9

Early Medieval Environmental Background

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9.1 Introduction

This is not a full review of all the palaeoenvironmental studies carried out in the region, but a general summary with most emphasis placed on the environment in which Early Medieval communities lived. It does not provide a comprehensive review of crop and animal husbandry in the region. Reviews of environmental archaeology carried out or commissioned by English Heritage are in progress or complete and will give an account of knowledge in these areas. Those wishing to follow this up should consult the English Heritage website (`http://www.english-heritage.org.uk` and follow the links Research & Conservation → Archaeology & Buildings → Scientific Techniques → Environmental Studies → Regional Reviews). At the time of writing, the reviews on insects (Robinson 2002) and wood and charcoal (W Smith 2002) were available as PDF files. Reviews of plant macrofossils, pollen, animal bones and geoarchaeology from southern England are in preparation and will be placed on the website when available. Rob Scaife very kindly made available a draft of his pollen review for this resource assessment. The excellent review of environmental archaeology in South West England by Martin Bell (1984) is still a very useful source of information. There are also reviews of environmental evidence in the Urban Archaeological Assessments for Bath (not yet published) and Bristol (Brett 2005), which are of relevance for this period. Urban deposits have not generally been referred to, but will be included in the reviews noted above. The inclusion of "grey" literature has not been comprehensive. The introduction to the Late Bronze Age and Iron Age section (on page 103) includes a summary of sources of evidence and comments on preservation which are not repeated here but are equally relevant for this period, apart from site specific references. As for other periods, pollen evidence for past vegetation is scarce or absent from the Cotswolds, Mendip and the chalk.

There are fewer studies of off-site sequences for the historic period than for the prehistoric periods, though some upland and lowland wetland sequences do cover all or part of the last 2000 years. These have the potential to give information on the local or wider environment, depending on the likely catchment of the sampling site. Coverage of the region is very patchy, with most information coming from Devon and Cornwall.

9.2 Arable farming – the use of free-threshing wheat

At some time between the Late Roman period and the later part of the Early Medieval period, a very important change took place in the wheat species cultivated: from predominantly hulled wheat species to free-threshing ones. In the Roman period, Spelt wheat (*Triticum spelta*) was the most commonly grown cereal, with a minority of emmer (*T. dicoccum*), bread wheat (*T. aestivum* s.l.), barley (*Hordeum* sp) and, in the south-west, oats (*Avena* sp). Emmer and spelt are hulled wheats, in the sense that the chaff adheres tightly to the grain, requiring drying and deshusking to free it. Free-threshing wheats such as bread wheat and rivet wheat (*T. turgidum*) or hard wheat (*T. durum*) release the grain readily when threshed, making them much less time consuming to process after harvesting. The different types of remains are readily identified in the archaeobotanical record if chaff is preserved. Free-threshing wheat can be tetraploid (rivet or hard wheat) or hexaploid (bread wheat).

Due to the paucity of settlement-based evidence for crop processing in this period, it is still very unclear

exactly when this important change takes place in different parts of the region. As noted below, the 5th–6th century coastal sites at Bantham and Tintagel do include some possible free-threshing wheat, but not in any quantity, and as noted above, occasional finds are also typical for the Roman period.

It is now also known that cultivation of hulled wheat did not disappear from the record altogether, as shown by the radiocarbon-dated emmer of Saxon date in the upper and middle Thames valley, considered to be a local variation (Pelling 2003, 200). This regional diversity has yet to be seen in the farming record of the South West for this period.

Apart from wheat, other Early Medieval crops are oats and barley (principally hulled barley) with some rye (*Secale cereale*), though possibly not as a principal crop. It is possible that oats and barley were often grown together as a "dredge" for animal fodder, whereas wheat was mainly for human consumption.

9.3 Climate

Although there is not much evidence specifically relating to climate in the Early Medieval period in the South West, there is a possible event in the 6th century that has been widely discussed and would have had a noticeable effect on climate.

Many writers (such as Baillie 1994; 1995; 1999; Grattan and Pyatt 1999) discuss a mystery dust veil observed for several years around 536. The authors cite widespread European accounts describing a veiling of the sun with the consequent effect on warmth, crop ripeness etc. Narrow tree rings in Irish bog oaks, possibly caused by poor growing conditions, were first noted by Baillie (1994). Baillie and many other authors have discussed possible causes including the effects of a volcanic eruption or impact from a comet. Unlike most eruptions, this event does not leave a record in the Antarctic or Greenland ice cores. Grattan and Pyatt (1999) suggest that it may be caused by a minor volcanic eruption which caused gas emissions that were confined to the near surface layer of the lower atmosphere. Whatever the cause, the effect on climate in the mid-6th century was clearly of major significance.

Insect remains from Anglo-Scandinavian York have given an indication of slightly higher temperatures from around 850. The prevalence of the nettle bug (*Heterogaster urticae*) during this period is thought to relate to slightly warmer conditions as the range of the host plant has not altered (Kenward and Hall 1995, 781). There is no comparable evidence from the South West, and both the postulated 6th-century cooling and 9th-century warm conditions would benefit from investigation using palaeoenvironmental techniques, particularly insect analyses.

9.4 Area reviews

A brief summary of present knowledge follows, for each of the physiographic sub-regions – broadly similar to those used in earlier chapters.

9.4.1 Chalk downland (Wiltshire and Dorset)

There are very few studies from this area, mainly because of the lack of suitable deposits. As demonstrated for earlier periods, palaeochannels are a potential source of information, and there is a particularly good example from Market Lavington, near Devizes. A peat-filled palaeochannel of the Easterton Brook was located on a low greensand ridge at the foot of the north-west scarp of the Salisbury Plain chalk. The earliest dated sediments were Iron Age but the most important palaeoenvironmental information comes from the Early Medieval palaeochannel fills where pollen preservation was good. The suite of ten radiocarbon dates allowed the authors to claim that it is the most "comprehensively dated and analysed sequence of Saxon and earlier Medieval deposits in the British Isles" (Wiltshire and Bayliss 2006, 118–121). Wiltshire (2006) presents a very detailed analysis of pollen and fungal spores, between estimated date ranges of sometime before cal AD 420–630 to cal AD 1000–1220 (Wiltshire and Bayliss 2006, 120, Table 18). The Anglo-Saxon settlement and cemetery was set in an open agricultural landscape with cultivation of a range of crops and local grassland, meadow and fen. Larger-scale and more diverse agriculture and horticulture is evident from about AD 900 when *Vitis* (grape) pollen also became evident. While direct evidence for viticulture was not found, Wiltshire considers that vines could have been grown in the vicinity of the settlement, the most suitable location being *c.*0.5km to the south on a south facing chalk slope. The grape pollen could have entered the palaeochannel via pruning or processing waste. This is rare evidence, but documents such as the Domesday Book cite the existence of vineyards in the early 11th century and before. There are no Domesday records of vineyards at Market Lavington, though there are others in Wiltshire (Wiltshire 2006). Both charred and waterlogged plant macrofossils were recovered from the top fill of the palaeochannel and demonstrated the value of multidisciplinary studies where preservation conditions permit. For example, rye pollen was present, indicating cultivation in the catchment, but rye cereal grains were not present either in the palaeochannel or in settlement contexts (Straker 2006a).

9.4.2 Jurassic uplands (Cotswolds and Mendip) and Coastal lowlands (Somerset, Severn and Avon Levels)

Environmental data for these two large areas is severely lacking. There are some reports on charred plant remains and animal bones, but the landscape context is still poorly understood.

9.4.3 Triassic and Devonian hills and valleys (south Somerset, Devon and east Cornwall

The studies that cover this period are from very different types of deposits but all suggest mainly open vegetation. The pollen sequence from a small peat accumulation at Aller Farm, in east Devon starts in the Roman period. The basal of three dates was 120–390 cal AD (GU-2710). The vegetation throughout was mainly pasture, but towards the end of the period (possibly Norman) there was more evidence of arable (Hatton and Caseldine 1991).

In the Blackdown Hills the end of the sequence at Bywood Farm dates to cal AD 990–1025. Pollen analysis shows that pasture with some woodland is accompanied by localised cereal production (A G Brown pers. comm.; Hawkins 2005).

On the Culm Measures of central Devon, Fyfe *et al.* (2004) studied four small sites giving information on local land use on Knowstone Moor and Rackenford Moor. Three cover the Early Medieval period, Middle North Combe (dating from *c.*1000 BC to AD 1400), Hares Down (*c.*300 BC to AD 900) and Lobbs Bog (Late Iron Age to Medieval). The vegetation record for the fourth (Windmill Rough), covers the later Medieval period. From the Iron Age until the 7th century AD, the land use was predominantly pasture, with no decline in human activity in the area, compared to that seen in some upland pollen sequences. From the 7th century, the introduction of a mixed farming system is suggested by expansion in arable and mixed heath at North Middle Combe and Lobbs Bog.

The recent discovery of two 7th-century wells on a spring line in the sands and gravels of the Budleigh Salterton Pebble Beds at Burlescombe, east Devon (Figure 9.1 on the next page), has provided the only dendrochronological dates for the period. The felling date from the earlier of the two wells is spring AD 629 (Tyers 2006; Marshall *et al.* forthcoming). The waterlogged conditions preserved wood, plant macrofossil, pollen and insect remains. The most likely explanation, drawing together the different lines of evidence is that the wells provided a watering hole for passing and local animals, but it is possible that some textile processing was also taking place. The evidence for arable, pasture, meadow, heathland and some managed woodland in the area shows a well-used and varied landscape (AG Brown *et al.* 2006; Gale 2006; J Jones 2006; forthcoming).

On the North Cornwall coast at Tintagel, ten seasons of excavation on the terraced slopes of the peninsula (usually referred to as the Island) revealed the remains of 5th–7th century settlement (Harry and Morris 1997). As both bone and pollen were very poorly preserved, evidence for land use and vegetation relied on the charred plant macrofossils from settlement contexts (Straker in Harry and Morris 1997, 82–108). Fruits and seeds of rough grassland and herbaceous plants were dominant and probably originated from open areas surrounding the settlement. The almost complete absence of heathland species such as heather and gorse suggests that the open island vegetation was mainly grassland. This is also reflected by the charcoal, where only a small amount of gorse (*Ulex* sp.) or broom (*Cytisus* sp.) was found. In contrast, excavations on the "mainland" in St Materiana's churchyard revealed macrofossils of gorse (*Ulex* sp.) and bell heather (*Erica cinerea*) from contexts thought to be associated with burial and feasting (Nowakowski and Thomas 1992; Straker 1992). The scarcity of gathered wild fruits and seeds (rare hazel-nut shell fragments and bramble pips) on the Island, was unusual. Hazel was the most frequently found wood species in both structural contexts and general layers (Gale and Straker in Harry and Morris 1997, 101–6). One possible explanation for the lack of nuts is that hazel was not growing on the island and wood was brought in for building when needed, possibly, to judge from the charcoal, from managed coppice.

Coastal occupation in the 5th–6th centuries AD was also found on the south coast at Bantham, in the South Hams and at Mothecombe, further to the west. At Bantham, two buried soils were separated and overlain by blown sand. Hearths on the ground surfaces included charred plant remains and the artefact assemblage included imported pottery (see page 179). Hulled barley, oats and occasional wheat with rounded grains typical of free-threshing forms were found at Tintagel and Bantham, but virtually no chaff was present to confirm species identifications. At Tintagel, oats were argued to be the principal crop, possibly because of their tolerance to poor acid soils and the exposed conditions of the area. At Mothecombe, abundant oat chaff confirmed the presence of domesticated oats as a crop (Carruthers 2002).

At Bantham, in contrast to Tintagel there was abundant evidence for the consumption of hazelnuts and the weed flora, which included corn spurrey, suggested some local cultivation, with meadow or grassy field verges nearby. The Bantham assemblages also preserved celtic bean and flax from one of the

Figure 9.1: *The plank-lined springhead at Town Farm Quarry, Burlescombe, Devon, during excavation. Dendrochoronolgy has provided a felling date of AD 629 for one of the timbers. Photo: Exeter Archaeology*

hearths. The flax could have been pressed for oil or used in breadmaking (J Jones 2002; Bidwell and Reed in preparation). The buried soils at Bantham were rich in sand and preserved shell and bone. The open environment is also shown by the mollusc fauna from the upper soil, which was probably relatively short sward or patchy dune vegetation (Davies pers. comm.; Bidwell and Reed in preparation). Eighty per cent of the animal bone is from the lower occupation horizon. It is well-preserved and dominated by

domestic species. Of the diagnostic fraction, cattle bones comprise 54%, pig 10% and sheep/goat 8%. Body part distribution indicates that livestock were brought to the site on the hoof and slaughtered locally. Cattle and sheep were slaughtered at the optimum age for prime beef and mutton, whilst pigs were slaughtered at a fairly young age. It appears that the principal meat preferences characteristic of the Roman period (i.e. beef and pork, followed by mutton) continue into the Early Middle Ages. Less frequent species include dog, red deer, roe deer, hare, domestic fowl, crow (*Corvus corone*), gull (*Larus* sp.), mouse (*Apodemus* sp.), amphibian (*Rana*) and fish (Higbee pers. comm.; Bidwell and Reed in preparation). The information gained from a small excavation at Bantham emphasises how much of the record is lacking because of poor preservation of bone and shell in the acid soils at Tintagel.

9.4.4 Moorland (Scilly and west Cornwall, Bodmin, Carnmenellis, St Austell area, Dartmoor and Exmoor)

At Gaverigan, in the china-clay area between St Austell and Indian Queens, pollen spectra were obtained from well-developed podsols buried beneath hedge banks. The hedges are thought to be Medieval (Tinsley 1999a, quoting R Cole pers. comm.) but are not independently dated. The pre-enclosure landscape was open, acid, grass-heathland with occasional stands of hazel and alder, the latter on wetter valley soils. Stands of oak woodland with elm, hornbeam and beech were present at some distance. The existence of well-developed woodland assemblages beneath heathland pollen in the lower parts of some of the Gaverigan profiles is of interest. It suggests a phase of woodland regeneration or possibly persistence in some areas considered to have been open heathland in the Bronze Age. However, the chronology for the vegetation is not clear (Tinsley 1999a). Similarly on Bodmin Moor, Maltby and Caseldine (1984) noted similar post-heathland woodland regeneration at Colliford, and at Stuffle, Walker (in Austin *et al.* 1989) suggested that patches of hazel woodland were growing on free-draining sites as recently as AD 600–700.

Gearey *et al.* (1997; 2000b) discuss the possibility of pre-1200 AD settlement on Bodmin Moor and Dartmoor. They note that sample sites at Rough Tor and Tresellern Marsh on Bodmin Moor and Tor Royal and Merrivale on Dartmoor all show anthropogenic activity in the area before later Medieval settlement. At Tor Royal, a rise in ribwort plantain (*Plantago lanceloata*) together with decreases in tree and shrub pollen continue from the 1st millennium BC. A possible hiatus occurs around the 5th to 7th centuries AD but, after this, expansion of grasses continues and the heather pollen curve is maintained. The authors interpret this as increased presence of grass-dominated heathland. A similar picture is seen at Merrivale, with a marked intensification of activity in the 9th century AD. At Rough Tor, species-rich grassland similar to old meadow communities such as *Cynosurus cristatus–Centaura nigra* grassland (see Rodwell 1991) is evident between the 1st to 4th centuries AD, lasting for about a thousand years. The grassland could have been managed by light grazing and possibly the removal of a hay crop. Gearey *et al.* (1997; 2000b) suggest that a seasonal system of low input land-use, such as transhumance that would have prevented woodland regeneration, would be appropriate for both moorland areas studied. The persistence of the limited evidence for woodland from the 1st millennium BC to the 12th to 14 centuries AD, with no observable increase or decrease, suggests careful husbanding of these resources. The very slight presence of cereal pollen in pre-12th century levels may be short-lived experimentation in cultivation or long-range transport from the lowlands.

On Exmoor, as on Bodmin Moor and Dartmoor, peat on the high moorland continued to accumulate in some locations until the present day. Profiles on Codsend Moor and Hoar Moor (Francis and Slater 1990; 1992) show an expansion of heathland between about AD 610–810, but as with other upland profiles, the dating resolution is not good, particularly for the historic period.

Fyfe *et al.* (2003b) report on studies from three spring mires on Exmoor's southern fringe: Long Breach valley/spring mire (*c.*3500 BC to AD 1300), Gourt Mires (*c.*2400 BC to AD 1000) and Anstey's Combe (*c.*100 BC to AD 1500). These sites allow detailed reconstruction of the local vegetation and show the scale of variation in vegetation type around the southern moorland edge. At Gourt Mires and Anstey's Combe on Molland Common, there is little change in the pollen record and no discernible Roman or post-Roman impact on the largely open, pasture-dominated agricultural system. This suggests cultural stability from the late Iron Age to the Early Medieval period (Fyfe *et al.* 2003a). At around AD 1000, there is a change from pasture to arable and pasture which the authors suggest is some form of convertible husbandry. Fyfe *et al.* (2003a) note that as at Hoar Moor and Codsend Moor on the Exmoor high moorland, (Francis and Slater 1990; 1992) fire appeared to have been used in land management. Woodland persists on slopes in Anstey's Combe, until the later Medieval period and may have been managed for fuel, timber or use in industrial processes.

At Brightworthy, the valley was not cleared of woodland at all until the Medieval period though the land probably still formed part of the upland farming system providing wood pasture, for example (Fyfe

2000; Fyfe *et al.* 2004). Reduction of oak and hazel woodland between AD 800 and 1200 was probably for pasture. Alder growing on the valley floor was also partially cleared, to be replaced by wet grassland supporting meadowsweet, bedstraws, and marsh valerian. Although typical of unmanaged floodplain grassland, these species are also characteristic of some hay meadows. Fyfe (2000) and Fyfe *et al.* (2004) suggest that these changes relate to the establishment of Brightworthy, with clearing and enclosure of both the moorland and valley bottom adjacent to the farm.

Petra Dark includes several sites in the South West in her investigation of landscape continuity and change between AD 400 and 800 (SP Dark 1996). These are the high moorland sites at Hoar Moor (Francis and Slater 1990) and the Chains on Exmoor (Merryfield and Moore 1974; Moore *et al.* 1984), Aller Farm in Devon (Hatton and Caseldine 1991) and Rimsmoor in Dorset (Waton 1982). The Exmoor sites show reduced activity, whereas the others appear to show continuity of exploitation. At the Chains, for example, an increase in heather (*Calluna*), birch and hazel and decrease in cereal pollen is seen. In contrast, the mosaic of woodland, grassland and possible arable showed no change at Aller Farm, whereas changes in tree pollen and increases in herbs continued from the earlier period at Rimsmoor. It should be noted however, that the dating for the Exmoor sites used in the study is not high resolution and, as noted above, moorland edge sites show a rather different picture. The dating at Rimsmoor may also bear reinvestigation.

There are many other potential studies that could have been included, but not all have been studied at sufficient resolution or possess adequate dating evidence. This is mainly because many pollen studies have focused research on prehistoric levels.

9.5 Discussion

Many studies relevant to this period, especially those from the last ten years (Bodmin Moor, Exmoor, central Devon and the Blackdown Hills in particular) have concentrated on building up a picture of relatively local environmental change by studying small catchments. This approach has shown its potential to further understand the setting of early settlements and diversity of local land use, provided that it is supported by high resolution dating.

A key question is whether woodland regeneration took place in the centuries following the Roman period. Once again, good dating is essential to answering this in any but the most general of terms. Some progress has been made, however, with the study by Petra Dark (1996, discussed above) but better dating is needed to fully interpret her findings. Woodland regeneration has been identified after heathland development on Bodmin Moor and in central Cornwall. This contrasts with continuity of pasture and land use between the Late Iron Age and Medieval periods on the Culm Measures, and sands and gravels of central and east Devon. The scarcity of settlement evidence in this area is tantalising, given the continuity of land use implied by the vegetation history. The new evidence from Burlescombe is especially welcome, even though the focus of settlement is yet to be discovered.

It is clear from these studies that in the west of the region, patterns of vegetation change on both upland and lowland were very variable. In the east and north of the region, in the Severn, Cotswolds, Wiltshire and Dorset, data is extremely limited.

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9.6 Radiocarbon dates

See Table 10.1 on page 187.