SOLENT THAMES RESEARCH FRAMEWORK RESOURCE ASSESSMENT

LATE UPPER PALAEOLITHIC AND MESOLITHIC PERIOD

Gill Hey

May 2010

(County contributions by Cathie Chisham, Mike Farley, Juliet Gardiner , Gill Hey, Rebecca Loader and Alison Roberts; palaeoenvironmental contribution by Mike Allen)

Introduction

History of research

The history of research into the Late Upper Palaeolithic (LUP) and Mesolithic of the Solent Thames region has been very variable and the extent of our understanding of settlement is, thus, extremely patchy. The Kennet Valley in Berkshire and the Greensand of Hampshire are amongst the best-known Mesolithic landscapes in Britain and, indeed, assemblages from the Greensand have provided the basis for national flint chronologies for the period. In contrast, relatively little is known about the Mesolithic of Oxfordshire and large parts of Buckinghamshire, with few excavations targeted at sites of this period.

Even in Berkshire, most work on LUP and Mesolithic sites has been concentrated in the middle stretches of the river Kennet, focusing on a few large sites such as Thatcham and Wawcott (Wymer 1962; Lobb and Rose 1996), as this is where the pressure for gravel and other development was originally most intense. Research projects have followed because of the known quality of the resource. Excavation in advance of development in the lower Kennet around Reading, survey work on the Downs and survey and research excavation in the Upper Kennet Valley, mostly undertaken more recently, have all revealed finds and sites of 10th to 5th millennium date (Richards 1978; Ford 1987a; Whittle 1990; Allen 2005). These tend to confirm the clustering of activity in the middle Kennet, at least for the early Mesolithic period.

Similarly, the highly visible scatters of Mesolithic flintwork on the light ploughsoils of the Hampshire Greensand attracted collectors from the 19th century onwards (Rankine 1953; Gardiner 1984). These substantial assemblages, sometimes associated with hearths, were compiled into a database and studied by Roger Jacobi; they formed the basis for his chronology of the British Mesolithic (Jacobi 1978; 1981; Wymer 1977), which has been little altered since (Reynier 2000). It is only in recent decades that work in other parts of the county, largely related to development control work and especially around the Solent, has started to redress this imbalance (Allen and Gardiner 2000; Gardiner 2002; Field 2008).

A particular concern with coastal erosion and a growing recognition of the extent and good preservation of the submerged Mesolithic landscape, has also led to work around the coasts of both Hampshire and the Isle of Wight and, more recently, underwater (Allen and Gardiner 2000; Momber 2000). The publication of the English Heritage funded project at Wootton-Quarr on the north coast of Wight should be of particular significance (Tomalin *et al.* forthcoming). Other work on LUP and Mesolithic sites on the Isle of Wight has tended to focus on the eroding cliff lines to the south-west of the island, the Medina Estuary or the Greensand to the south of the island (Poole 1936; Rankine 1956; Palmer 1977). Early work suggested that there were two groups present: one using heavy tranchet axes, gravers and a few microliths on the coast, and another on the Greensand utilising lighter axes, and more microliths and petit tranchet arrowheads (Poole 1936). More recently, Palmer suggested that these assemblages were, in fact, utilised by a single population but with variation in finds reflecting different activities (Palmer 1977).

Traditionally, most work in Buckinghamshire has been conducted in the south of the county, on the outskirts of London, especially related to gravel extraction in the lower Colne Valley. The site at Iver is particularly well-known (Lacaille 1963), but the quality of preservation of both Late Upper Palaeolithic and Mesolithic sites in the Denham and Uxbridge area (straddling the Buckinghamshire/Middlesex county boundary) has only recently become apparent. Exceptions are the collections made by Peake at Kimble Farm, Turville close to the Oxfordshire border (Peake 1917) and work undertaken at the important site of Stratford's Yard, Chesham (Stainton 1989). A few Chilterns upland sites have also been investigated, for example Bolter End (Millard 1965). More recently, Mesolithic material has emerged as the result of gravel extraction and flood alleviation schemes near the Thames in the Eton/Maidenhead area (Allen forthcoming; Hey and Barclay 2007).

In Oxfordshire, only two major sites have been excavated in recent years specifically because of their Mesolithic component: New Plantation, Fyfield and Tubney and Windmill Hill, Nettlebed (Bradley and Hey 1993; Boismier 1995). LUP and Mesolithic material has also come from major excavations within the Thames Valley, for example Gravelly Guy, Stanton Harcourt and Gatehampton Farm, Goring (Holgate 2004; Brown 1995) and sustained smaller-scale investigations and collections around Abingdon (Abingdon Area Archaeological and Historical Society various), all of these largely the result of gravel extraction. Otherwise, activity is generally deduced from fieldwalking material, with a concentration of sites on the Corallian Ridge and more sparse spreads on the Cotswolds and the Downs, or finds that have been dredged from the Thames (Case 1953; Holgate 1977; Ford 1987).

Chronology

Conventional sequence and artefact chronologies

The start of the Late Upper Palaeolithic is traditionally dated to the end of the Last Glacial Maximum (LGM; around 13,000 BP), a time when only modern humans were present in Britain (Barton 1997). Three main industrial traditions are currently recognised for this period: Creswellian (*c* 13,000 - 12,000 BP), Final Palaeolithic (*c* 12,000 - 10,700 BP) and Long Blade or Epipalaeolithic (*c* 10,700 - 9,800 BP), and all of these have direct affinities with industries on the European mainland, to which South East England was attached at that time. The Creswellian represents the earliest reoccupation Britain following the LGM (Barton *et al.* 2003). The diagnostic artefact for this industry is the bi-truncated angle-backed 'Cheddar point', although it can also be defined on the basis of technological features such as the presence of blades with butts *en éperon*. Although sites were originally believed to be situated at upland margins, more finds are now coming to light from open-air locations in Southern England; the lower half of a Cheddar point has been found at Mingies Ditch, Oxfordshire (Barton 1995).

Final Upper Palaeolithic industries appear to be much more regionally diverse (Barton and Roberts 1996), with a greater variety of tools present than in the Creswellian phase, including curve-backed, straight-backed, tanged and Penknife points and blade-end scrapers. Long Blade assemblages seem to occur at the very end of the Pleistocene and beginning of the Holocene, and may overlap with the earliest Mesolithic. They were defined for Britain by Barton and are mainly found in floodplain or river valleys close to the sources of high-quality, *in-situ* flint (Barton 1986). Unsurprisingly, the technology is characterised by the production of very long blades, commonly heavily edge-damaged blades known as 'bruised blades', but assemblages also include end scrapers and burins as well as microliths (Barton and Roberts 2004).

Diagnostically early Mesolithic assemblages are represented by simple microlith forms (oblique points and broad triangles) with a range of other equipment, including end scrapers, microdenticulates, burins, awls and bifacially-flaked axeheads or adzes (*ibid.*, 342). Where assemblages are of reasonable size, it may be possible to distinguish chronological traits within early Mesolithic groups (Reynier 1998). Earliest, 'Star Carr' assemblages, represented by microliths with broad oblique points, isosceles triangles and trapezoids, have been found as far south as Thatcham (III), Berkshire. Slightly later, 'Deepcar' assemblages, perhaps dating to around 9,400 years ago, have more slender oblique points, with few

isosceles triangles and trapezoids. Later early Mesolithic 'Horsham' assemblages (after around 9,000 years ago), with distinctive basally-retouched microlith forms, are more common and widely dispersed (Barton and Roberts 2004).

Small geometric and more varied microlith forms are the defining characteristics of late Mesolithic assemblages; smaller, and especially rod microliths, are seen as indicative of very late dates (*ibid.*). In addition, adzes and axes seem more common on later Mesolithic sites (Gardiner 1988).

There are, however, many sites which are of uncertain date within the Mesolithic period because they lack diagnostic elements, including many of the lithic scatters listed in county HERs. Additionally, there can be serious difficulties in distinguishing between late Mesolithic and early Neolithic assemblages that lack the diagnostic microliths or leaf-shaped arrowheads.

Scientific dating

Late Upper Palaeolithic
An OSL date of 10,250 BC ± 1,100 years came from the Long Blade site at Crown Acres, from sediments enclosing the assemblage (Barton *et al.* 1998).

The Long Blade site at Three Ways Wharf nearby in Middlesex, yielded horse bone dating to 10650-9650 and 10050-9250 cal BC (OxA-1788: 10270±100 BP; OxA-1902: 10010±120 BP), and peat overlying a newly-discovered site at Sanderson in the lower Colne Valley dated to 8710 - 8340 cal BC (Lab no: 9300±50 BP), providing a *terminus post quem* for that site (Farley 2009, 16).

Early Mesolithic
A number of conventional and AMS dates exist, in particular for Thatcham. These show that activity associated with a Mesolithic material culture started in the area within 2-300 years of the start of the Holocene (10,900-9,700 cal BC; Q-659: 10,365±170 BP; Wymer 1962), comparable with Star Carr in the Vale of Pickering (Mellars and Dark 1998; Dark 2000), the two forming the earliest Mesolithic sites recorded in Britain. It is suggested activity may have existed even earlier in the Holocene at Thatcham and at the nearby Chamberhouse Farm, with Final Upper Palaeolithic culture continuing beyond the end of the Lateglacial (Barton 2004; Wessex Archaeology 2005); overlap of the two cultures or continuity in settlement is feasible in places if not proven. Chisham for Berkshire provides a complete list.

Eleven dates also come from Hampshire:

- Six dates come from Oakhanger VII, on 9200-7900 cal BC (Q148: 9225±200 BP) and others all falling between 8750 and 7550 cal BC (Q1490-4; Gardiner, table 1).
- Two dates from Longmoor Inclosure I, Hampshire for Horsham assemblages: 8300-7700 and 8250-7750 cal BC (OxA-376: 8930±100 BP; and OxA-377: 8760±110 BP)
- Three dates around the middle of the 8th millennium come from Broom Hill, from the bottom of a pit (Pit III; Q-1192: 8540±50 BP; Q-1383: 8315±150 BP; Q-1528: 8515±150 BP; Gardiner, table 1)

(note that a number of these come from wood charcoal, the species of which is not specified).

Late Mesolithic
Although few radiocarbon dates are available, these suggest an overlap between diagnostically early and late assemblages.

At Broom Hill, an assemblage of microliths and other late Mesolithic types was sandwiched between a layer at the bottom of the pit yielding the three dates around the middle of the 8th millennium cal BC (above) and charcoal from the layer above providing 7050-6450 cal BC (Q-1460: 7830±120 BP). Two

more dates from above Pit III and from Pit II hearth are mid 7th to early 6th millennium and mid to late 6th millennium respectively (Gardiner, table 1).

One result from Oakhanger V is very late 8th or 7th millennium in date and two from Oakhanger VII lie in the mid and late 6th millennium (Gardiner, table 1).

A late 7th to mid 6th millennium date came from below the Micheldever R4 barrow, and a hearth in a pit at Wakeford's Copse yielded a 5th millennium date (*ibid.*).

A tree bole at the base of a cliff at Bouldnor on the Isle of Wight produced a date of 6430-6120 cal BC (GU-5420: 7440±60 BP), and a *terminus ante quem* is provided at Wootton-Quarr by a sample of charcoal from sediment overlying the flint scatter of 3630-3110 cal BC (OxA-7183: 4645±65 BP).

There are late 6th and 5th millennium dates from Ascott-under-Wychwood on roe deer from an early Neolithic midden and beech charcoal from a posthole (Bayliss *et al.* 2007). A very late Mesolithic date of 4360-3780 cal BC (BM-449: 5260±130 BP; Froom 1972) came from a hearth at Wawcott (Lobb and Rose 1996).

In Buckinghamshire, late Mesolithic radiocarbon dates have come from Stratford's Yard, Chesham, where a *bos primigenius* bone was dated to 5010-4500 cal BC (BM-2404: 5890±100 BP; Stainton 1989), and the Misbourne Railway Viaduct site, on the floor of the Misbourne, where seven radiocarbon dates were obtained, three of which were late Mesolithic (OxA-601: 6190±90 BP; OxA-618: 5970±100 BP; OxA-619: 6100±120 BP), but others produced both very early, late glacial and post-Mesolithic results.

Environment and Geoarchaeology

River valleys

Major river valley corridors have been the location of major Late Upper Palaeolithic and Mesolithic finds, as described below. In many cases these site were buried under a mantle of alluvium, albeit sometimes thin, retarding discovery and indicating that significant sites may be present beneath blankets of alluvium in other less-well explored areas (eg Allen 1991, 51). Importantly, those alluvial and riverine contexts which are sometimes associated with peats and tufas, provide key stratigraphic sequences from which to obtain geoarchaeological information about sites and their regional and extra-regional context, and extract a detailed stratified palaeoenvironmental record (pollen, snails, ostracods, etc.). The concentration of sites in river valleys demonstrates the attraction of these localities, but the precise nature of activity in its ecotonal setting and how it relates to the local environmental resources and the wider landscape is rarely fully addressed.

Where they survive, faunal remains can provide further key information about animal resources and carcass preparation, and of Palaeolithic and Mesolithic life-styles. Soil micromorphological evidence at Nea Farm, Avon valley, provides indication of soil development in the warmer Alleröd to early Younger Dryas periods, and includes evidence of on-site activity. This lies on weakly calcareous soils and drift geology leading to poor to no bone preservation and no shells (land snails), but other areas may well exist in which these palaeoenvironmental and economic evidence will survive, perhaps in the Middle Kennet and Lower Colne Valleys.

Current coastal and submarine

Geoarchaeologically, sites in present day near-coastal, coastal, intertidal and submarine locations provide whole physical lowland, terrestrial landscapes that have rarely been satisfactorily brought into the reconstruction of Mesolithic lifeways. Just outside the Solent-Thames area, work off the Sussex coast has recovered habitable dated Mesolithic land surfaces, containing charcoal at *c* -36 m below current sea

level. Large portions of the sea-bed in later Upper Palaeolithic and earlier Mesolithic were large lowland landscapes capable of supporting whole ecosystems and hunting-foraging communities. Often trapped within the sediments is stratified detailed palaeoenvironmental information which allows detailed and imaginative reconstruction of large physiographic areas virtually never considered in studies of Mesolithic activity.

Clay and other lowlands
In-situ palaeoenvironmental evidence beyond the river corridors, both *sensu stricto* and *sensu lato*, is desperately lacking. Recent finds of Late Upper Palaeolithic sites at Nea Farm, Somerly, near Ringwood, Hampshire (Barton *et al.* 2009) and just outside the Solent-Thames area, at Deer Park Farm, Cranborne Chase, Dorset (Green *et al.* 1998), demonstrate their presence. Geoarchaeological and sediment micromorphological studies (eg French 2007, 389-9) clearly provide key taphonomic and formation data. Less readily accessible is the contemporaneous palaeoenvironmental material.

Open-air sites on rising ground do exist (see Deer Park Farm, Green *et al.* 1998) and have significant, if restricted, palaeoenvironmental potential (see French 2007), but the low density of artefacts makes them difficult to identify.

Chalkland: a superficial lack of evidence
The broad expanses of the chalklands seem, superficially, only to contain scatters of flints, and there is no palaeoenvironmental evidence to accompany the evidence of considerable activity. Outside the region, long and stratified palaeoenvironmental sequences from local colluvial sequences and well-dated palaeoenvironmental evidence in subsoil hollows indicate the potential for fragmented survival of data which can be used for re-evaluating early Holocene chalkland history (Allen and Gardiner 2009). Little comparable palaeoenvironmental data has yet been recovered from the Solent Thames chalklands to date. Glimpses of Mesolithic woodland from the land snails on Twyford Down, Winchester, Hampshire, indicated a closed deciduous woodland (Allen 2000a, 138-142), but also that the adjacent river valley may have been more open (Allen 2000b; Waton 1982; 1986).

Key Mesolithic vantage points and local colluvial burial
Many physiographic zones seem superficially to be ones of open landscape in which typically only surface Mesolithic sites may occur. These tend to provide relatively-rich artefact assemblages with some spatial patterning, but few contemporaneous deposits or soils from which to obtain proxy palaeoenvironmental data or even contemporary geoarchaeological information. Recent research in South East England is just starting to indicate that, within these landscapes, there are key bluff locations, with excellent vantage and viewpoints. More significantly, however, many of these locations are ones where shallow and highly-localised colluvial deposits may bury, seal, preserve and protect evidence of Mesolithic activity. They provide new topographic locations for Mesolithic activity and it is likely that such sites occur within the Solent Thames region.

Late Upper Palaeolithic

Creswellian and Final Upper Palaeolithic

Around 12,600 years ago, the climate and vegetation was only just recovering from the Last Glacial Maximum (LGM). At Mingies Ditch in the Lower Windrush Valley (Robinson 1993), a sample from a channel in the floodplain gravel contained arctic fauna and flora, including an arctic-alpine species of beetle (*Helophorus glacialis*) and fruit scales and leaves of dwarf birch (*Betula nana*; Late Devensian Zone III; 11,150 - 10,650 cal BC; HAR-8356: 10860± 130 BP; *ibid.*, 7-9). No trees were present, although pollen analysis suggested that clumps of birch and pine grew beyond the edge of the floodplain terrace. An open environment with light tree cover (predominantly birch and pine with some willow) was present in the base of a pollen sequence from nearby, on the higher Corallian Ridge at Cothill Fen (Day 1991, 465), but this can only be dated as being before 8650 - 7900 cal BC (OxA-2114: 9070±1100 BP).

It is thought that, gradually, the landscape became more wooded. Work in the Kennet by the Kennet Valley Project and subsequently, shows an open and relatively unstable Lateglacial environment in terms of sedimentation and hydrology, including high-energy, braided river channels (Chartres 1975; Cheetham 1975; Holyoak 1980; Collins 1994; Collins *et al.* 1996). As warming began at the start of the Holocene, a highly dynamic period of environmental fluctuation followed, resulting in the deposition of thick bodies of calcareous marl in West Berkshire. Subsequently the landscape stabilised, with soil formation and establishment of open aspen-birch-pine woodland.

The only known Creswellian stage find from the region is the Cheddar point found at Mingies Ditch, Oxfordshire (Barton 1993) referred to above, but there is more evidence for activity dating to the Final Upper Palaeolithic. People seem to have used a greater variety and more local sources of flint, and the evidence suggests a pattern of short-lived and seasonal settlement, with open-air sites which seem to represent places where people congregated close to the spring or autumn migration routes of herding animals (Barton 1997, 128). It is possible that, at first, there was long-distance mobility, with groups moving in and out of Britain (Jacobi 1981) but, with more closed habitats, people may have become less wide ranging.

Hengistbury Head, Dorset (Barton 1992) had been the only open-air site so far excavated in Britain and it lies just to the west of our region, but two new sites have recently come to light nearby in Hampshire which will add considerably to knowledge about this period. One of these, Nea Farm, Somerley, New Forest, Hampshire, on the first gravel terrace of the River Avon, has been excavated recently (Barton *et al.* 2009). At present there are only a few diagnostic artefacts from Oxfordshire, most of which have come from gravel extraction sites (for example Mingies Ditch, Hardwick and Drayton Cursus), though some have recently been identified by Alison Roberts in the Ashmolean collections. To date, all seem to have been recovered from the Thames river valley but, given the context of their discovery, this is perhaps unsurprising. A possible tanged point was recovered at '100 Acres' pit in the lower Colne Valley, also in a riverine environment (Lacaille 1963; Wymer 1977).

Long Blade sites

Human activity probably ceased in Britain during the Loch Lomond Stadial or Younger Dryas, a short but very cold period (*c* 10,800 - 10,000 BP) when there was a reversion to arctic temperatures and a tundra environment. Reindeer arrived and other, small mammals only found in northern Scandinavia today. There seems to have been a very sudden recovery from these glacial conditions, with temperatures rising to those similar to today within a period of less than 50 years. Human beings followed soon afterwards, as evidenced by the presence of sites with Long Blades, as well as the scrapers, microliths and burins already mentioned above. The absence of hearths and quantities of burnt flint associated with these sites has led Barton to suggest that they represent short-term occupation events (Barton 1997).

It has been suggested that the edge damage found on 'Bruised Blades' is the result of working hard materials such as wood or antler (Barton 1986), although they may also have been used to replenish the ends of sandstone hammers for flint knapping. Other tools suggest a bow-hunting technology. As already noted, Long Blade sites are mainly found on the floodplain or in river valleys close to the sources of high-quality, *in-situ* flint (Barton 1986). The site at Gatehampton Farm, Goring, Oxfordshire is, thus, in a classic location. It was interpreted by Barton (1995) as a kill/butchery site and its position in the narrow Goring Gap where the Thames has forced its way through the Chalk ridge may not be coincidental. Near Milton Keynes, in the north-east of our region, a large concentration of 'narrow blade industry' flints was found in ploughsoil at Little Woolstone by the Ouzel (Mike Farley pers. comm.).

There are a number of important Long Blade sites not far from Goring, in the Kennet Valley, Berkshire, including Avington IV - with an OSL date of 10,250 BC ± 1,100 years (Froom 1970, 2005; Barton and Froom 1986; Barton 1989; Barton *et al.* 1998), Wawcott XII (Froom 1970, 2005) and Crown Acres (Campbell 1977; Barton 1986; Froom 2005). As with Goring, they were all open sites with a high

proportion of blade waste to retouched pieces. At Crown Acres, the Long Blade horizon appears to lie in sandy marl below a site of early Mesolithic date, both being sealed by peat (Barton 1986, 84). Avington VI is the best stratified, with 6000 artefacts seemingly *in situ* on and within possible colluvial or soliflucted clay with a fine (overbank) alluvial input. Typologically, the artefacts are similar to sites on the Continent where they have been associated with the killing and processing of large game (Bokelmann 1991; Fischer 1991; Larsson 1991). No animal bones have been found on the Kennet Valley sites and environmental preservation was poor, but there was some indication of an open flora at Avington VI (Holyoak 1980).

Further down the Thames Valley, recent work by MoLAS at the Sanderson site between the Colne and the Colnbrook in Buckinghamshire has yielded relatively large flakes which may be of Upper Palaeolithic date within an otherwise early Mesolithic assemblage (Lakin 2006), and at Denham nearby, *in-situ* long blade material has been found during evaluations by Wessex Archaeology (2005). This site was sealed by peat over 2 m deep dated to 8710 - 8340 cal BC (Lab no: 9300±50) and indicating a late cold stage herb/juniper assemblage. Close by, across the county boundary in Middlesex, is the well-known long-blade site at Three Ways Wharf with associated animal bone, including horse dating to 10650-9650 and 10050-9250 cal BC (Lab no: 10270±100 BP; Lab no: 10010±120 BP; Lewis 1991). The flint assemblage from this site is broadly comparable with that from Avington IV.

The Isle of Wight was part of mainland Britain, though divided from present-day Hampshire by the great Solent River. The offshore zone of the northern coast of the island is thought to offer potential for the survival of material of this period that would have lain within the river valley (Momber 2000; 2001; HWTMA 2005; Wessex Archaeology 2004). A thin scatter of finds from the south-west coast of the island was thought by early antiquaries to be of Upper Palaeolithic date, but the identifications are open to question and would merit reassessment.

Landscape and land use in the Mesolithic

Early Mesolithic landscapes

By around 9,000 BC temperate conditions were beginning to lead to an expansion in woodland (juniper, birch, pine and hazel) and woodland animals such as elk, roe deer, pig and beaver were present. This did not occur uniformly, however, for some regions experienced retarded vegetation development, and it is in some of these areas that early human activity is found (Simmons *et al.* 1981; Allen and Gardiner 2009). The appearance of diagnostic Mesolithic tools suggests specialist wood-working equipment (transversely sharpened axes and adzes) and more flexible tool kits with items suited to a mobile lifestyle and hunting small game within a more enclosed setting. The Mingies Ditch environmental sequences show that by 9150 - 8300 cal BC (HAR-8366: 7430± 110 BP) all the species present can be found growing in England today, with birch and willow present with some pine and juniper (Robinson 1993, 9). Half the terrestrial pollen was from grasses, however, indicating a relatively open environment; evidence from Yarnton suggests that the numerous, anastomised channels of the river Thames were free-flowing at this time (OSL date of 9450 - 6850 BC; Robinson forthcoming). The Cothill sequence shows a rise of pine, hazel and elm on the Corallian Ridge, with birch and willow declining, and then oak and later hazel increasing at the expense of pine (Day 1991). The pollen from peat adjacent to a Thames-side stream at Little Marlow is consistent with this environmental reconstruction (Richmond *et al.* 2006).

From the 9th millennium BC, dense thickets of hazel existed in the Kennet Valley, with colonisation of common deciduous types such as oak, elm then lime and alder following soon after (Holyoak 1980, Chisham 2004). Peat formation occurred on the floodplains and low terraces of the rivers Kennet and Loddon, and the deposition of tufa evidenced at a number of sites here and south of the Chilterns, for example in the Misbourne valley at Gerrards Cross (Barfield 1977), was the result of increasing spring

activity fed by calcium-rich water coming off the chalk uplands. Less peat formed or has been preserved around the Thames where erosion then thick alluviation seems to have occurred. Although significant woodland cover was certainly present from the early Mesolithic, indications are that, in the Kennet, a mosaic of small gaps remained, notably at the river margins where there was low-growing herb and grass flora. These persisted through natural gap formation, and appear to have been maintained by grazing herbivores, possibly also beaver (Evans 1975, 88) and also human activity. Molluscan and some pollen studies on the chalk, have shown that open grassland and scrub vegetation in the Lateglacial was followed there by the spread of deciduous woodland in the early Holocene, contrary to the assumption such areas have always been grassland (Waton 1982, 1983, 1986; Evans 1978; Evans *et al.* 1993; Allen 1992; Birbeck 2000).

In the Upper Thames, the distribution of Mesolithic sites along the river valley is striking but many are undated and it is uncertain what proportion of these are of early date; there are certainly early elements at North Stoke and Goring (Ford 1987; Brown 1995), and probably also at Abingdon. There is a noted concentration of early Mesolithic sites on the Corallian Ridge, of which Tubney Wood is a good example (Bradley and Hey 1993). Many of these are situated near the scarp overlooking the Thames Valley, and they may have provided single locations with a number of different environmental niches within easy reach. The site at Tubney seems to have been visited on a number of occasions, but there was evidence of more permanent occupation with a range of domestic activities taking place as well as hunting (Bradley and Hey 1993). The Cotswold sites (eg Ascott-under-Wychwood, Benson and Whittle 2007) and those on the Chilterns (eg Nettlebed, Peake 1915; Kimble Farm, Turville, Peake 1917; and Marline's Sandpit, Bolter End, Millard 1965) are further away from the main river valley, although in the case of the Cotswolds they are often near to tributary rivers and streams. It seems probable that woodland cover was not as dense in these higher areas as on the intermediate valley slopes, and clearings would have provided important areas of resource aggregation.

North of the Chilterns, the area which has received the most intensive archaeological investigation is Milton Keynes, where Williams (in Croft and Mynard 1993, 5-10 and fig. 3) notes the discovery of 'significant quantities of Mesolithic flints, including microliths and large numbers of narrow blades … in both the Ouse valley and its tributaries, the River Ouzel and Loughton Brook'. No specific Mesolithic sites appear to have been excavated or published from the Milton Keynes area, however. It is possible that the geomorphological history of these valleys has led to only limited alluviation and thus the evidence has not been well preserved. Evidence further down the Thames in Oxfordshire, Buckinghamshire and Berkshire reinforces the significance of rivers in the distribution of Mesolithic sites, perhaps as routeways, but also as important sources of plant and animal food, both in the river and on its banks. A concentration of adzes has been found in the river around Goring, although whether these were the result of casual loss or deliberate deposition is debatable.

Even though rising water levels in the Kennet Valley resulted in deeply-buried early Mesolithic sites (Hawkes and Heaton 1993), it is apparent that there is a significant concentration of early Mesolithic sites on low terraces and bluffs in the valley of the Middle Kennet and its tributaries, and the Kennet/Thames confluence area. By contrast, there is a near-absence of known sites along the Loddon (Ford 1997), Whistley Court Farm, Wokingham being the exception (Harding and Richards 1982). At Thatcham Reedbeds five major early Mesolithic lithic concentrations (Sites I-V) were associated with hearths and substantial animal bone assemblages. Approximately 16,000 flakes and spalls, 1,200 blade-like flakes, 280 cores, 285 microliths, 17 axe-adzes, 130 scrapers, 15 awls, six hammerstones and a variety of other flint implements were found, demonstrating intense *in-situ* activity (Wymer 1958; 1959; 1960; 1962; 1963; Churchill 1962). Nearby concentrations occurred at Newbury Sewage Works (Healy *et al.* 1992) and Lower Way and Chamberhouse Farm Newbury (Wymer 1977; Wessex Archaeology 2005) and other substantial early assemblages are found in the wider area which are thought to contain stratified assemblages (Lobb and Rose 1996).

Early Mesolithic material has come to light during fieldwork in advance of the Eton Rowing Lake, on the Maidenhead Flood Alleviation Scheme, especially around Taplow, and at Holyport, Bray (Tim Allen pers. comm.; Ames 1993; Allen *et al.* forthcoming). A number of important sites with large early assemblages are also known in the braided river system of the lower Colne Valley, for example '100 Acres' and Boyer's Pit, Denham and Sandstone, Iver (Lacaille 1963; Wymer 1977), another important area of resource aggregation. The river is fed by the Chess, Misbourne and Alderbourne rivers which cut through the Chilterns chalk and themselves contain infilled late and post-glacial sediments. At Sandstone, the flint lay upon basal floodplain gravels and sands and was overlain by peat, containing predominantly hazel and pine pollen, 'pieces of tree' and a red deer tine, the whole defined as Late Boreal (Mitchell in Lacaille 1963). This deposit was overlain by mud and tufa thought to be the sediments of a local pond or lake and containing some oak pollen and molluscs. Early Mesolithic flint was also found at the Wessex Archaeology evaluation at Denham in association with animal bone (Wessex Archaeology 2005). A sample of wild boar was dated to 8470-8250 cal BC (Lab no: 9131±45 BP).

Other areas in the north of the Solent Thames region appear, on present evidence, to be little used in the early Mesolithic, for example the Vales of Aylesbury and the White Horse and the boulder clay of East of Berkshire (Wymer 1977; Ford 1987). Only light scatters of Mesolithic flint have been recovered from the Berkshire Downs (Richards 1978) and other slopes away from the Thames. Ford (1992, 263) noted that only 13% of known sites in the area come from ridges, hilltops and dry valleys on the chalklands and, although this may be partially explained by the activities of particular individuals like Froom in the Wawcott area, low-lying areas do seem to have been preferred. The distribution of tool types represented may indicate transitory use of the lower Kennet and more specialised activity in the uplands where many tranchet adzes have been recovered (S. Allen pers. comm.; 2005), with an occupation focus in the Middle Kennet. However, Ford (1992) felt the few sites outside the valley were also settlements, though smaller.

Virtually all known early Mesolithic sites in Hampshire are concentrated on the Greensand in the north-east of the county around Oakhanger, Petersfield Heath, Sleaford Heath, Selborne, Trottsford and Kingsley (Clarke 1932; Rankine 1949; 1953; Jacobi 1981). These include some substantial assemblages, for example Oakhanger sites V and VII produced approximately 85,000 and over 100,000 pieces respectively (dates between 9200 and 7550 cal BC; see below, Gardiner table 1). Sites away from the Greensand are relatively few and those that have been recognised, for instance at Sandy Lane, Shedfield and Abbey Wells, Woolton Hill (Draper 1953; 1968; Wymer 1977, 112; Gardiner 1988), are again generally associated with sands and gravels rather than with the chalk which dominates the county's geology. Smaller early scatters may be apparent amongst material collected in a few locations around Basingstoke, for example at Dummer and Bradley (Gardiner 1988), but given the amount of fieldwork on the chalk, this distribution seems likely to be genuine.

Major flint assemblages containing Horsham points are concentrated just to the east of the region, in East Sussex and Surrey, with 'outliers' on the Hampshire Greensand in amongst the distribution of early sites. However, some assemblages from chalkland areas, such as Salt Hill East Meon, Windmill Hill and Butser Hill (Draper 1968) have also produced small numbers of Horsham points and these industries can now be seen to have a sporadic but widespread distribution across the southern chalk, even as far as Cranborne Chase, though their main distribution continues to be peripheral to it. The only other substantial assemblage in Hampshire to incorporate Horsham points is Broom Hill, Braishfield, which is again located on sandy substrate (O'Malley and Jacobi 1978). One area that seems so far to be largely devoid of Mesolithic flintwork is the eastern part of the New Forest, though this may reflect land use and the absence of collectors.

The present coastal plain, with its generally gentle topography and sand and gravel deposits was, in the Mesolithic, incised by a series of relatively deep river valleys running south from the chalk. These were far inland in the Mesolithic period (Allen and Gardiner 2000). Pollen evidence from Langstone Harbour indicates that they contained open grass and sedge environments bordered by flat plateau areas supporting light deciduous woodland and open grassland (Scaife 2000). A pollen sequence from Testwood,

Southampton, also indicated a gradual change from pine and juniper in the 9th millennium cal BC to a more open, semi-deciduous woodland including oak, elm and hazel by the middle of the 8th millennium (Scaife in prep.). As such, this region would have seen high biodiversity and the extensive flint scatters reported from the shores of all the major harbours suggest extensive exploitation of the lowland plain; the intertidal and underwater resource of the Solent harbours has particular potential for the preservation of organic materials and pollen sequences.

Jacobi (1981) drew particular attention to the presence of many Mesolithic flint scatters at or below present tide level all along the Hampshire coastline. Such sites, from Christchurch Harbour in the west to Chichester Harbour and Selsey in the east, were well known to local collectors such as Rankine and Draper, and many thousands of implements had been recovered from foreshore sites (Rankine 1951; 1956; Draper 1951; 1958; Bradley and Hooper 1975; Jacobi 1981; Gardiner 1978; 1984; 1988; Cartwright 1982). Most scatters can be seen to be eroding out of the soft clay margins of the harbours onto the foreshore and it is clear that the material represents extensive exploitation of former dry land rather than a coastal environment.

Lying on the southern banks of the Solent River, the Isle of Wight would have been very close to the southern coastline of Britain in the early Mesolithic and, in many ways, the environment would have resembled that to the north (Allen and Gardiner 2000).

On the Isle of Wight, sites have also been discovered eroding out of banks and cliffs or on the modern shoreline, for example at Werrar on the west bank of the Medina, Newtown East Spit, on the south-west coast, between Wootton and Quarr and at Bouldnor (Poole 1936; Clifford 1936; Scaife 1987; Scaife 1987; Loader 2006; Tomalin *et al.* forthcoming; Momber 2000; 2004; McInnes *et al.* 2001; HWTMA 2005). A number of these sites are probably late Mesolithic in date. Undoubtedly, archaeological investigation has been more intense in coastal areas in recent years, and this may have biased the distribution maps. Nevertheless, fieldwalking in the Wootton-Quarr hinterland has found little evidence of Mesolithic activity (Tomalin *et al.* forthcoming). The Greensand, to the south of the island, has also revealed a number of Mesolithic sites, largely as a result of fieldwalking. Excavations have been few, but an amateur archaeologist digging in the garden of The Wakes, Shorwell, produced nearly 1200 waste flakes and over 400 hundred implements, including scrapers, microliths, gravers, burins, awls and a small pick (Bennett 1966; 1967). Some Neolithic material was also present, but the assemblage has not been systematically studied.

Later Mesolithic landscapes

It is in the south of the region that the most dramatic environmental change occurred during the Mesolithic period, when rising water levels breached the land bridge with Continental Europe, and Britain became an island. The Isle of Wight became separated from England at this time and a coastal environment was established in these areas for the first time for around 25,000 years. The dating of this event remains uncertain, but the most commonly accepted view is 6900 - 5800 BC, or possibly a little later (Tomalin *et al* forthcoming). In the lower Thames Estuary, it is estimated that, between *c* 7950 - 5900 cal BC, sea levels were rising at around 13 mm per year (Devoy 1979), although the tidal reach of the Thames was way below that of today (Sidell and Wilkinson 2004).

On the Isle of Wight and the Hampshire coast rapidly changing sea levels had a significant impact on the whole terrestrial environmental and coastal landscape but also on the nature, presence and distribution of exploitable resources. Picks and tranchet adzes have been recovered from the north coast and the Medina Estuary (Tomalin *et al.* forthcoming), and worked and burnt flints have been found below sea level at Bouldnor, with humanly-modified timbers at *c* - 11 m OD. The distribution of sites shows a marked concentration on the coast and in the river valleys, in particular the Medina.

The present coastal plain of Hampshire would have been far inland in the late Mesolithic; evidence from Langstone Harbour shows that it remained a river valley with an open, grassy hinterland and not a marine environment (Allen and Gardiner 2000). It only really started to become a coastal environment in the Bronze Age; tidal inlets only occurred from the later Bronze Age and Iron Age. Numerous small, late Mesolithic scatters have been found on the foreshore and around the islands of the harbour, some associated with hearths, animal bone and burnt flint, suggesting short-stay visits, probably lasting only a few days at a time (*ibid.*). Both Jacobi (1981) and Wymer (1977; 1996) commented on the comparative lack of late Mesolithic flint sites in Hampshire, excepting those early sites in the western Weald which also had late Mesolithic components, for example Kingsley and Oakhanger III and IX (Rankine 1952; 1953).

Recent work has indicated the widespread occurrence of flint scatters both off and on the Chalk. Many thousands of pieces were recovered from a sandpit at Broom Hill, Braishfield, in the lower Test Valley, where 80% of the microlithic component comprises rods and scalene triangles and over 100 adzes. Radiocarbon dates are again few but span the period 6400–5260 cal BC (Gardiner, table 1; O'Malley and Jacobi 1978). The East Hampshire Field Survey (Shennan 1985) showed that, outside of the main concentrations, there is a generalised scatter of broadly later Mesolithic material spreading across to the western edge of the Chalk, especially in areas capped by clay with flints, while excavations at Southam Common, just 5 km south of Oakhanger, identified several small, dense flint scatters associated with hearths (Thames Valley Archaeological Services 1989; Gardiner 2002). Southam reflects a pattern that is most noticeable away from the Greensand, where sites tend to be discrete, quite small in terms of both size of assemblage and extent, often associated with hearths or possibly pits and to cluster over relatively small areas; this pattern has been confirmed by larger-scale, more systematic surveys (Schofield 1995; Gardiner 2002). Sites are usually located on sandy substrates or on superficial deposits overlying the Chalk, for example at Windmill Hill, Chalton and Butser Hill, in southern Hampshire (Draper 1952; 1968; Gardiner 1988).

Direct evidence for the vegetation of the Hampshire Wealden is lacking, but pollen evidence from the adjacent area of Sussex demonstrated dramatic change from hazel-dominated open woodland to heathland species, especially heathers, during the course of the early Mesolithic (Simmons *et al.* 1981; Garton 1980). Whether anthropogenic factors were involved is not known. This may have encouraged more widespread use of the landscape. The distribution of Hampshire's late Mesolithic sites indicates the importance of river valleys as communication routes as well as favoured areas for settlement. Penetration of the Chalk uplands seems to have been accomplished via major rivers and their tributaries, and the presence of axes and adzes may indicate clearance of the upland forests at this time.

The Upper and Middle Thames Valley was quite heavily wooded by the 7th millennium cal BC, and closed alder woodland prevailed on the floodplain by the mid 6th millennium. Mixed deciduous woodland appeared to be present over much of the valley by the 5th millennium, with alder growing in the valley bottoms and lime, oak, hazel, ash and elm on the better drained gravel terraces and higher slopes (Day 1991; Needham 1992; Robinson 1993, 9-12; Scaife 2000; Keith-Lucas 2000; Branch and Green 2004). Under climax vegetation, channels in the Upper Thames ceased to flow, many subsidiary river channels silted and the floodplain became quite dry; alder trees were growing in the base of channels at Yarnton by 4460 - 4250 cal BC (OxA-10713; 5535±50). The hydrology of the Middle Thames was affected by sea-level rises, the changing gradient of the river creating wetter valley-bottom conditions and encouraging peat formation.

The late Mesolithic is comparatively poorly represented in the Kennet Valley, in both artefactual remains and dated layers or sites. However, several late Mesolithic sites are known, including those which show long-term use, notably Wawcott Sites XV and XXX (Froom 1976b; Froom *et al* 1993), and others where small discrete clusters appear to represent short-term events, for example Wawcott III (Froom 1976b). In addition, finds for the later period are more prevalent in East Berkshire, and to the west at Avebury and the headwaters of the Kennet where, conversely, there is little evidence for early Mesolithic activity (Ford 1987a; Lobb and Rose 1996). It may be that increasing waterlogging within the valley bottoms (Holgate

1988; Healy *et al.* 1992; Evans *et al.* 1993), while it might not have created conditions unfavourable to settlement and exploitation (Whittle 1990), may have changed patterns of settlement and land use. Once again, the picture seems to be of smaller groups moving over more extensive and varied territories.

Elsewhere in the Thames Valley and its catchment, most later Mesolithic activity seems to be related to rivers and water courses, a pattern already observed for Hampshire. Sites such as Gravelly Guy, Kidlington Lock Crescent, Abingdon, North Stoke and Goring provide evidence of activity on the gravel terraces and floodplain of the Upper Thames. Work in the Eton area has produced scatters and *in-situ* deposits of late Mesolithic flint (Allen *et al.* forthcoming). These were often found on riverside locations, with tools often on levées on the banks of palaeochannels and *in-situ* knapping sites on the adjacent floodplain. It may even be possible to detect tracks through the woodland beyond, by the thin trails of artefacts left behind on these, largely-intact landscapes (Tim Allen pers. comm.). Major sites have been found at Jennings Yard, Windsor (Hawkes and Heaton 1993), Park Farm, Binfield (Roberts 1995), which lies on raised ground overlooking the river valley, and Moor Farm, Holyport, in Bray (Ames 1993). A number of sites have also come to light in south Buckinghamshire, for example Fulmer in the Alderbourne Valley, Bucks (Farley 1978) and the Misbourne Railway Viaduct site on the floor of the Misbourne, where small flint assemblages were found associated with animal bone: aurochs, red deer, wild pig, roe dear and small amounts of beaver, wild cat, otter, badger and possibly pine martin (Farley 1983; Wilson in Farley 1983). Seven radiocarbon dates were obtained, three of which were late Mesolithic (OxA-601: 6190±90 BP; OxA-618: 5970±100 BP; OxA-6100±120 BP), but the others are both very early and late.

Robin Holgate's model of late Mesolithic activity in the Thames Valley postulated short-stay or base camps on the terrace edges adjacent to rivers with task-specific sites on the upper slopes (Holgate 1988). He thought that increasing utilisation of upland areas may have been related to the increased importance of hunting ungulates as part of food-gathering strategies. Recent work suggests more activity on the floodplain than he anticipated, but also few large sites in any location. It is the case, however, as he argued, that microliths are more numerous in upland assemblages, with fewer tranchet adzes or axe-sharpening flakes (*ibid.*, 74-6). The evidence is, perhaps, more consistent with small and mobile groups exploiting many different environments according to resource availability, need and inclination.

In summary, it still seems to be the case that in the early Mesolithic sites on sandy geologies were favoured, whether this was the Corallian Ridge in Oxfordshire or the Hampshire Greensand. These naturally acidic soils would have produced distinctive combinations of vegetation and resources, encouraging repeated occupation of traditional hunting and foraging grounds. Sites seem to have been preferentially positioned on scarps, bluffs and slopes overlooking watercourses or arranged along springlines, and these are locations also favoured in river valleys such as the Kennet and the Lower Colne Valley. They would have provided optimal environments for the exploitation of a range of resources and for the congregation of communities, probably at specific times of the year, in areas with a good and constant water supply. Large assemblages probably represent the repeated use of a favoured sites for many generations.

In the late Mesolithic, resource exploitation and land use seems to have changed. Smaller sites are found over a much wider range of geologies and topographies, but the presence of nearby water remains an important factor in site choice. River valleys became increasingly utilised. Referring to Hampshire, Julie Gardiner notes that 'in general, the largest and most complex assemblages are still those that are located on the sands and we can envisage the regular movement of smaller groups of people along the river valleys penetrating the Chalklands in search of seasonal resources and/or on hunting trips', and this seems to be a situation that applies over much of our region.

Social organisation and settlement

Like much of the rest of the country, there is too little evidence to say much about social organisation in the Solent Thames region during the Mesolithic. As Julie Gardiner points out, the notion of seasonal movements with the coming together of small groups in so-called base camps at particular times of the year is a now well-rehearsed explanation of Mesolithic lifeways and there is nothing to contradict this view in the current evidence. What we may see, however, is an increasingly wider range of movements through the period, with new areas gradually being drawn into the seasonal cycle. Whether this reflects a perceived need for new 'territory', an increase in the range of available natural resources or changes in the character of resource utilisation by animals resulting from climatic and vegetation changes, or change in social organisation is impossible to tell. It is unfortunately the case that, even where the range of environments within the locality of particular sites is described, the dynamics of the exploitation of the wider resource base by the people who used those sites is rarely considered, even when the proxy palaeoenvironmental data is has been retrieved and reported upon. Clear integration of palaeoenvironmental records to discriminate between local resources and those obtained from wider afield can not only provide an understanding of social and economic activity on site but also that of wider Mesolithic economies. An apparent uniformity of tool traditions, despite the changing technology and environment of the time is interesting, and might point to widespread communication between groups and maintenance of longer-distance ties.

More effort needs to be expended on defining the seasons, or seasonality of site occupation, whether long or short term, and resource exploitation. Such information can be derived from the seasonality of various plant and animal foods, for example that recently derived from the study of animal bones, particularly deer, at Thatcham (Carter 2003). This not only aids interpretation and understanding of the use and activities performed at any one location, but also helps define seasons and allows us to focus attention upon those for which we have no direct evidence. Seasonality is inextricably linked with community mobility, social economy and resource territories. It also provides evidence of total food diet throughout the year and not just at one particular location. The absence of Mesolithic human remains from the region precludes a number of new and extremely useful methods of studying diet, for example isotope analysis from teeth and other human bones, in contrast to the possibilities in Scandinavia, for instance. Nevertheless, holistic examination of both the plant food and meat evidence from a number of sites should start to build up a picture of the total food diet.

Aggregation sites

The vast majority of Mesolithic finds recovered in the region have been from disturbed contexts. Nevertheless, some sites do survive, usually buried beneath alluvium or peat on valley floors with evidence of hearths, intact surfaces and *in-situ* flint spreads. It is necessary to reconstruct the local site-based lived-in environment in all its components, soils, hydrology, vegetation and animal resources and be aware of the spatial distribution of these components both in the immediate vicinity and the wider landscape. When this has been done, a framework for much higher level of human-nature relationships can be created and modelled.

Where sites lie on the surface without vertical stratigraphy or nearby contemporary deposits from which to obtain proxy palaeoenvironmental data, geoarchaeology, soil and sediment micromorphology can help to elucidate more precisely the taphonomy of lithic scatters, although it can be difficult to ascertain whether the deposits in which the material is found is contemporary with them (*cf* pollen and flints from La Sagesse; Conneller and Ellis 2007). At La Sagesse, Romsey, Hampshire, like many other sites, the clear patterning in the flintwork shows that they retain some spatial integrity but have lost their precise original position. Paedogenesis and minor sediment movement have resulted in the artefacts being vertically moved with some lateral displacement. This activity largely occurred as a result of soil formation processes during increased vegetation growth many millennia later; the pollen reflects this later vegetation and paedogenic activity and not that relating the Mesolithic flint deposition.

Recent work in south-east England is indicating that highly-localised colluvial benches in key topographical locations may provide glimpses of the data lost in these open sites (see above; Allen *et al.* 2008a; 2008b).

Surfaces

The five early Mesolithic sites at Thatcham Reedbeds (Sites I-V) comprised hearths associated with substantial animal bone and flint assemblages, with a great variety of tool types present. Intense *in-situ* activity seems to be represented (Wymer 1958; 1959; 1960; 1962; 1963; Churchill 1962), as at a number of nearby sites, such as Newbury Sewage Works (Healy *et al.* 1992) and Lower Way and Chamberhouse Farm Newbury (Wymer 1977; Wessex Archaeology 2005); some sites appear to contain stratified assemblages (Lobb and Rose 1996).

A possible working floor has been claimed at Gerrards Cross in the Misbourne Valley (Barfield 1977) with an assemblage associated with flint-rich gravels which includes two core axes and four axe-sharpening flakes, but Neolithic material is also present and it is hard to disentangle the remains.

The association between substantial early Mesolithic flint assemblages and hearths on the Hampshire Greensand has already been noted, as have the numerous small late Mesolithic scatters with hearths associated with animal bone and burnt flint at Langstone Harbour and elsewhere on the Hampshire coast; in the former case inter-site patterning was revealed (Allen and Gardiner 2000).

In a more unusual environment, material found beneath the Neolithic long barrow at Ascott-under-Wychwood in the Cotswolds suggests midden accumulation in both the early and late Mesolithic (Benson and Whittle 2007).

Structures

Mesolithic structures are incredibly rare nationally, although a few stake-built houses have come to light in recent years. Some kind of tented structure has been suggested for a series of pits and possible stakeholes at Wakeford's Copse, Havant (Bradley and Lewis 1974) and a sub-circular arrangement of postholes associated with a pit at Broom Hill, Braishfield, in the latter case associated with a vast assemblage of flintwork and other pits (O'Malley and Jacobi 1978; Jacobi 1981). In neither case have these suggestions met with universal agreement. The similarity of the Broom Hill 'structure' with those recently-excavated further north at Howick, Northumberland, Dunbar and Ronaldsway on the Isle of Man, shows that its original interpretation may be correct and it merits reappraisal. Another substantial assemblage, radiocarbon dated to around 4800 cal BC, was excavated at Bowman's Farm near Romsey where it was thought to have been associated with structures represented by ring-slots, but these have since been re-evaluated as belonging with Iron Age activity on the site (Green 1991).

Claims have been made for temporary shelters or windbreaks at Wawcott (Froom 1972; 1976) and Stout (1994, 9) proposed a stakehole hut or shelter in the Earley Water Meadows near the Thames at Broken Brow, but these have not been verified.

Wymer (1958, 31-32, after Money and Richards 1895) suggested a pile structure with associated flints in the peat at Bartholomew Street, Newbury might be Mesolithic and a dug out butt-ended ditch at Thatcham was identified as a possible fishtrap (Wymer 1963, 46).

Activities

There is a range of activities indicated by assemblages that would conventionally be described as representing base camps (Mellars' 'balanced assemblages'). At these sites, tools include those for cutting and for plant and animal food preparation and processing (eg Tubney, where the high proportion of microdenticulates on this site was suggested to be linked to plant-food processing), working bone, antler or wood (Windmill Hill, Nettlebed), processing skins and hides (Nettlebed and Tubney) and making and rejuvenating the tools needed to undertake these tasks. Tranchet axes from Goring may suggest deliberate tree clearance.

The sites in the Kennet Valley indicate home-base sites visited time after time or even ones in continuous use through the early Holocene are indicated. Use-wear analysis at Thatcham Sewage Works gives some indication that wood-cutting was carried out but an emphasis on scraping eg hides and cutting soft plant material eg roots and tubers, was suggested for the northern concentration, which appears to be later than the southern (Healy *et al* 1992, 59). Use on harder material such as antler and bone, including boring and whittling, may have dominated the southern site. A functional difference is indicated and, if the sites were of different ages as suggested, different specialisms took place at Thatcham at different times. With only one likely projectile point and little bone, there was little evidence of hunting or butchery.

Possible charred fibres have been found in Mesolithic peats at Culham Reach (Wessex Archaeology), which may indicate clothing or other textiles. Evidence for the preparation of mastic has been found at Thatcham (Roberts *et al.* 1998).

A number of sites have yielded evidence of multiple activities with what are probably palimpsest assemblages showing small task groups engaged in variety of subsistence activities repeatedly occupying the same location, as suggested for Windmill Hill, Nettlebed (Boismier 1995, 18). At this site these activities included, core preparation and reduction, tool manufacture, use and rejuvenation of a variety of tools used in working bone, antler or wood, and processing skins (*ibid.*). At Tubney, successive episodes of activity also seemed to be present and seem to represent hide preparation, food preparation and microlith manufacture. This may be a more accurate way of describing sites that had previously been considered to be base or short-stay camps, such as that suggested for Gravelly Guy, where cutting, scraping and engraving tools were being used, microliths produced and axes sharpened. The early settlement activity at Ascott-under-Wychwood was suggested to be of some duration and included microlith manufacture and tool use; the late assemblage probably represents short visits rather than prolonged stays.

Hunting and gathering strategies

Hunting and gathering strategies seem to have been based on river resources, on the mosaic of clearings around the river and less densely-wooded upland areas. The Corallian Ridge may have been seen as an advantageous site from which to observe animals, but also exploit wide range of environmental niches from the sandy ridge to the valley bottom of the Thames.

Faunal remains from early Mesolithic sites are common, showing presence and exploitation of a wide range of types for food and, potentially, fur and sinews. At Thatcham these included pike, mallard, crane, goldeneye duck, hedgehog, watervole, hare, beaver, fox, pine martin, wildcat, red deer, roe deer and aurochs. Domestication of dogs is also evidenced. Normally red deer and roe deer were favoured but at Faraday Road and Thatcham, butchered wild boar remains dominated the onsite Early Mesolithic assemblages (Ellis *et al.*2003, Carter 1976). At the Late Mesolithic sites at Wawcott only red deer and wild cattle continued to be recorded for the large herbivore types (Froom 1976, Carter 1976). Carter (2001) assessed the age at death of six immature red deer (*Cervus elaphus*) specimens from Thatcham from tooth development and suggested that killing took place in at least late summer/autumn and winter. Interestingly, isotopic analysis of a humerus recovered at Thatcham suggests a diet lacking in freshwater

fish as well as marine sources, with similar results for a dog bone also found at the site (Schulting and Richards 2000).

Wild cattle, red deer, wild pig and roe deer were found at Stratford's Yard, Chesham (Grigson 1989), along with charred hazelnut shells; a radiocarbon date of 5010-4500 cal BC (BM-2404; 5890±100 BP) was obtained on a bos primigenius (check) bone (Stainton 1989).

Contrary to the traditional view, there is no evidence for seasonal population movements to follow deer migrations in the Kennet Valley. Few sites have been identified on the Chalk, while temporary sites with evidence of deer hunting have been found in the lowlands, for example Ufton Green and Faraday Road (Allen and Allen 1992; Chisham 2004; Ellis *et al.* 2003), indeed, herbivores would have gravitated to water sources. The distribution of tool types suggests upland-lowland site differentiation by specialist task rather than by hunting or season.

Hunting sites have been identified elsewhere. At Rollright, high up on the Cotswolds, a knapping scatter is interpreted as one or more individuals carrying a flint-working toolkit and manufacturing or repairing hunting equipment on the spot (Holgate 1988b, 90). Sites around South Stoke and Goring in the Goring Gap, may represent more frequent hunting visits, while individual microliths found in the landscape may represent tools lost during hunting expeditions.

Apart from the evidence from microwear analysis on tools, evidence of food remains is very slight, the exception being the common discovery of charred hazelnut shells. An assemblage of 120 charred hazelnut fragments reported by Scaife (in Healy *et al.* 1992, 65) at Newbury Sewage Works indicates at least autumnal use of the site, although storage was possible.

Interference in the landscape

Childe (1931) suggested over 75 years ago that the introduction of picks and adzes was part of Mesolithic human adaptation to their woodland environment in general, and tree clearance in particular. Nevertheless, the extent to which Mesolithic populations modified their physical environment remains uncertain, though evidence continues to mount for at least some interference in the woodland vegetation (eg Dennell 1983; Mellars 1975). It is highly likely that management of woodland by fire existed, but there is little tangible palaeoenvironmental evidence for this, only generalised interpretations and suggestions from pollen diagrams. Much clearer and directed research in this region is needed to identify and model these activities. Areas such as Denham, Buckinghamshire, for instance, have high potential to yield stratified sequences (pollen) and possibly identifiable inwashed charcoal.

Repeated phases of small patch burning of both the dry terrace edge and wetland landscapes occurred during the early Mesolithic occupation of Thatcham, dated to between 9150-8600 and 7950-7520 cal BC (AA-55303: 9480±68 BP; AA-55308: 8629±82 BP; Chisham 2004), a pattern mirrored in the nearby, contemporary sequence at Woolhampton. Charred *Carex* sp. nutlets associated with a peak in a major phase in landscape burning in the floodplain peat and dated to 8,480-8,230 cal BC (AA-55306: 9,134±65 BP; *ibid.*) might indicate late summer activity, assuming the nutlets burnt on the stem. On the other hand, no evidence of burning other than local hearths was found at the more temporary hunting site at Ufton Green, perhaps indicating a pattern of interference in the vicinity of major settlements related to navigation, access and encouragement of specific resources (*ibid.*). Hints of Mesolithic impact on the vegetation were also described for Charnham Lane, Hungerford (Keith-Lucas 2002).

The Kennet valley is blanketed by varying depths of calcareous silty loessic alluvium which has largely eroded from the interfluves (Evans *et al.* 1993). It extends for many kilometres along the Kennet valley and presumable indicates removal of considerable soil mantle from the interfluves changing their character significantly. It is presumed that the mechanism and cause was essentially deforestation, but palaeoenvironmental evidence has yet to confirm, elaborate upon, or refute this.

Although woodland was the dominant feature of the Upper Thames Mesolithic landscape, there is little direct evidence for woodland clearance, with the exception of the quantities of charcoal found in the Cothill cores by Petra Day and suggested by her to be the result of human clearance of the pine woodland on the Corallian Ridge at around 8800 - 7700 BP (Day 1991, 465). This coincides with what appears to be the period of most intense use of this landscape, providing some support for her hypothesis (Bradley and Hey 1993). Additionally, there are many indications that some clearings were used perhaps opportunistically at first but then repeatedly, suggesting that they were maintained by humans, assisted by fauna (for example at Ascott-under-Wychwood and around the Abingdon and Eton areas). Numbers of tranchet adzes from Goring may indicate deliberate tree clearance (Brown 1995).

Exploitation of other natural resources

Although there is some use of larger flint nodules from the river gravels, the use of good-quality flint occurs probably on most Mesolithic sites. There is no evidence for flint mines during this period, and the material could all have been recovered from surface deposits.

In the Kennet Valley, for example, assemblages are dominated by high-quality flint from the Chalk, requiring short-distance importation from exposures and outcrops, with material being brought to sites as pre-prepared cores (eg Ford 1997, 3-5; Hawkes and Heaton 1993, 12). But there is some local use of lower-quality material taken from the London Clay and from river gravels, for example at Holyport (Ames 1993) and Thatcham. The site at Stratford's Yard, Chesham could be related to exploitation of flint on valley slopes of the Chilterns. Five horizons above river gravels and sealed beneath colluvium yielded over 34 cores and in excess of 300 struck flakes, along with some 49 microliths including scalene triangles and rods of the narrow blade tradition, scrapers, a tranchet and two sharpening flakes (Stainton 1989).

In the north of the region, the majority of flint found has been brought over a great distance, for example sites in the north of Oxfordshire, such as Rollright, where high-quality flint is found. Thus people moved over long distances to acquire important resources, or they exchanged materials with neighbouring groups.

It has been suggested that the people making short-stay visits to the Langstone Harbour area were largely concerned with the procurement of large flint nodules from the Bracklesham Beds (Allen and Gardiner 2000). These would have been exposed in river cliffs and gravels and were used to make adzes and other core tools as well as flake and blade tools. Significantly, nearly all the tranchet adzes and sharpening flakes recovered during the recent Langstone Harbour survey are made of chalk flint indicating that, whatever the local flint was to be used for, the visitors brought their own adzes with them and took some of them away again. The restricted range of forms and lack of processing tools suggests that items were being manufactured here and removed for use elsewhere.

A variety of stone sources was used on the Isle of Wight, including the good-quality grey-black flint found during the Wootton-Quarr survey, but local gravel flint seems to have been used too, for example at Werrar and Newtown. Chert is also available on the Island, and was exploited for use as picks amongst other purposes.

In Hampshire, there was a change through the Mesolithic from the use of generally poor-quality, small-size nodules available in the river gravels and Greensands to the much larger and generally better-quality material derived from the tertiary beds in the south of the county and, especially, from the chalk. The majority of Mesolithic flint tools are small and easily portable but, increasingly, high-quality raw material was needed in order to produce the small, precise, fine blades from carefully prepared cores that

characterise the later assemblages. There was also an increase in the production of 'tranchet' adzes and large core tools that required the availability of very large, quality nodules. Like Neolithic polished axes, these tools were in use for many hundreds of years and it is very difficult to trace their development closely, but Gardiner (1988) found that the vast majority occur on the upland chalk, particularly in areas covered by clay with flints where they were probably made, but, significantly, the remainder are very widely spread with comparatively few in the Mesolithic 'heartlands' of the Greensand belt. In other words, they mirror the pattern of Late Mesolithic flint distributions much more closely than they do that of the earlier sites. It is reasonable to assume that communities moving into the flint-rich areas and encountering this resource would have collected sufficient for their own needs, if not for the wider community, presumably carrying away roughouts or finished items rather than predominantly raw materials.

Funerary and ritual practices

There are certainly no known cemeteries or even single burials from these periods. The only certainly Mesolithic human remains is a humerus recovered from a flood deposit below the occupation site at Thatcham (Brothwell in Wymer 1962, 355). Three human skulls were also reported by Silus Palmer as coming from the peat at Halfway, Thatcham near red deer antlers (Palmer 1872-5; Wymer 1958), but they have not been dated and their whereabouts are unknown. No human remains from river in the region have as yet been dated to the Mesolithic period. It can be surmised that treatment and disposal of the dead was conducted away from living sites and was thorough, for example cremation and the scattering of remains or excarnation. It has been suggested (Barton *et al.* 1995) that there was long-distance transport of remains to coastal regions where the few inhumations of the period are to be found, but this seems unlikely.

There may be some evidence in the Solent Thames region of deposits that seem to be the result of special rather than day-to-day activity. An inverted red deer skullcap and antlers were found above the ground surface at Thatcham, with a battered antler beam propped up against it and knapping waste to one side (Warren 2006, 24-5; Wymer 1962), indicating the inclusion of ritual practice into a more mundane task. It has also been suggested that the large groups of animal bone found at the contemporary lake edge of many of the Thatcham sites is the result of deliberate acts of deposition (Chatterton 2006, 103-4). A skeleton of an aurochs with microliths embedded into its sinus region alongside the horn of a red deer was found in the same area (*ibid.* 104).

It is possible that at least some of the picks and adzes dredged from the river near to Goring could be the result of deliberate deposition. The deposition of finds within tree-throw holes has been evidenced at Gatehampton Farm, Goring and also on the Eton Rowing Course and the Maidenhead Flood Alleviation Scheme (Brown 1995, 80-1; Lamdin-Whymark 2008). Although there was no evidence of formal structuring of this material, it was clearly deliberately deposited and demonstrates an intimate link between people and their natural woodland environment. It may have been seen as a way of replacing things retrieved from the pits, for example flint nodules that may have been exposed when trees fell (Carew *et al.* 2006).

Material culture

Aside from flint tools, there is a paucity of material culture associated with Mesolithic sites. These were mobile communities whose possessions would have been easily carried and who had no tradition of manufacturing artefacts from durable materials; we may not recognise collected natural items even if they survived.

Tools made from animal bone and antler include needles at Thatcham, for example, and, of course, these objects show that clothes and objects were made from organic materials which have not survived. A single bone spearhead, apparently unique in the British Mesolithic and resembling a Palaeolithic type, was found with the Early Mesolithic assemblages at Thatcham (Wymer 1963). Traces of ochre were found at Thatcham (Wymer 1963).

Otherwise, material culture is confined to flint artefacts and occasional objects made from Greensand/Portland chert and other stone where this was easily accessed, for example the use of sandstone for pebble maceheads (Roe 1979). Several chert maceheads recorded in the Isle of Wight HER may be Mesolithic in date. In addition, although few have been analysed, this collection is believed to contain examples made in non-local stone. Occasionally chert objects are found away from their source, for example the Dorset chert axe found at Wawcott (Froom 1963d, 1972b, 1976a).

Becoming Neolithic

None of the late Mesolithic sites so far investigated in the Solent Thames area have ever yielded pottery or the remains of domesticated plants or animals and there are no other signs of emerging Neolithic culture, such as monument construction or burial of the dead (Schulting 2000). Where Mesolithic and Neolithic sites are discovered in the same locality, as they often are, they are either disturbed or the Neolithic material is stratified above the Mesolithic remains. Radiocarbon dating of some sites, for example Ascott-under-Wychwood (Benson and Whittle 2007) has tended to show a gap in time between these episodes of activity.

Late Upper Palaeolithic and Mesolithic Bibliography

Allen, J R L, and Allen, S A, 1997 A stratified prehistoric site from the Kennet floodplain at Ufton Nervet, Berkshire, *Berkshire Archaeological Journal* **75,** 1-8

Allen, M J, 1991 The environmental (molluscan) evidence, in The investigation of the prehistoric landscape along the route of the A303 improvement between Andover, Hampshire, and Amesbury, Wiltshire (P S Bellamy), *Proceedings of the Hampshire Field Club Archaeological Society* **47**, 5-81

Allen, M J, 1991 Analysing the landscape; a geographical approach to archaeological problems, in *Interpreting artefact scatters: contributions to ploughzone archaeology*, (ed. A J Schofield), Oxbow Books, Oxford, 37-54

Allen, M J, 1997a Landscape, land-use and farming, in *Excavations along the route of the Dorchester by-pass, Dorset, 1986-8*, (eds R J C Smith, F Healy, M J Allen, E L Morris, I Barnes, and P J Woodward), Wessex Archaeology Report No. **11**, 277-283

Allen, M J, 1997b Environment and land-use: the economic development of the communities who built Stonehenge; an economy to support the stones, in *Science and Stonehenge*, (eds B Cunliffe and C Renfrew), Proceedings of the British Academy, Oxford, 115-144

Allen, M J, 2000a Wood, farm and field: landuse history of Twyford Down; land snail evidence, in *Twyford Down, Hampshire: archaeological investigations on the M3 Motorway from Bar End to Compton, 1990-93*, (eds K E Walker and D E Farewell), Hampshire Field Club Monograph **9**, 138-142

Allen, M J, 2000b Landscape and economy: a discussion of the environmental evidence. in *Twyford Down, Hampshire: archaeological investigations on the M3 Motorway from Bar End to Compton, 1990-93*, (eds K E Walker and D E Farewell), Hampshire Field Club Monograph **9** 158-9

Allen, M J, forthcoming An environmental archaeology and geoarchaeological revolution?, in *The New Antiquarians: 50 years of archaeological innovation in Wessex*, (ed. R Whimster), CBA Research Report, York

Allen, M J, Carter, R, and Maxted, A, 2008a Rapid field investigation methods and a new Mesolithic site approach for the Weald, UK, *PAST* **59** (July), 5-8

Allen, M J, Maxted, A, and Carter, R, 2008b A new Mesolithic for the Weald? Rapid geoarchaeological survey at Chiddinglye Wood Rocks, West Hoathly, *Sussex Past and Present* **115** (August), 4-5

Allen, M J, and Gardiner, J, 2000 *Our changing coast. A survey of the intertidal archaeology of Langstone Harbour, Hampshire*, CBA Research Report **124**, York

Allen, M J, and Gardiner, J, 2009 If you go down to the woods today. A re-evaluation of the chalkland postglacial woodland: implications for prehistoric communities, in *Land and people: papers in memory of John G Evans* (eds M J Allen, N Sharples and T O'Connor), Prehistoric Society Research Paper **2**, 49-66

Allen, M J, and Scaife, R, 2007 A new downland prehistory: long-term environmental change on the southern English chalklands, in *Prehistoric and Roman landscapes; landscape history after Hoskins*, (eds A Fleming and R Hingley), Windgather Press, Macclesfield, 16-32

Allen, S, 2005 Mesolithic hunter-gatherer exploitation of the Marlborough Downs, in *The Avebury landscape: aspects of the field archaeology of the Marlborough Downs* (eds G Brown, D Field D and McOmish) Oxbow Books, Oxford, 95-102

Allen, T G, 1995 *Lithics and landscape: archaeological discoveries on the Thames Water pipeline at Gatehampton Farm, Goring, Oxfordshire 1985-92*, Thames Valley Landscapes **7**, Oxford

Allen, T, Barclay, A, and Cromarty, A M, forthcoming *Opening the wood, making the land: The archaeology of a Middle Thames landscape: Mesolithic to earlier Bronze Age*, Thames Valley Landscapes, Oxford

Ames, R E, 1993 A Mesolithic assemblage from Moor Farm, Holyport, near Maidenhead, *Berkshire Archaeological Journal* **74**, 1-8

Barfield, L H, 1977 The excavation of a Mesolithic site at Gerrards Cross, Bucks, *Recs Bucks* **20** (3), 308-36

Barton, R N E, 1986 Experiments with long blades from Sproughton, near Ipswich, Suffolk, *Studies in the Upper Palaeolithic and Britain and Northwest Europe* (ed. D A Roe), BAR Int Ser **296**, Oxford, 129-41

Barton, R N E, 1989 Long Blade Technology in Southern Britain, in *The Mesolithic in Europe* (ed. C Bonsall), John Donald, Edinburgh, 264-71

Barton, R N E, 1992 *Hengistbury Head, Dorset, Volume 2: the Late Upper Palaeolithic and early Mesolithic sites*, Oxford University Committee for Archaeology Monograph **34**, Oxford

Barton, R N E, 1993 Late Upper Palaeolithic Flints , in *The prehistoric landscape and Iron Age enclosed settlement at Mingies Ditch, Hardwick-with-Yelford, Oxfordshire*, (T Allen and M A Robinson), Thames Valley Landscapes **2**, Oxford, 16

Barton, N, 1995 The long blade assemblage, in Allen 1995, 54-64

Barton, N, 1997 *Stone Age Britain*, Batsford/English Heritage, London

Barton, R N E, Antoine, P, Dumont, S, Hall, S and Munaut, A V, 1998 New optically stimulated luminescence (OSL) dates from a Late-glacial site in the Kennet Valley at Avington VI, Berkshire, UK, *Quaternary Newsletter* **85**, 21-31

Barton, R N E, Berridge, P J, Bevins, R E, and Walker, M J**,** 1995 Persistent places in the Mesolithic landscape: an example from the Black Mountain uplands of South Wales, *Proc Prehist Soc* **61**, 81-116

Barton, R N E, and Froom, F R, 1986 The Long Blade assemblage from Avington VI, Berkshire, in *The Palaeolithic of Britain and its nearest neighbours: recent advances* (ed. S N Colcutt) Department of Archaeology and Prehistory, University of Sheffield, Sheffield, 80-4

Barton, N, Roberts, A J and Roe, D A, 1991 *The Late Glacial in North-West Europe: human adaptation and environmental change at the end of the Pleistocene*, CBA Research Report **77**, York

Barton, R N E and Roberts, A J, 1996 Reviewing the British Late Upper Palaeolithic: new evidence for chronological patterning in the Lateglacial record, *Oxford Journal of Archaeology* **15:3**, 245-265

Barton, R N E , Jacobi, R M , Stapert, D and Street, M J, 2002 The Creswellian and the lateglacial reoccupation of the British Isles, *Journal of Quaternary Science* **18**, 631-643

Barton, N, and Roberts, A, 2004 The Mesolithic period in England: current perspectives and new research, in *Mesolithic Scotland and its neighbours* (ed. A Saville), Society of Antiquaries of Scotland, Edinburgh, 339-58

Barton, R N E, Ford, S, Collcutt, S N, Crowther, J, Macphail, R I, Rhodes, E, and Van Gijn, A, 2009 A Final Upper Palaeolithic site at Nea Farm, Somerley, Hampshire and some reflections on the occupation of Britain in the Late Glacial Interstadial. *Quärtar* **56**, 7-35

Bayliss, A, Benson, D, Bronk Ramsey, C, Galer, D, McFadyen, L, van der Plicht, J and Whittle, A, 2007 Interpreting chronology: the radiocarbon dating programme, in Benson and Whittle 2007, 221-32

Bell, M G, 1983 Valley sediments as evidence of prehistoric land-use on the South Downs, *Proceedings of the Prehistoric Society* **49**, 119-150

Bell, M, 2008 *Prehistoric coastal communities: the Mesolithic in western Britain*, York CBA Research Report **149**

Bell, M, Chisham, C, Dark, P, and Allen, S, 2006 Mesolithic sites in coastal and riverine contexts in southern Britain: current research and the management of the archaeological resource, in *Preserving the early past: investigation, selection and preservation of Palaeolithic and Mesolithic sites and landscapes*, (eds E Rensink and H Peeters), NAR Nederlandse Archeologische Rapporten **31**, Amersfoort, 25-40

Bennet, F J, 1966 A late Mesolithic and secondary Neolithic flint industry at Shorwell, I.W., *Hampshire Field Club Archaeol Soc Newsl* **4**, 44-5

Benson, D, and Whittle, A, 2007 *Building memories: the Neolithic Cotswold long barrow at Ascott-under-Wychwood, Oxfordshire*, Oxford

Birbeck, V, 2000 *Archaeological investigations on the A34 Newbury Bypass, Berkshire/ Hampshire 1991-7*, Wessex Archaeology report for the Highways Agency, Salisbury

Boismier, W A, and Mepham, L N, 1995 Excavation of a Mesolithic site at Windmill Hill, Nettlebed, Oxon, *Oxoniensia* **60**, 1-19

Bokelmann, K, 1991 Some new thoughts on old data on humans and reindeer in the Ahrensburgian Tunnel Valley in Schleswig-Holstein, Germany, in *The Late Glacial in North-West Europe*, (eds N Barton, A J Roberrts and D J Roe), CBA Research Report **77**, York, chapter 9

Bradley, P and Hey, G, 1993 A Mesolithic Site at New Plantation, Fyfield and Tubney, Oxfordshire, *Oxoniensia* **58**, 1-26

Bradley, R J, and Hooper, B, 1975 Recent discoveries from Portsmouth and Langstone Harbours: Mesolithic to Iron Age, *Proceedings of the Hampshire Field Club* **30**, 17–27

Bradley, R J, and Lewis, E, 1974 A Mesolithic site at Wakeford's Copse, Havant, *Rescue Archaeology in Hampshire* **2**, 5–18

Branch, N P, and Green, C P, 2004 Environmental history of Surrey, in *Aspects of Archaeology and History in Surrey: towards a research framework for the county* (eds J Cotton, G Crocker, and A Graham), Guildford, 1-18

Brown, A, 1995 The Mesolithic and later flint artefacts, in Allen 1995, 65-84

Campbell, J B, 1977 *The Upper Palaeolithic of Britain. A study of man and nature in the late ice age. Volumes I & II*, Clarendon Press, Oxford

Carew, T, Bishop, B, Meddens, F, and Ridgeway, V, 2006 *Unlocking the landscape: archaeological investigations at Ashford Prison, Middlesex*, Pre-Construct Archaeol Monogr **5**, Great Dunham

Carter, H H, 1976 Fauna of an area of Mesolithic occupation in the Kennet Valley, considered in relation to contemporary eating habits, *Berkshire Archaeological Journal* **68**, 1-3

Carter, R J, 2001 New evidence for seasonal human presence at the early Mesolithic site of Thatcham, Berkshire, England, *Journal of Archaeological Science* **28**, 1055-60

Cartwright, C R, 1982 Field survey of Chichester Harbour 1982, *Sussex Archaeological Collections* **122**, 23–7

Case, H J, 1952-3 Mesolithic finds in the Oxford area, *Oxoniensia* **17-18**, 1-13

Chartres, C J, 1975 *Soil development on the terraces of the River Kennet*, unpublished PhD Thesis, University of Reading

Chatterton, R, 2006 Ritual, in *Mesolithic Britain and Ireland: new approaches*, (eds C Conneller, and G M Warren), Stroud, 101-20

Cheetham, G H, 1975 *Late Quaternary palaeohydrology with reference to the Kennet Valley*, unpublished PhD Thesis, University of Reading

Childe, V G, 1931 The forest cultures of northern Europe: a study in evolution and diffusion, *Journal of the Royal Anthropological Institute* **61**, 325-48

Chisham, C, 2004 *Mesolithic human activity and environmental change: A case study of the Kennet Valley*, unpublished PhD Thesis, Department of Archaeology, University of Reading

Churchill, D M, 1962 The stratigraphy of the Mesolithic Sites III and V at Thatcham, Berkshire, England, *Proceedings of the Prehistoric Society* **28**, 362-370

Clark, J G D, 1932 *The Mesolithic Age in Britain*, Cambridge

Clifford, M H, 1936 A Mesolithic flora in the Isle of Wight, *Proc Isle Wight Natur Hist Archaeol Soc* **2**, 582-94

Collins, P E F, 1994 *Floodplain environmental change since the Last Glacial Maximum in the Lower Kennet Valley, South-central England*, unpublished PhD thesis, University of Reading

Collins, P E F, Fenwick, I M, Keith-Lucas, M D, and Worsley, P, 1996 Late Devensian river and floodplain dynamics and related environmental change in Northwest Europe, with particular reference to a site at Woolhampton, Berkshire, England, *Journal of Quaternary Science* **11**(5), 357-375

Conneller, C, and Ellis, C, 2007 A Late Upper Palaeolithic site at La Sagesse Convent, Romsey, Hants, *Proceedings of the Prehistoric Society* **73**, 191-228

Cotton, J and Field, D, 2004 *Towards a new stone age: aspects of the Neolithic in south-east England*, CBA Res Rep **137**, York

Croft, R A, and Mynard, D C, 1993 *The Changing Landscape of Milton Keynes*, Bucks Arch Soc Monog **5**

Dark, P, 2000 Revised 'absolute' dating of the early Mesolithic site of Star Carr, North Yorkshire, in the light of changes in the early Holocene tree-ring chronology, *Antiquity* **74**, 304-7

Day, S P, 1991 Post-glacial vegetational history of the Oxford region, *New Phytologist* **119**, 445-70

Dennel, R W, 1983 *European economic prehistory: a new approach*, Academic Press, London

Devoy, R J N, 1979 Flandrian sea-level changes and vegetational history of the lower Thames estuary, *Phil Trans Royal Soc London*. Series B **285**, 355-410

Draper, C, 1951 Stone industries from Rainbow Bar, Hants, *Archaeological Newsletter* **3.9**, 147–9

Draper, C, 1953 Further Mesolithic sites in south Hampshire, *Archaeological Newsletter* **4.12**, 193

Draper, C, 1968 Mesolithic distribution in south-east Hampshire, *Proceedings of the Hampshire Field Club* **23**, 110–19

Ellis, C J, Allen, M J, Gardiner, J, Harding, P, Ingrem, C, Powell, A, and Scaife, R G, 2003 An early Mesolithic seasonal hunting site in the Kennet Valley, Southern England, *Proc Prehist Soc* **69**, 107-36

Evans, J G, 1975 *The environment of early man in the British Isles*, Paul Elek, London

Evans, J G, Limbrey, S, Maté, I and Mount, R, 1993 An environmental history of the Upper Kennet Valley, Wiltshire, for the last 10,000 years, *Proceedings of the Prehistoric Society* **59,** 139-95

Farley, M E, 1978 Excavations at Low Farm, Fulmer, Bucks, 1: the Mesolithic occupation, *Recs. Bucks*. **20**, 601-16

Farley, M E, 1983 Archive notes and finds, CASS 5276, BCM 417.1983

Farley, M, 2009 The Mesolithic period, in *An archaeological research framework for Buckinghamshire: collected papers from the Solent-Thames Research Framework*, (ed. D Thorpe), Buckinghamshire Papers **15**, Aylesbury, 13-9

Field, D, 2008 *Use of land in Central Southern England during the Neolithic and Early Bronze Age*, BAR Brit Ser **459**, Archaeopress, Oxford

Fischer, A, 1991 Pioneers in deglaciated landscapes: the expansion and adaptation of the late Palaeolithic societies in Southern Scandinavia, in Barton *et al.* 1991, 100-21

Ford, S, 1987a *East Berkshire archaeological survey*, Berkshire County Council Department of Highways and Planning Occas Pap **1**, Reading

Ford, S, 1987b Flint scatters and prehistoric settlement patterns in south Oxfordshire and east Berkshire, in *Lithic analysis in later British prehistory* (eds A Brown and M Edmonds), BAR Brit Ser **162**, 101-35, Oxford

Ford, S D, 1992 *The nature and development of prehistoric settlement and land-use in the Middle Thames Region (8000-500 BC), with special reference to the evidence from lithic artefacts*, unpublished PhD thesis, University of Reading

Ford, S D, 1997 Loddon Valley (Berkshire) fieldwalking survey, *Berkshire Archaeological Journal* **75,** 11-33

French, C, 2007 Deer Park Farm; micromorphological analysis of the soil profile, in *Prehistoric landscape development and human impact in the upper Allen valley, Cranborne Chase, Dorset*, (eds C French, H Lewis, M J Allen, M Green, R G Scaife, and J Gardiner), McDonald Institute Monograph, Cambridge, 398-9

French, C, Lewis, H, Allen, M J**,** Green, M, Scaife, R G, and Gardiner, J, 2007 *Prehistoric landscape development and human impact in the upper Allen valley, Cranborne Chase, Dorset*, McDonald Institute Monograph, Cambridge

Froom, F R, 1963 An axe of Dorset chert from a Mesolithic site at Kintbury, *Berkshire Archaeological Journal* **61**, 1-3

Froom, F R, 1970 The Mesolithic around Hungerford Part VI: further results of the surface survey, *Transactions of the Newbury District Field Club* **12**, 58-67

Froom, F R, 1972 A Mesolithic site at Wawcott, Kintbury, *Berkshire Archaeological Journal* **66**, 23-44

Froom, F R, 1976 *Wawcott III: a stratified Mesolithic succession*, BAR Brit Ser **27**, Oxford

Froom, R, 2005 *Late Glacial Long Blade sites in the Kennet Valley. Excavations and fieldwork at Avington VI, Wawcott XII and Crown Acres* (ed. J Cook) British Museum Research Publications **153**, Bloomsbury Press, London

Froom, R, Cook, J, Debenham, N, and Ambers, J, 1993 Wawcott XXX: an interim report on a Mesolithic site in Berkshire, in *Stories in Stone* (eds N Ashton and A David), Lithic Studies Society Occasional Paper **4**, Oxford, 206-12

Gardiner, J, 1984 Lithic distributions and settlement patterns in central-southern England, in *Neolithic studies* (eds R Bradley and J Gardiner), BAR Brit Ser **133**, Oxford, 15–40

Gardiner, J, 1987 The Neolithic and Bronze Age, in *Hengistbury Head Dorset, Vol 1: the prehistoric and Roman settlement 3500 BC–AD 500*, (B W Cunliffe), Oxford University Committee for Archaeology Monograph **13**, Oxford, 329–36

Gardiner, J, 1988 *The composition and distribution of Neolithic surface flint scatters in central southern England*, unpublished PhD thesis, University of Reading

Gardiner, J, 2002 The Palaeolithic and Mesolithic, in *The Millennium Publication: a review of archaeology in Hampshire 1980–2000* (ed. N Stoodley), Winchester, 1–3

Garton, D, 1980 An early Mesolithic site at Rackham, east Sussex, *Sussex Archaeological Collections* **118**, 145–52

Green, F, 1991 Mesolithic structures in the Test Valley: Bowman's Farm, *PAST* **11**, 1–2

Green, M, Barton, R N E, Debenham, R E, and French, C A I, 1998 A new late-glacial open-air site at Deer Park Farm, Wimborne St Giles, *Proceedings of the Dorset Natural History & Archaeological Society* **120**, 85-8

Grigson, C, 1989 The animal remains, in Stainton 1989, 49-74

Hampshire and Wight Trust for Maritime Archaeology, 2005 Archaeological and palaeo-environmental investigations of a Mesolithic site 11.5m below sea level, unpublished report for SCOPAC

Healy, F, Heaton, M, and Lobb, S J, 1992 Excavations at a Mesolithic site at Thatcham, Berkshire, *Proc Prehist Soc* **58,** 41-76

Hey, G, and Barclay, A, 2007 The Thames Valley in the late 5th and early 4th millennium cal BC: the appearance of domestication and the evidence for change, in *Going over: the Mesolithic-Neolithic transition in North-West Europe* (eds A Whittle and V Cummings), Proceedings of the British Academy **144**, London, 399-422

Holgate, R, 1988a *Neolithic settlement of the Thames Basin*, BAR Brit Ser **194**, Oxford

Holgate, R, 1988b The flints, in *The Rollright Stones: megaliths, monuments and settlement in the prehistoric landscape* (G Lambrick), English Heritage, London, 85-90
Holgate, R, 2004 Flintwork, in *Gravelly Guy, Stanton Harcourt, Oxfordshire: the development of a prehistoric and Romano-British community* (G Lambrick and T Allen), Thames Valley Landscapes **21**, Oxford, 93-9
Holyoak, D T, 1980 *Late Pleistocene sediments and biostratigraphy of the Kennet Valley, England*, unpublished PhD thesis, University of Reading.
Holyoak, D T, 1983 A late Pleistocene interglacial flora and molluscan fauna from Thatcham, Berkshire, with notes on mollusca from the interglacial deposits at Aveley, Essex, *Geological Magazine* **120** (6), 623-9
Jacobi, R, 1978 The Mesolithic of Sussex, in *The archaeology of Sussex to AD 1500* (ed. P Drewett), CBA Research Report **29**, London, 15–22
Jacobi, R, 1981 The last hunters in Hampshire, in *The archaeology of Hampshire* (eds S J Shennan and R T Schadla Hall), Hampshire Field Club and Archaeological Society Monograph **1**, Winchester, 10–25
Keith-Lucas, D M, 2002 Pollen Analysis, in *Charnham Lane, Hungerford. Archaeological investigations 1988-1997*, (S Ford), Thames Valley Archaeological Services Monograph **1**, Reading
Lacaille, A D, 1963 Mesolithic industries beside Colne Waters in Iver and Denham, Buckinghamshire, *Recs Bucks* **17** (3), 143-181
Lakin, D, 2006 *The former Sanderson site, Oxford Road, Denham, Buckinghamshire: an archaeological post-excavation assessment and updated project design*, Site Code BM-SSU02, Museum of London Archaeology Service, London
Lamdin-Whymark, H, 2008 The residue of ritualised action: Neolithic depositional practices in the Middle Thames Valley, BAR Brit Ser **466**, Oxford
Larsson, L, 1991 The late Palaeolithic in Southern Sweden: investigations in a marginal area, in *The Late Glacial in North-West Europe,* (eds N Barton, A J Roberrts and D J Roe), CBA Research Report **77**, York, chapter 12
Lewis, J, 1991 A late Glacial and early post-glacial site at Three Ways Wharf, Uxbridge, England: interim report in Barton *et al.* 1991, 246-255
Lewis, J S C, Wiltshire, P, and Macphail, R I, 1992 A late Devensian/ early Flandrian site at Three Ways Wharf, Uxbridge: environmental implications, in *Alluvial archaeology in Britain*, (eds S Needham and M.G. Macklin) Oxbow Monograph **27**, Oxford, 235-247
Lobb, S J, and Rose, P G, 1996 *Archaeological survey of the Lower Kennet Valley, Berkshire*, Wessex Archaeology Report **9**, Trust for Wessex Archaeology, Salisbury
McInnes, R G, and Jakeways, J, 2001 *Coastal change, climate and instability: final technical report. Volume 2: palaeoenvironmental study areas, Study Area P1*, LIFE Project no **97 ENV/UK/000510**, Isle of Wight Centre for the Coastal Environment, Ventnor
Mellars, P, 1975 Ungulate populations, economic patterns and the Mesolithic landscape, in *The effects of man on the landscape: the Highland zone*, (eds J G Evans, S Limbrey and H Cleere), CBA Research Report **11**, London, 49-56
Mellars, P, and Dark, P, 1998 *Star Carr in context: new archaeological and palaeoecological investigations at the early Mesolithic site of Star Carr, North Yorkshire*, McDonald Institute Monograph, Cambridge
Millard, L, 1965 A Mesolithic industry from Bolter End, *Recs Bucks* **17**, 343-9
Momber, G, 2000 Drowned and deserted: a submerged prehistoric landscape in the Solent, England, *Int J Naut Archaeol* **29** (1), 86-99
Momber, G, 2001 Recent investigation of deeply submerged human occupation site on the floor of the Western Solent, in McInnes and Jakeways 2001, 36-41
Momber, G, 2004 The inundated landscapes of the Western Solent in *Submarine prehistoric archaeology of the North Sea* (ed. N C Fleming), CBA Res Rep **141**, York, 37-42
Needham, S P, 1992 Holocene alluviation and interstratified archaeological evidence in the Thames valley at Runnymede Bridge, in Needham and Macklin (eds) 1992, 249-60
O'Malley, M, and Jacobi, R, 1978 The excavation of a Mesolithic occupation site at Broom Hill, Braishfield, Hampshire 1971–1973, *Rescue Archaeology in Hampshire* **4**, 16–38

Palmer, S, 1872-5 On the antiquities found in the peat of Newbury, *Transactions of the Newbury District Field Club* **2**, 123-34
Palmer, S, 1977 *Mesolithic cultures of Britain*, Dolphin Press, Poole
Peake, A E, 1913 An account of a flint factory with some new types of flints excavated at Peppard Common, Oxon, *Archaeol J* **70**, 33-68
Peake, A E, 1917 A prehistoric site at Kimble S. Bucks, *Proceedings of the Prehistoric Society of East Anglia* **II** (3), 437-58
Poole, H F, 1936 An outline of the Mesolithic flint cultures of the Isle of Wight, *Proc Isle Wight Natur Hist Archaeol Soc* **2**, 551-581
Rankine, W F, 1949 *A Mesolithic survey of the west Surrey Greensand*, Papers of the Surrey Archaeological Society **2**, Guildford
Rankine, W F, 1951 A Mesolithic site on the foreshore at Cams, Fareham, Hants, *Proceedings of the Hampshire Field Club* **17**, 141–2
Rankine, W F, 1952 A Mesolithic chipping floor at the Warren Oakhanger, Selborne, Hants, *Proceedings of the Prehistoric Society* **18**, 21–35
Rankine, W F, 1953 Mesolithic research in east Hampshire: the Hampshire Greensand, *Proceedings of the Hampshire Field Club* **18**, 157–72
Rankine, W F, 1956 *The Mesolithic of Southern England*, Research Papers of the Surrey Archaeological Society **4**, Guildford
Reynier, M, 2000 Thatcham revisited: spatial and stratigraphic analysis of two sub-assemblages from Site III and its implications for Early Mesolithic typo-chronology in Britain, in *Mesolithic lifeways: current research from Britain and Ireland* (ed. R Young), Leicester University Archaeological Monograph **7**, Leicester, 33–46
Richmond, A, Rackham, J, and Scaife, R, 2006 Excavation of a prehistoric stream-side site at Little Marlow, Buckinghamshire, *Recs Bucks* **46**, 65-101
Roberts, A J, Barton, R N E, and Evans, J, 1998 Early Mesolithic mastic radiocarbon dating and analysis of organic residues from Thatcham III, Star Carr and Lackford Heath, in *Stone Age archaeology: essays in honour of John Wymer* (eds N M Ashton, F Healy and P B Pettit), Oxbow Monogr **102**/Lithic Studies Occas Pap **6**, Oxford, 185-92
Roberts, M R, 1995 Excavations at Park Farm, Binfield, Berkshire 1990: an Iron Age and Romano-British settlement and two Mesolithic flint scatters, in *Early settlement in Berkshire: Mesolithic-Roman occupation in the Thames and Kennet Valleys* (I Barnes, W A Boismier, R M J Cleal, A P Fitzpatrick and M R Roberts), Wessex Archaeology Report **6**, Salisbury, 93-139
Robinson, M A, 1993 The pre-Iron Age environment and finds, in *The prehistoric landscape and Iron Age enclosed settlement at Mingies Ditch, Hardwick-with-Yelford, Oxfordshire*, (T Allen and M A Robinson), Thames Valley Landscapes **2**, Oxford, 7-19
Robinson, M A, in prep. The palaeohydrology, in *Yarnton Neolithic and Bronze Age settlement and landscape*, (G Hey), Thames Valley Landscapes Monograph, Oxford
Roe, F, 1979 Typology of stone implements with shaftholes, in *Stone axe studies*, (T H McK Clough and WA Cummins), CBA Res Rep **23**, London, 23-48
Scaife, R G, 1987 The Late-Devensian and Flandrian vegetation of the Isle of Wight, in *Wessex and the Isle of Wight: Field Guide*, (ed. K E Barber), Quaternary Research Association, Cambridge, 156-80
Scaife, R, 2000 Pollen analysis from Farlington Marshes: a vegetational history of Langstone Harbour, in Allen and Gardiner 2000, 171–5
Schofield, A J, 1995 The changing face of 'landscape' in field archaeology: an example from the upper Meon valley, in *The evolution of the Hampshire landscape: the Meon valley landscape project* (ed. M Hughes), Hampshire County Council Archaeological Report **1**, Winchester, 1–14
Schulting, R J, 2000 New AMS dates from the Lambourn long barrow and the question of the earliest Neolithic in southern England: repacking the Neolithic package, *Oxford J Archaeol* **19**, 25-35
Schulting, R J, and Richards, M P, 2000 The use of stable isotopes in studies of subsistence and seasonality in the British Mesolithic, in *Mesolithic lifeways: current research from Britain and Ireland*, (ed. R Young), Leicester Archaeology Monographs **7**, Leicester, 55-65

Shennan, S, 1985 *Experiments in the collection and analysis of archaeological field data: the East Hampshire Field Survey*, Sheffield
Sidell, J, and Wilkinson, K, 2004 The central London Thames: Neolithic river development and floodplain archaeology, in Cotton and Field 2004, 38-49
Simmons, I, Dimbleby, G W, and Grigson, C, 1981 The Mesolithic, in *The environment in British Prehistory*, (eds I Simmons and M Tooley), London, 82–124
Stainton, B, 1989 Excavation of an early prehistoric site at Stratford's Yard, Chesham *Recs Bucks* **31**, 49-74
Stout, A, 1994 *Where two rivers meet: the story of Kennet Mouth*, Two Rivers Press, Reading
Thames Valley Archaeological Services 1989 *Southam Common, Blackmoor, East Hampshire: archaeological evaluation*, unpublished report BM89/5
Tomalin, D J, Loader, R D, and Scaife, R G, forthcoming *Coastal archaeology in a dynamic setting: a Solent case study*, English Heritage, London
Warren, G M, 2006 Technology, in *Mesolithic Britain and Ireland: new approaches*, (eds C Conneller, and G M Warren), Stroud, 13-34
Waton, P, 1982 Man's impact on the Chalklands: some new pollen evidence, in *Archaeological aspects of woodland ecology*, (eds M Bell and S Limbrey), BAR Int Ser **146**, Oxford, 75-92
Waton, P V, 1983 *A palynological study of the impact of man on the landscape of Central Southern England with special reference to the Chalklands*, unpublished PhD thesis, University of Southampton
Waton, P V, 1986 Palynological evidence for early and permanent woodland on the Chalk of Central Hampshire, in *The scientific study of flint and chert*, (eds G de G Sieveking and M B Hart), Cambridge University Press, Cambridge, 169-74
Wessex Archaeology, 2004 *Artefacts from the sea. Catalogue of the Michael White Collection* (2 volumes), Salisbury
Wessex Archaeology, 2005a *Chamberhouse Farm, Thatcham Berkshire*, unpublished draft client report 1998 (issued 2005) report ref **43211**, Salisbury
Wessex Archaeology 2005b *Preferred Area 4, Denham, Buckinghamshire: archaeological evaluation report*, unpublished client report **50692.08**, Salisbury
Whittle, A, 1990 A model for the Mesolithic-Neolithic transition in the Upper Kennet Valley, North Wiltshire, *Proceedings of the Prehistoric Society* **56**, 101-10
Wilkinson, K, and Straker, V, 2008 Neolithic and Early Bonze Age environmental background, in *The archaeology of South West England: South West archaeological research framework, resource assessment and research agenda*, (ed. C J Webster), Somerset County Council, Taunton, 63-74
Wymer, J J, 1958 Excavations at the Mesolithic site at Thatcham, Berkshire, 1958, *Transactions of the Newbury District Field Club* **10**, 31-48
Wymer, J J, 1959 Excavation on the Mesolithic site at Thatcham, Berkshire, 1958: interim report with a report on the pollen analysis by Dr G W Dimbleby, *Berkshire Archaeological Journal* **57**, 1-33
Wymer, J J, 1960 Excavations at the Maglemosian sites at Thatcham, Berkshire: second interim report, *Transactions of the Newbury District Field Club* **11**, 12-9
Wymer, J J, 1962 Excavations at the Maglemosian sites at Thatcham, Berkshire, England, *Proceedings of the Prehistoric Society* **28**, 329-61
Wymer, J J, 1963 Excavations at Thatcham: final report, *Transactions of the Newbury District Field Club* **11**, 41-52
Wymer, J J, 1968 *Lower Palaeolithic archaeology in Britain as represented by the Thames Valley*, John Baker, London
Wymer, J J, 1977 *A gazetteer of Mesolithic sites in England and Wales*, CBA Research Report **20**, London
Wymer, J J, 1996 The Palaeolithic and Mesolithic periods in Hampshire, in *Archaeology in Hampshire: a framework for the future* (eds D A Hinton and M Hughes), Winchester, 1–6

Appendix

Gardiner Table 1: radiocarbon dates for Mesolithic sites in Hampshire

Site	*Context*	*Material*	*Lab Ref*	*BP determination*	*Date cal. BC at 2 sigma*
Oakhanger VII	level II	hazelnuts	Q1489	9225±200	9200-7900
	level II	pinus charcoal	Q1491	9100±160	8750-7750
	level II	pinus charcoal	Q1493	9040±160	8700-7600
	level II	pinus charcoal	Q1490	8995±160	8600-7600
	level II	pinus charcoal	Q1492	8975±1600	8550-7600
	level II	pinus charcoal	Q1494	8885±160	8450-7550
		scots pine charcoal and hazelnut	F 68	6380±115	5650-5050
		scots pine charcoal and hazelnut	F 69	6380±110	5650-5050
Longmoor	L1, podsol	hazelnut	OxA-376	8930±100	8300-7700
	L3 podsol	hazelnut	OxA 377	8760±110	8250-7550
	L3	oak/birch charcoal	HAR 4475	6060±110	5300-4700
Broom Hill, Braishfield	base of Pit III	wood charcoal	Q1192	8540±150	8200-7100
		wood charcoal	Q1528	8515±150	8000-7000
		wood charcoal	Q1383	8315±150	7650-6800
	top infill of Pit III	wood charcoal	Q1460	7750±120	7050-6350
	above Pit III	wood charcoal	Q1191	7220±120	6400-5800
	Pit II hearth	wood charcoal	Q1128	6535±125	5720-5260
Oakhanger V		pinus sylvestris charcoal	BM 221	7869±104	7100-6500
Micheldever R4	pre barrow	oak charcoal	HAR 1043	6904±170	6200-5450
Wakefords Copse	hearth in pit 8	charcoal	HAR 233	5680±120	4800-4250