during the last 5000 years. The radiocarbon-dated profile provides strong evidence for human modification of the local vegetation and landscape during both Neolithic and Iron Age to Roman times, and adds weight to the argument that the spread of upland blanket peat was caused by a combination of climatic and anthropogenic factors. Evidence from The Chains provides a stark reminder of human effects on an ecosystem already under climatic stress.

References



(Figure 7.25) Selected pollen data and radiocarbon dates from a peat profile at The Chains, Exmoor. (Adapted from Merryfield and Moore 1974.)