Chapter 3

The Lower/Middle Palaeolithic Resource Assessment and Research Agenda

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Introduction

This review of the Lower and Middle Palaeolithic resource in the Solent-Thames region considers the region as a whole, embracing the five county authorities of Buckinghamshire, Oxfordshire, Berkshire, Hampshire and the Isle of Wight. Previous reviews (Table 3.1) have given a detailed picture of the resource in each county. This synthesis combines this information to provide a more general overview of the nature, distribution, diversity and potential importance of the resource in the region.

Before addressing these central themes, some general background is provided on the British Palaeolithic, and the Pleistocene geological period during which it occurred. Following this, the current landscape of the Solent-Thames region is reviewed, focusing on topography, drainage and bedrock geology, but also considering the potential for paleoenvironmental and human remains ; these contemporary landscape aspects are intimately related to the present survival and distribution of Pleistocene deposits, and the story they tell of climatic change and landscape development through the long period covered by the Lower/Middle Palaeolithic.

As will become clear, the approach taken to the core object of reviewing the Lower/Middle Palaeolithic resource in the region is deposit-centred rather than find-centred. Clearly artefact finds are the most direct evidence of the Palaeolithic; but, research into, and understanding of, the period depends almost more upon the context of discovery than upon the finds themselves. Most importantly, the potential for the existence of a Palaeolithic site is initially contingent upon the presence of Pleistocene sediments; and then the questions are: what do they contain in the way of Palaeolithic remains, and how important are these remains for current research? Central to answering these questions is the nature of the sediment containing any remains, how it formed, and the taphonomy of the evidence contained. This section is based, therefore, upon reviews of the range of Pleistocene sediments within the region, their differing formation processes, and consequently the varied potential importance of any contained Palaeolithic remains. Attention is then given to the distribution, prevalence and potential of the Palaeolithic remains in the different deposits in the region, and to identification of key areas/sites.

The resource review is then followed by an interpretive overview of our current understanding of the Lower/Middle Palaeolithic in the region. This looks at the regional history of occupation within the wider national context, and presents interpretations of lifestyle and behaviour. The final section briefly reviews the end of the Lower/Middle Palaeolithic in Britain, and the transition to Upper Palaeolithic.

Background

The inheritance: the British Palaeolithic in global context

The Palaeolithic, or Old Stone Age, is the earliest period of prehistory, representing the very substantial period of time for which our main surviving evidence is lithic

Table 3.1 County reviews of the Lower and Middle Palaeolithic Resource

County	*Author*	*Title*	*Link/Availability*
Berkshire	Hosfield, R.	Solent–Thames Research Framework: Lower/Middle Palaeolithic Resource (Berkshire)	
Buckinghamshire	Silva, B.	An Archaeological Resource Assessment of the Lower/Middle Palaeolithic in Buckinghamshire	
Hampshire	Wilkinson, K.	The Palaeolithic of Hampshire	
Isle of Wight	Wenban-Smith, FF. & Loader, R.	The Isle of Wight: a Review of the Lower and Middle Palaeolithic Resource	
Oxfordshire	Hardaker, T.	The Lower and Middle Palaeolithic of Oxfordshire	

artefacts. Globally, the Palaeolithic begins in the east African Rift Valley over two million BP (years Before Present), with the manufacture of simple stone chopping tools by Australopithecines, a group of bipedal apes with a brain capacity not very different from the modern chimpanzee. The initial hominin expansion out of Africa took place between 1.5 and 1 million years ago, and involved eastward migration across southern Europe into Asia (Dennell 2003). The hominins at this stage, named as *Homo erectus* or *Homo ergaster*, and much more recognisably human than their Australopithecine ancestors, were capable of inhabiting a range of tropical and sub-tropical regions, but could not yet cope with the seasonality of the higher European latitudes.

The start of the British Palaeolithic is defined by the earliest hominin presence in Britain as reflected in lithic artefacts. Clearly this is therefore not an easily fixed date, but one liable to vary in conjunction with new discoveries and with improved dating of existing remains. Initial expansion into Britain and northern Europe seems to have consisted of very occasional forays during periods of warm climate between 800,000 and 500,000 BP. A few very early sites of this age are known in France and Spain, as well as one recently discovered in Britain at Pakefield on the Norfolk coast (Parfitt *et al.* 2005). These pioneer populations failed to establish themselves, however, and soon died out. Following these isolated occurrences of very early hominin presence, there then was a major range expansion northward into Britain and northern Europe *c.* 500,000 years ago. There are a number of sites from this period with evidence of stone tool manufacture (Roebroeks & van Kolfschoten 1994; 1995), associated with the early western European *Homo heidelbergensis*, named after a jawbone found in a quarry at Mauer, near Heidelberg, in Germany. The main British site is Boxgrove in West Sussex, where an extensive area of undisturbed lithic evidence is associated with abundant faunal remains and palaeo-environmental indicators, as well as fossil remains of two hominid individuals (Pitts & Roberts 1997; Roberts & Parfitt 1999). These comprise two lower front incisors from one individual, and a shinbone from another. Hominid remains from this period are so rare that the Heidelberg and Boxgrove finds comprise the full northern European skeletal record of this early ancestor.

One of the key factors to bear in mind when considering the British Palaeolithic is that it coincides with the second half of the Pleistocene geological period (aka 'The Ice Age'). During the Pleistocene, there were repeated climatic oscillations between warm, interglacial conditions and severe cold. This would have inevitably resulted in major variations in the character of day-to-day existence over time, as well as upon long-term patterns of colonisation and occupation. Between 500,000 and 425,000 BP, there was a marked deterioration in climate (the Anglian glaciation), leading to most of Britain being covered by ice, and abandonment by (or local extinction of) the hominin population. Following the end of the Anglian glaciation, Palaeolithic occupation became much more frequent in Britain, although certainly not continuous. Further periodic deteriorations in climate would have made Britain uninhabitable, and existing populations must either have again died out, or moved southward to the continent. Britain would then have become inhabitable again as the climate ameliorated. Sea levels would, however, have risen with the warming climate, and, once the straits of Dover had been created through breaching the Dover–Calais Chalk ridge, probably shortly after the end of the Anglian (Gibbard 1995), access to Britain would have been effectively obstructed during warm periods. The potential of hominids and other fauna to recolonise would have been governed by a sensitively balanced combination of the distribution of the refuge population, its rate of expansion as climate changed and the rate of sea level rise. Once a population had returned to Britain it would then be isolated from the continent by high sea-level until the following climatic deterioration. This history of contact with the northern European mainland through the Palaeolithic, and of abandonment and recolonisation of Britain, or of extinction of its population, is still poorly understood.

The Palaeolithic population of Britain seems to have flourished for at least 150,000 years following the end of the Anglian glaciation. Numerous sites of this period, often with very abundant evidence, are found across southern Britain. Then, after *c.* 250,000 BP, there seems to have been a marked decline in Palaeolithic occupation. Between this time and the end of the Palaeolithic at *c.*10,000 BP, there again seems to have been only very sporadic incursions into Britain by the Palaeolithic populations that were relatively abundant and almost continuously present on the European continent. As is explained in more detail further below, this period of absence coincides with the spread across Europe and western Asia of the Neanderthal people, their subsequent extinction and the first appearance in Britain of anatomically modern humans in *c.* 30,000 BP.

The other key points to take on board when considering the Palaeolithic are that it is an immensely long period of time, at least 600,000 years in Britain, and that almost the only evidence of the period are stone artefacts that we recognise as humanly worked. These are found in a range of natural Pleistocene deposits, and our understanding of the Palaeolithic is mostly based upon our interpretation of the context in which lithic artefacts are found, and study of associated faunal and floral remains. These lead to dating of sites and construction of frameworks of material cultural change, climatic and palaeo-environmental reconstruction, and, on rare occasions when artefacts are undisturbed, direct reconstruction of hominin activity.

The Palaeolithic and the Pleistocene

Study of the Palaeolithic is inseparably entwined with study of the Pleistocene. During the Pleistocene the climate underwent numerous and repeated dramatic changes, oscillating between glacials – episodes of severe cold, and interglacials – episodes of warmth. Thus, rather than a single Ice Age, there were repeated ice ages throughout the Pleistocene, separated by interglacials. At the cold peak of glacial periods, ice-sheets hundreds of metres thick would have covered most of Britain, reaching on occasion as far south as London, and rendering the country uninhabitable. At the warm peak of interglacials the climate would have been warmer than the present day; mollusc species that now inhabit the Nile were abundant in British rivers, and tropical fauna, such as hippopotamus and forest elephant, were common in the landscape. For the majority of the time, however, the climate would have been somewhere between these extremes.

The start of the Pleistocene, approximately 1.8 million years BP, is marked by an initial deterioration in the climate. Following this, over sixty numbered cold and warm stages have been recognised up to the present day, based on fluctuating proportions of the oxygen isotopes O^{18} and O^{16} in deep sea foraminifera. By convention odd numbers represent warm stages and even numbers cold ones, and different stages are counted back from the present. We are therefore currently in marine isotope stage (MIS) 1, also known as the Holocene, which represents the 10,000-year warm period since the end of the last cold stage (the Devensian glaciation) (Table 3.2). The Middle and Late Pleistocene are of most relevance to British Palaeolithic archaeology, with the first occupation of Britain occurring early in the Middle Pleistocene, and continuing thereafter, albeit with a number of gaps.

Middle and Late Pleistocene climatic oscillations were sufficiently marked to have a major impact on sea level and terrestrial sedimentation regimes. In the colder periods ice sheets grew across much of the country, and arboreal forests disappeared, to be replaced by steppe or tundra. Sea levels dropped across the globe due to the amount of water locked up as ice, exposing wide areas offshore as dry land, and enhancing river channel downcutting. In the warmer periods sea levels rose as ice melted, river channels tended to be stable and prone to silting up and the development of alluvial floodplains, and forests regenerated. The range of faunal species inhabiting Britain changed in association with these climatic and environmental changes, with *in situ* evolutionary adaptations of some species to cope with these changes, or local extinction when conditions became intolerable.

Britain has been particularly sensitive to these changes, being: (a) situated at a latitude that has allowed the growth of ice sheets in cold periods, and the development of temperate forests in warm periods; and (b) periodically isolated as an island by rising sea levels and then rejoined to the continent when sea level falls. This has led to different climatic stages having reasonably distinctive sets of associated fauna and flora, which both reflect the climate and environment, and may also identify the specific MI Stage represented (eg. Plate 3.1 for the Aveley Interglacial). The study of such evidence – such as large mammals, small vertebrates, molluscs, ostracods, insects and pollen – is an integral part of Pleistocene, and Palaeolithic, research for its role in

Table 3.2 Quaternary epochs and the Marine Isotope Stage framework

Epoch	*Age (BP)*	*MI Stage*	*Traditional stage (Britain)*	*Climate*
Holocene	Present 10,000	1	Flandrian	Warm — full interglacial
Late Pleistocene	25,000 50,000 70,000 110,000	2 3 4 5a–d	Devensian	Mainly cold; coldest in MI Stage 2 when Britain depopulated and maximum advance of Devensian ice sheets; occasional short-lived periods of relative warmth ("interstadials"), and more prolonged warmth in MI Stage 3.
	125,000	5e	Ipswichian	Warm — full interglacial
Middle Pleistocene	190,000 240,000 300,000 340,000 380,000	6 7 8 9 10	Wolstonian complex	Alternating periods of cold and warmth; recently recognised that this period includes more than one glacial–interglacial cycle; changes in faunal evolution and assemblage associations through the period help distinguish its different stages.
	425,000	11	Hoxnian	Warm — full interglacial
	480,000	12	Anglian	Cold — maximum extent southward of glacial ice in Britain; may incorporate interstadials that have been confused with Cromerian complex interglacials
	620,000 780,000	13–16 17–19	Cromerian complex and Beestonian glaciation	Cycles of cold and warmth; still poorly understood due to obliteration of sediments by subsequent events
Early Pleistocene	1,800,000	20–64		Cycles of cool and warm, but generally not sufficiently cold for glaciation in Britain

Plate 3.1 Reconstruction of Marsworth, Buckinghamshire, *copyright Buckinghamshire County Council*

dating Palaeolithic sites and recreating the associated palaeo-environment (Plate 3.2).

The evidence from different MI Stages, including any hominin lithic evidence, is contained in terrestrial deposits formed during the stage. In contrast to the deep-sea bed, where there has been continuous sedimentation, terrestrial deposition only occurs in specific, limited parts of the landscape. The deposits formed are also highly variable, depending upon climate and landscape situation. Furthermore, sedimentation takes place as a series of short-lived depositional events such as land-slips or river-floods interrupted by long periods of stability and erosion. Thus the terrestrial record is relatively piecemeal, and the challenge for both Pleistocene and Palaeolithic investigation is to integrate the terrestrial evidence into the global MIS framework, based on relatively few direct stratigraphic relationships, and making maximum use of biological evidence and inferences about the sequence of deposition in major systems such as river valleys.

The current interglacial began *c.* 10,000 BP and it is generally agreed that MI Stages 2–5d, dating from

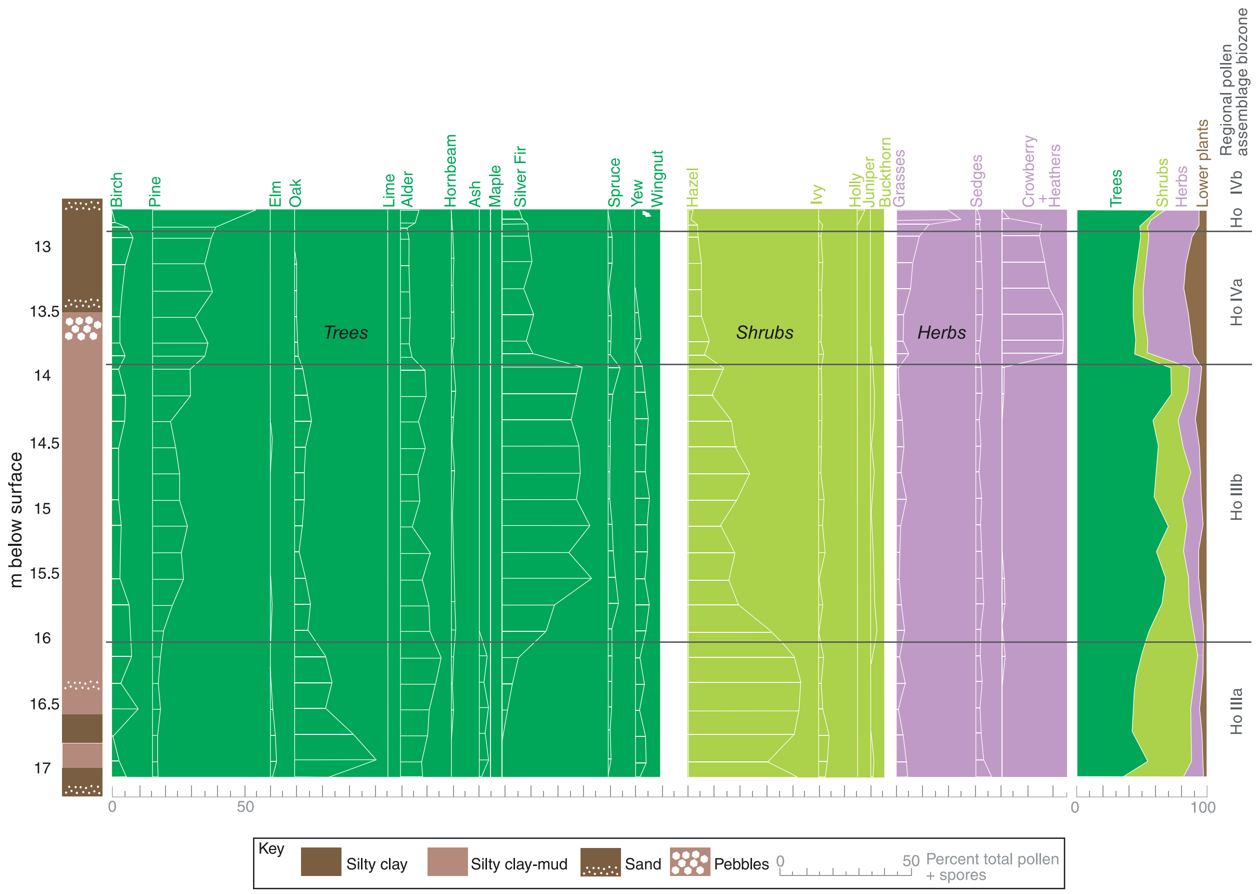

Plate 3.2 Pollen diagram from Denham, Buckinghamshire, *adapted from Gibbard 1975, Cambridge University Press with permission*

c. 10,000–115,000 BP cover the last glaciation (the Devensian), and that Stage 5e dating from *c.* 115,000––125,000 BP correlates with the short-lived peak warmth of the last interglacial (the Ipswichian) (Table 3.2). Beyond that disagreement increases, although many British workers feel confident in accepting that MI Stage 12, which ended abruptly *c.* 425,000 BP, correlates with the major British Anglian glaciation when ice-sheets reached as far south as the northern outskirts of London (Bridgland 1994).

The nature of the evidence

Our understanding of the Palaeolithic is hampered by the fact that the earliest written texts post-date the end of the Palaeolithic by thousands of years. Furthermore, unlike in later periods, there is no structural evidence such as huts, houses or monuments. It is only through the natural sediments that survive from the Pleistocene, and the archaeological and environmental evidence they contain, that we have any knowledge of the Palaeolithic. Sediments are only laid down, however, in certain locations in the landscape, and then are vulnerable to subsequent reworking or destruction. It is only under rare circumstances that lithic remains have accumulated at a point in the landscape where they are likely to be preserved, for instance on the edge of a river floodplain just before a major flooding episode, or at the foot of a slope just before a minor landslip. One should, therefore, always remember that for any phase of the Palaeolithic, our knowledge is initially restricted by the limited circumstances where sediment formation has incorporated archaeological material; and after this, by the tiny parts of the ancient landscape that survive to the present day, most of which will only rarely happen to contain archaeological evidence.

Interpretation of the evidence we do have is then dependent upon understanding how it has become buried. Different burial processes have different implications for any archaeological evidence. Some processes lead to substantial mixing and transport of material, and this destroys fragile evidence, confusing the spatial distribution of evidence from various areas of activity and combining material from different phases of occupation and possibly periods. Other processes bury material gently, preserving faunal remains and individual areas of activity. The swiftness of burial will therefore affect whether single episodes of activity are represented, or an accumulated behavioural palimpsest. Although many types of Pleistocene sediment are known in Britain, most of which have produced at least some Palaeolithic evidence (Wymer 1995), in the Solent-Thames region there are only eight broad sediment types occurring, six of which have produced Palaeolithic remains (cf. Table 3.5). The distribution of these deposits across the Solent-Thames region, the ways in which they formed and their consequent implications for Palaeolithic studies, are discussed further below.

Plate 3.3 Photograph of excavation of a mammoth at Dix Pit, Stanton Harcourt, Oxfordshire, *Information and images courtesy of Kate Scott and Christine Buckingham, the Upper Thames Quaternary Research project*

Stone tools and waste flakes from their manufacture constitute the main type of evidence. Handaxes are the most commonly found and easily recognised type of lithic artefact, but the earliest lithic technology embraces simple core and flake strategies, and attention should also be paid to their recognition. Although stone artefacts can be damaged by some burial processes, as for example when they are caught up in a river channel or crushed under an ice sheet, they are essentially indestructible and resistant to biological decay, which is why they constitute the bulk of Palaeolithic evidence. This can of course pose problems, since one always has to consider, when interpreting stone artefacts, whether they have been moved from where they were originally discarded, and whether they represent mixed material from different periods of the Palaeolithic.

Besides lithic artefacts, which also incidentally include stones with batter marks used as percussors, artefacts can be made from organic material such as wood, bone and antler. These are much more perishable, and so are very rarely found. They are only preserved under certain combinations of swift burial, waterlogging and (usually) alkalinity of the sedimentary context. However, because of this rarity, one should be particularly aware of the possibility of their recovery from suitable contexts. These include, even from early in the Palaeolithic, wooden spears, hafted flint tools, and antler percussors for knapping. These rare discoveries serve as a constant reminder that at most sites we are missing major elements of the evidence, and that we should not overlook this when interpreting human society and behaviour from the ubiquitous stone tools and waste flakes that predominate through the Palaeolithic. Otherwise unmodified bone and antler fossils can also show cut-marks and evidence of breakage, indicating exploitation for food.

Although no decorated/carved objects are yet known from the early, Lower/Middle phase of the Palaeolithic, there is some evidence of a capacity for ritual behaviour at this period (for instance the deposition of Neanderthal and *Homo ergaster/erectus* skeletons in association with probable grave goods in France and Spain), so it is not out of the question that evidence of this type could be found.

An important category of evidence for researching the Palaeolithic that must not be overlooked is biological/palaeo-environmental remains. These are often large mammalian, small vertebrate or molluscan, but a wide range of other evidence may be brought to bear, including pollen and ostracods (Table 3.3). They may be present at the same sites as artefactual remains, either in the same horizon or in stratigraphically related horizons; or they may be present at sites where direct artefactual evidence is absent. In both cases, they have the same value and potential for Palaeolithic research, and should be recognised as significant, even in the absence of artefacts. Faunal and floral remains can help in dating the deposit, and providing information of the local climate and environment at any particular time. They can also point up differences in species within the region (Plates 3.3; 3.4). Such information is essential if we are to carry out core research objectives such as dating sites, constructing regional and national frameworks of cultural change and development, and understanding human activity and behaviour in its environmental and landscape context.

Plate 3.4 *Elephas primogenius*, short-tusked forest elephant, Isle of Wight, *Isle of Wight Dinosaur Museum*

Besides artefactual and environmental evidence, a range of other information associated with Pleistocene deposits is relevant to Palaeolithic research objectives (cf. Table 3.3). Information on their height above OD, their three-dimensional geometry, their position in the landscape and their sedimentary characteristics are all integral to interpreting their origin and date. Other factors such as the range of lithologies represented in the solid clasts, heavy mineral signatures and the occurrence of sand bodies suitable for dating by optically stimulated luminescence (OSL) also have a role to play.

The Lower and Middle Palaeolithic in Britain

The British Palaeolithic has been divided into three broad, chronologically successive archaeological periods (Lower, Middle and Upper), based primarily on changing types of stone tool (Table 3.4). This framework was developed in the nineteenth century, before any knowledge of the types of human ancestor associated with the evidence of each period, and without much understanding of the timescale. This tripartite division has broadly stood the test of time, proving both to reflect a broad chronological succession across wide areas of

Table 3.3 Palaeolithic remains and relevant information

Category	*Range*	*Eg., Comments*
Human activities/artefacts	Lithic artefacts	Flaked stone tools and debitage, percussors
	Wooden artefacts	Spears, tool-hafts
	Bone/antler artefacts	Percussors, handaxes (known from Italy from elephant bone)
	Cut-marked faunal remains	
	Decorated/carved objects	Generally Upper Palaeolithic, but not out of the question for Lower/ Middle Palaeolithic
	Cave art	Upper Palaeolithic only
	Manuports	Unused raw material
	Features, structures	Hearths, stone pavements, pits
	Fire	Charcoal concentrations in association with hearths
Biological/ palaeo-environmental	Large vertebrates	Mammals (rhino, elephant, lion, deer horse, carnivores, etc.) birds
	Small vertebrates	Mammals (bats, mice, voles, lemmings etc.), fish, reptiles, birds, amphibians
	Plant macro-fossils	
	Pollen and diatoms	
	Molluscs	
	Insects	
	Ostracods and foraminifera	

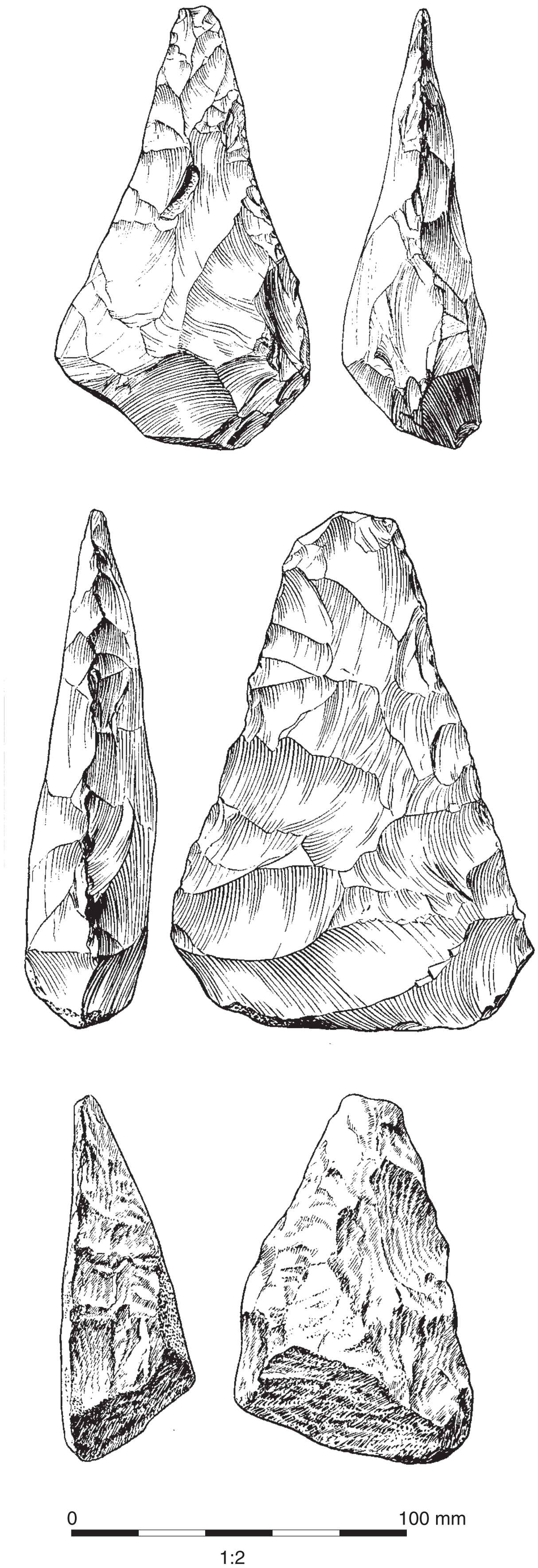

Plate 3.5 Post-Anglian tools from Toots Farm, Caversham, *copyright Wymer 1968 with permission Wessex Archaeology*

Table 3.4 The Palaeolithic period in Britain

Traditional archaeological period	*Updated cultural stage*	*Human species*
Upper Palaeolithic	Upper Palaeolithic	Anatomically modern humans (*Homo sapiens sapiens*)
Middle Palaeolithic	British Mousterian	Neanderthals (*Homo neanderthalensis*)
	-	-
Lower Palaeolithic	Lower / Middle Palaeolithic	Early pre-Neanderthals, evolving into *Homo neanderthalensis*
	-	-
Lower Palaeolithic	*Homo* cf *heidelbergensis*	
	Homo ergaster	

Europe, and to correspond with the evolution of different hominin species. However, improved understanding, and particularly dating, of a number of sites over the last fifty years has resulted in: (a) recognition of a wide range of technological and typological variation within the Lower Palaeolithic; and (b) some confusion over the distinction between Lower and Middle Palaeolithic.

The earliest Lower Palaeolithic evidence, associated with the sporadic pre-MIS 13 incursions, constitutes simple core and flake industries, as at Pakefield (Parfitt *et al.* 2005). Subsequent Lower Palaeolithic industries (from MIS 13 through to MIS 8) are for the most part dominated by handaxes (in a wide range of shapes from ovate to sharply pointed; Plate 3.5) although there are various instances throughout this period of non-handaxe industries such as the High Lodge flake-tool industry of MIS 13 and the Clactonian of MIS 11. The transition from Lower to Middle Palaeolithic is conventionally marked by the appearance of prepared core technology (Levalloisian) and/or the manufacture of *bout coupé* handaxes. However several sites in southern England dating to MIS 9–11 contain Levalloisian material in conjunction with handaxe-dominated technology. Furthermore, it also seems that the growth of Levalloisian technology in Britain in MIS 7–8 is contemporary with a number of late handaxe industries. It is therefore difficult to make a distinction between Lower and Middle Palaeolithic based on the presence of (often only one piece) of Levallois material. In contrast, it seems that *bout coupé* handaxes are genuinely associated with a distinct phase of occupation much later than the main Levalloisian phase, at *c.* 60,000 BP in the middle of the subsequent (Devensian) glaciation (White & Jacobi 2002; Plate 3.6).

This has resulted in updating the framework of British Palaeolithic cultural stages used for this resource assessment (Table 3.4). Separation between Lower and Middle Palaeolithic has largely been abandoned. Only material

Lithic artefacts and other material culture	*MI Stage*	*Date (BP)*	*Geological period*
Dominance of blade technology and standardised tools made on blade blanks, personal adornment, cave art, bone/antler points and needles	2–3	10,000–35,000	Late Devensian
The appearance of *bout coupé* handaxes	3–5d	35,000–115,000	Early/Middle Devensian
Britain uninhabited	5e	115,000–125,000	Ipswichian
Still some handaxe-dominated sites, but growth of more standardised (Levalloisian) flake and blade production techniques	6–9	125,000–425,000	Hoxnian/Saalian complex
Handaxe-dominated, but appearance of more standardised flake and blade production techniques (Levalloisian); occasional industries without handaxes (Clactonian)	8–11		
Britain uninhabited	12	425,000–475,000	Anglian
Handaxe-dominated, with unstandardised flake core production techniques and simple unstandardised flake-tools; occasional industries without handaxes (High Lodge)	13	475,000–500,000	Late Cromerian
Simple flake/core industries with no standardised flake-tools	18–13	500,000–700,000 complex	Early/Middle Cromerian

reliably dated to before the Anglian glaciation is regarded as Lower Palaeolithic. Sites of uncertain date in the period MIS 13 to MIS 6 with any or all of handaxes, flakes/cores and Levallois material are included under the umbrella of "Lower/Middle Palaeolithic". Sites with *bout coupé* material have been attributed to a later period, which could be regarded as "true" Middle Palaeolithic, but has been renamed "British Mousterian" to avoid confusion.

So far as hominin species goes, the Lower/Middle Palaeolithic saw the gradual evolution in northwest Europe of an Archaic hominid lineage from the first colonisers (*Homo erectus/ergaster*) through *Homo heidelbergensis* into Neanderthals (*Homo neanderthalensis*). In the middle of the last, Devensian glaciation Neanderthals were suddenly replaced *c.* 35,000 BP in north-west Europe by anatomically modern humans (*Homo sapiens*

Plate 3.6 Two *bout-coupé* handaxes from Thrupp, Oxfordshire, *copyright OA with kind permission of Derek Steptoe and Geoff Cross*

sapiens), who are associated with the following Upper Palaeolithic. The suddenness of this change, the physiological differences between Neanderthals and modern humans and DNA studies (Cann 1988) all suggest that modern humans did not evolve from Neanderthals, but developed elsewhere, probably in Africa *c.* 150,000 BP, before colonising other parts of the world and replacing any pre-existing Archaic populations. Although there is evidence of a late Neanderthal British Mousterian population in the middle of the last glaciation *c.* 60,000 BP (Boismier 2003), Britain was probably unoccupied at the time of the Neanderthal–Modern transition.

Landscape and topograpy

Regional variation

As shown in Figure 1.4: Topographic Zones, the Solent-Thames region comprises a north-south transect across the middle of southern England, passing across the western end of the London Basin, the Wealden Basin and the Hampshire basin with intervening areas of higher ground. Chalk bedrock outcrops and thickens southward from within southern Oxfordshire and Buckinghamshire (here comprising the Chilterns). North of this, older Lower Cretaceous and Jurassic limestone deposits form the landscape of the northern parts of these counties (the Cotswolds), containing the upper part of the Thames, and its tributaries the Cherwell and the Thame. The Thames then heads south through Oxford and diverts across the Chilterns into the London Basin through the Goring Gap. South of this, a major synclinal fold in the Chalk forms the London Basin, which is filled with softer Tertiary sands and clays. The western end of this occurs roughly along the boundary between Berkshire and Hampshire. Here, the Kennet drains eastward towards London, joining the Thames at Reading. Further east, the Thames is joined by a number of tributaries, including, (from the north) the Wye and the Misbourne, and (from the south) the Blackwater and the Loddon.

The chalk landscape rises again southward, forming widespread chalk downland of the Wessex Downs and the Hampshire Downs. In the eastern part of Hampshire, an eroded anticlinal rift in the chalk exposes older, Lower Cretaceous sediments at the western end of the Wealden Basin. This area contains the headwaters of a number of western Wealden rivers: the Wey, the Godalming Wey, and the (western) Rother. Further south, the surface of the chalk dips again and becomes overlain by younger Tertiary sands and clays, filling the Hampshire Basin. Several rivers drain southwards across the Hampshire/Wessex Downs into the Hampshire basin, particularly the Avon, the Test and the Itchen. Just off the southern coast of Hampshire, the central east-west Chalk ridge of the Isle of Wight represents the southern edge of the Hampshire basin, with Chalk bedrock rising again, and, to the south, a further minor anticlinal exposure of older sediments forms the southern part of the Island. Thus, geologically, the Hampshire basin is very similar to the London basin, although its southern edge has been broken through by the sea between Durlston Head and the Needles, destroying the lower reaches of what would once have been a major river (the Solent River) passing east from Poole Harbour, north of the Isle of Wight, entering the English Channel southeast of Bembridge.

Palaeo-environmental and human remains

Because of the strong geo-archaeological engagement necessitated by those studying this period (eg Wymer 1999 *Southern Rivers Project*), and the geo-achaeological teams they regularly deploy (eg Boxgrove, Roberts & Parfitt 1999), most of this assessment dwells on the sedimentary and geo-archaeological architecture associated with and related to the Lower-Middle Palaeolithic resource. Nevertheless the rare, but demonstrable, survival of palaeo-environmental and human remains is not widely considered, nor are the application of some of the newer scientific techniques to biological remains. Although the data are limited, in previous studies there is an almost total lack of engagement with the lived-landscape inhabited during the Lower and Middle Palaeolithic. More significantly, there has been no direct acknowledgement of Lower Middle Palaeolithic people, despite the fact that their remains have been encountered, albeit rarely and in sparse quantity (eg Boxgrove, Happisbugh etc.).

Studies of the environment have generally been undertaken within a broad geo-archaeological framework. Balaam and Scaife's national concern 20 years ago is still apposite today. They stated that 'No concerted attempt has been made to examine possible effects, if any, of Palaeolithic man upon his local environment' (Balaam & Scaife 1987, 8). Indeed there has been little attempt to define the local lived-environment i.e., the physical and vegetational nature of the land they inhabited (see Allen 1996, 60). Until such sites come to light, or are directly searched for via modelling and mapping, it will be necessary to continue to refine knowledge of Quaternary chronology and landscape in the broadest terms, in order to understand from whence the artefact assemblages came, and in what general landscape environment the populations that created them lived. What is required for the Solent-Thames region, and the likelihood of its existence seems moderate, is *in situ* evidence accompanied by palaeo-environmental and palaeo-economic evidence.

***Ex situ*: the depositionary environment**

The *ex situ* environment, such as riverine and glacial outwash gravels, is largely well documented for most sites. There is little engagement, however, with the environment of the origin of those artefacts. Geo-archaeological and stratigraphic investigations have studied the environment of their emplacement and deposition, but not of their origin – challenging though this may be. Defining the likely location of origin, and of human activity prior to sediments displacement, is thus key to any interpretation of human activity within the wider Palaeolithic landscape.

In situ

Most sites are comprised of allochthonous, or derived, artefacts and ecofacts, and *archaeological* sites *per se* are scarce, their rarity attracting a battery of environmental analyses to recover as much information as possible. Nevertheless, there is increasing evidence that finds may occur in 'slack-water' locations or protected quiet depositional environments in river valleys, former cliff lines (Boxgrove) and locations currently submarine (Bouldnor, Isle of Wight). The potential of these sites to contain internationally important palaeo-environmental evidence (soils, pollen, charcoal, charred plant elements, snails, as well as food detritus; animal bones, marine and riverine shells) is clearly high, and such information is desperately needed. It will provide important and rare clues into some of the basic information about the lived-in environment, local natural resources, and modification of that environment, diet and consumption.

People

Human remains are increasingly being recovered and the potential for sites similar to Boxgrove exists along the same cliff line in Hampshire. Serendipitous finds elsewhere in the country associated with fine-grained deposits (Boxgrove, Happisburgh) and coarse-grained clastic material (Swanscombe) undoubtedly exist. Clearly such finds are accorded the importance they deserve but there is little, or no, predefined research agenda for these remains. Obviously the population is small and there are too few remains to enable any real comparative studies.

Pleistocene deposits, palaeography and county landscape zones

The region contains a variety of superficial, Pleistocene deposits, reflecting its history of landscape development over the last 2 million years or so (Table 3.5). For this period more detailed consideration of deposits is required than can be obtained from the broad zones already discussed. Glacial till is present in the northern half of Buckinghamshire, and in two small patches in Oxfordshire, one in the north-east corner, and the other near Chipping Norton, reflecting the most southerly extent of a substantial ice sheet during one of the Pleistocene glaciations. It is uncertain which glaciation is responsible, but it was probably in the time range 500,000 to 250,000 BP. The remainder of the region has not been directly affected by glaciation, so any surviving Pleistocene sediments potentially reflect a greater span of Pleistocene time.

The two major groups of Pleistocene sediments in the remainder of the region are: (a) residual Clay-with-flint, capping the higher parts of the chalk downland that covers much of the region; and (b) fluvial sand/gravel terrace deposits associated with the changing drainage history of the region. These latter can be subdivided further, into: (1) a more recent group, mostly post-dating the Anglian glaciation, which are evidently associated with present-day drainage systems, lining the valley flanks of existing rivers; and (2) an older group, found at higher levels and mapped as "plateau" or "high-level" gravels, distributed with little relation to existing river valleys, and probably dating to early in the Pleistocene, or perhaps back into the Pliocene or before in some instances.

In addition to these major sediment groups, a few other types of deposits occur as minor isolated outcrops at various locations. A few small patches of diverse fluvio-glacial sediments occur in north Buckinghamshire, associated with the more widespread glacial till. Fine-grained sand/silt deposits mapped as "brickearth" occur as small patches in a number of locations across the region, present in all counties apart from Oxfordshire. These are associated with Middle Thames fluvial terrace deposits in Berkshire and Buckinghamshire, are known in southeast Hampshire in the vicinity of Portsdown Hill and the Gosport peninsula, and occur as isolated patches in the centre and on the eastern side of the Isle of Wight. As is discussed further below (see The Lower/Middle Palaeolithic resource *`Brickearth'*), sedimentologically similar brickearth deposits can have formed in a variety of ways, ranging from mass-movement slopewash deposition (colluvium), floodplain water deposition (alluvium) to gentle aeolian deposition

Table 3.5 Pleistocene sediments in the Solent-Thames region, by county

Deposit	*Bucks*	*Oxon*	*Berks*	*Hants*	*IoW*
Glacial till	+++	+	-	-	-
Fluvio-glacial	+	-	-	-	-
Fluvial	+++	+++	+++	+++	++
High-level/plateau gravels	-	+	++	+	++
Residual (Clay-with-flints)	++	++	++	+++	++
Brickearth: (a) Head/valley	+	-	+	+	+
Brickearth: (b) Plateau	-	-	-	-	+
Head/solifluction gravels	-	++	+	+	++
Marine littoral (raised beach, intertidal/estuarine)	-	-	-	+	++

[+++ Abundant; ++ moderately common; + scarce; - none known; ? Uncertain]

Table 3.6 Solent-Thames landscape character palaeo-zones and Pleistocene sediments

County	*Zone*	*Zone character description*	*Pleistocene sediments*	*Notes*
Bucks	BU1 – Great Ouse (Upper)	Great Ouse valley, upper part and tributaries, esp. Ouzel	+++ Glacial till + Fluvio-glacial ++ Fluvial	No Palaeolithic remains known One varied patch, at Bletchley Great Ouse and Ouzel valleys
	BU2 – North Bucks Clay Lands	Undulating clay topography, low hills incised by rivers, namely the Thame and the Great Ouse	+++ Glacial till + Fluvial	No Palaeolithic remains known Thame Valley; Thame, Ouzel and Lea headwaters
	BU3 – Chilterns	Chalk hills of the Chilterns dominates a landscape incised by small valleys that in high areas is capped by clay-with-flint deposit	+ Fluvio-glacial +++ Residual (C-w-f)	Patches at Chalfont St. Giles and Beaconsfield Widespread pockets/patches
	BU4 – Middle Thames	The Middle Thames Valley, and the tributaries of the Colne and Wye rivers; this southern part of Buckinghamshire is formed by fluvial terraces as well as the floodplain itself	+ Fluvio-glacial +++ Fluvial ++ Brickearth: Head/valley	Burnham area Extensive Thames terraces Alluvial/colluvial spreads, equiv. to Langley Silt complex
Oxon	OX1 – Cotswolds	Jurassic upland plateau of mainly soft yellow limestones	+ Glacial till + Fluvial ++ High-level/plateau gravels	Small patches Evenlode terrace patches Northern Drift
	OX2 – Upper Thames	The Upper Thames valley follows the course of the Thames and its tributary the Cherwell, whose floodplains are filled with Devensian gravels and whose slopes are intermittently occupied by older terrace gravels	++ Fluvial ++ Head/solifluction gravels	Extensive Thames and tributary terraces Wallingford Fan gravels
	OX3 – Chalk Downs	The Oxford Clay vale is occupied by Upper Jurassic rocks merging into the Cretaceous, in the far south and southeast of the county; with Thames terrace deposits between Henley and Reading	++ Fluvial ++ High-level/plateau gravels ++ Residual (C-w-f)	Thames terraces, including Caversham Ancient Channel Pre-Anglian Thames terraces, including Winter Hill Patches on Chalk high ground
Berks	BE1 – Northwest Berks	The Thames valley upstream of Reading and the Berkshire Downs region between the northern county boundary and the northern edge of the Kennet valley	++ Residual (C-w-f)	Patches on Chalk high ground
	BE2 – East Berks	The Thames valley between Reading and Windsor	+++ Fluvial + Residual (C-w-f) + Brickearth: Head/valley	Extensive Thames and tributary terraces Occ. patches Slough, Langley Silt complex
	BE3 – Southwest Berks	The Kennet valley from Newbury to Reading	++ Fluvial ++ High-level/plateau gravels ++ Residual (C-w-f) + Head/solifluction gravels	Kennet terraces Pre-Anglian terraces, including Silchester Gravel Patches on Chalk high ground Savernake; possible confusion with terrace deposits
	BE4 – Southeast Berks	The Loddon and Blackwater valleys	++ Fluvial + High-level/plateau gravels	Whitewater, Blackwater, Loddon terrace deposits Small patches
Hants	HA1a - London Basin	Thames and tributary valleys, developed in soft Tertiary deposits overlapping Chalk at the northeastern corner of the county	++ Fluvial	Whitewater, Blackwater, Loddon terrace deposits
	HA1b - Western Wealden Basin	Upper headwater area of Wealden rivers, overlying Cretaceous Gault and Greensand within western end of Wealden Basin, at eastern side of county	++ Fluvial ++ Fluvial	Upper headwaters of Wealden rivers: Wey, Godalming Wey, western Rother Upper headwaters of Wealden rivers: Wey, Godalming Wey, western Rother

Table 3.6 Solent-Thames landscape character palaeo-zones and Pleistocene sediments (continued)

County	*Zone*	*Zone character description*	*Pleistocene sediments*	*Notes*
	HA2 – Wessex Downs	Middle and Upper Chalk highlands, through which the upper valleys of the southward flowing Avon, Test, Itchen and Meon rivers are cut	+ Fluvial	Occasional patches along Bourne, Dever and Test; one more sub stantial spread at Longparish
			+++ Residual (C-w-f)	Extensive spreads capping high ground
	HA3 – Hants Basin	Lower valleys of the Avon, Test, Itchen and Meon rivers together with the extinct Solent River, developed over soft Tertiary sands/clays filling the Hampshire Basin syncline	+++ Fluvial	Extensive terrace systems associated Solent River and tributaries
			++ High-level/plateau gravels	Higher terrace patches, pre-Anglia
			++ Brickearth: Head/valley	Extensive spreads on Gosport peninsula; plus slopes of Ports Down Hill
			√ Marine littoral sediments	Limited raised beach outcrops on S-facing slope of Ports Down Hill
Isle of Wight	IoW1a - Chalk Downs (central)	The east–west central Chalk ridge, between the Needles and Culver Cliff	+ High-level/plateau gravels	Occasional patches
			+++ Residual (C-w-f)	Extensive spreads, esp. Cheverton Down
	IoW1b - Chalk Downs (south)	The Chalk high ground at the southern tip of the Island	+++ Residual (C-w-f)	St. Catherine's Hill
	IoW2 - Northern Plain (Hants Basin)	The whole part of the Island lying to the north of the central Chalk ridge; various valleys, tending to drain north into the Solent, dissecting soft Tertiary sands/clays filling the Hampshire Basin syncline	++ Fluvial	Terrace systems associated with Yar (western) and Medina
			++ High-level/plateau gravels	Substantial spreads northern and northeastern coast – uncertain age, and may include marine littoral and/or soli fluction deposits
			+ Brickearth: Head/ valley	Small patches: over Medina 1st terrace deposits at Newport; cliff-section at Bembridge
			+ Brickearth: Plateau	Small patch at Downend
			++ Head/solifluction gravels	A swathe of deposits is mapped as marine along NE coast between Bembridge and Ryde – much may be of fluvial or solifluction origin; many gravels mapped as "plateau" may also be of solifluction origin
			++ Marine littoral	Much of the mapped "marine gravels" are probably of solifluc tion origin – cf. above –although raised beach (and other marine) sediments occur at Bembridge
	IoW3 - Southern Plain	The southern half of the Island lying between the two Chalk Downland areas; an undulating landscape, mostly developed over Cretaceous Lower Greensand and Gault sediments	++ Fluvial	Terrace systems associated with upper reaches of Yar (western) and the Yar (eastern)
			++ High-level/plateau gravels	Substantial spreads, esp. Bleak Down
			+ Brickearth: Head/ valley	Various patches associated with upper western Yar terrace system
	IoW4 - Solent Waters	Submerged ground under the Eastern and Western Solent straits	++? Fluvial	Poorly known; sea bed bathy- metry suggests offshore sub- merged continuations of terrestrial terrace systems …
			++? Marine littoral	… these may include marine littoral sediments

[+++ Abundant; ++ moderately common; + scarce; - none known; ? Uncertain]

(loess), or as a combination of any or all of these processes, with corresponding implications for any contained archaeological material.

Coarser-grained head gravel and solifluction deposits are mapped in all counties apart from Buckinghamshire, but are not extensive. They are, however, probably more widespread than is shown by current geological mapping as: (a) substantial gravel spreads mapped as "high-level" or "plateau" gravel, or as "marine" gravel (especially on the Isle of Wight) are probably of head/solifluction origin; and (b) there are probably numerous minor unmapped head/solifluction gravel deposits filling dry valleys in, and draining out of, the chalk downland that extends across the majority of the region.

Finally, marine littoral sediments occur only in the southern coastal counties of the region, namely Hampshire and the Isle of Wight, and then are only present in two very restricted areas: (a) on the south-facing slope of Ports Down Hill, southeast Hampshire; and (b) on the eastern corner of the Isle of Wight, in the vicinity of Bembridge. At this latter location, extensive spreads of gravel extending north-west up the coastline towards Ryde are mapped as "marine". However, it is questionable whether this is a correct interpretation. Exposures in these deposits at Priory Bay show features equally suggestive of a fluvial origin in the deeper-lying gravel deposits, as well as demonstrating a substantial overburden of head/solifluction deposits (see Plate 3.10); no other sub-surface exposures have been examined.

Each county has been subdivided into a number of landscape character zones, reflecting a combination of bedrock type, geomorphology and associated Pleistocene sediments, and the presence/abundance of different Pleistocene sediment types in each of these landscape zones is given (Table 3.6).

The Lower/Middle Palaeolithic resource

Introduction and approach

The approach taken here to assessing the Lower/Middle Palaeolithic resource in the Solent-Thames region is deposit-centred rather than find-centred. Clearly artefact finds are the most direct evidence of the Palaeolithic, but as outlined above, research into, and understanding of, the period depend almost more upon the context of discovery, and other evidence, faunal and floral, than upon the finds themselves. Most importantly, the potential for the existence of any Palaeolithic remains at a location is initially contingent upon the presence of Pleistocene sediments; and then the questions are:

- What do they contain in the way of artefactual or other evidence?
- How important are these remains for current research?

Therefore this assessment focuses first upon the distribution and prevalence of Pleistocene deposits of various types, secondarily addressing the presence/prevalence/nature of Palaeolithic remains within them, and their research potential, taking account of how they formed and the range of evidence they contain. This then provides the basis for the subsequent review of our current understanding, both of the region in its own right and also within the wider national context, addressing the history of occupation and cultural change represented, and interpretations of lifestyle and behaviour.

The resource

Glacial till

Glacial till is characteristically a clay-rich sediment containing frequent and very poorly sorted lithic (and Chalk, in areas of chalk bedrock) clasts ranging in size from fine gravel to large boulders. It is formed underneath glacial ice sheets, and as such, does not represent a situation where Palaeolithic occupation would have been possible or animal bone remains are likely to accumulate. Any artefactual or mammalian finds from a glacial till context would definitely originate from pre-existing sediments overridden by the ice sheet, and would have undergone substantial transport and reworking. The massive compression and shear stresses underneath an ice sheet are not conducive to the preservation of mammalian remains, should any be caught up from pre-existing sediments. Lithic artefact remains are, however, sufficiently robust not to be destroyed. Despite loss of their original provenance, they could still be of interest, as representing a remnant of occupation from some time prior to the formation of the till, which would be of importance if the till represented one of the earlier periods of glaciation. That having been said, no artefactual remains are attributed to glacial till in the Solent-Thames region, which only occurs in the northern half of Buckinghamshire, and in two small patches in Oxfordshire.

An important point to bear in mind is that glaciers may have over-ridden pre-existing fluvial channels or lakes, sealing the pre-existing sediments under thick layers of glacial till without destroying them. In such circumstances, the buried sediments may be of high Palaeolithic potential; therefore, although glacial till itself is of low potential, landscape areas covered by glacial till are not necessarily entirely also of low potential.

Fluvio-glacial deposits (outwash sands/gravels, pro-glacial lake sediments)

Deposits of this category are typically formed at, or near, the boundaries of ice sheets. As such, they are most liable to be present in the northern part of the Solent-Thames region, the only part subject to glaciation. Even here, they only occur in very restricted areas (Table 3.7), particularly in the vicinity of Bletchley, comprising a complex accumulation of sands, gravels and fine-grained lacustrine sediments. Artefacts from the coarser-grained of these sediments are liable to have been substantially

Table 3.7 The Lower/Middle Palaeolithic resource, Solent-Thames region: fluvio-glacial sediments

County zone	*Abundance (deposits)*	*Key areas*	*Abundance (Palaeolithic remains)*	*Key sites*	*Notes*
BU1	+	Bletchley; Newport Pagnell	++	Yew's End Pit; Fenny Stratford	Need to clarify provenance of artefacts; high potential for undisturbed material and faunal remains in fine-grained sediments
BU2	-	-	-	-	-
BU3	+	Chalfont St. Giles; Gerrards Cross; Beaconsfield	+	-	-
BU4	+	Burnham	-	-	-
OX1	-	-	-	-	-
OX2	-	-	-	-	-
OX3	-	-	-	-	-
BE1	-	-	-	-	-
BE2	-	-	-	-	-
BE3	-	-	-	-	-
BE4	-	-	-	-	-
HA1a	-	-	-	-	-
HA1b	-	-	-	-	-
HA2	-	-	-	-	-
HA3	-	-	-	-	-
IoW1a	-	-	-	-	-
IoW1b	-	-	-	-	-
IoW2	-	-	-	-	-
IoW3	-	-	-	-	-
IoW4	-	-	-	-	-

[+++ Abundant; ++ moderately common; + scarce; - none known; ? Uncertain]

reworked, and hence of minimal interpretive potential. In contrast, however, any artefacts from fine-grained sediments may represent *in situ* occupation, and would thus be of high importance. These latter sediments would also have high potential for preservation of faunal and other palaeo-environmental remains. A moderately high number of Palaeolithic find spots occur in the vicinity of Bletchley (where, incidentally, there are also substantial outcrops of Terrace deposits associated with the Ouzel). It would certainly be worth giving this area some attention to clarify the distribution and stratigraphic relationships of the various Pleistocene fluvial and fluvio-glacial sediments in the vicinity, to clarify which of them contain Palaeolithic artefactual remains and to investigate for the preservation/association of biological remains.

Fluvial deposits (sand/gravel terraces, alluvium and buried channels)

The most widespread sedimentary contexts for the Lower/Middle Palaeolithic record are undoubtedly the fluvial ones, with the ubiquitous sand/gravel terrace deposits accounting for a large majority of artefacts in the various extant collections. These contexts represent (in the main) the gravel beds of rivers flowing during the colder parts of the Pleistocene, when they would have formed multiple-channelled 'braided' systems with gravel accumulating on bars between the channels, and periodic

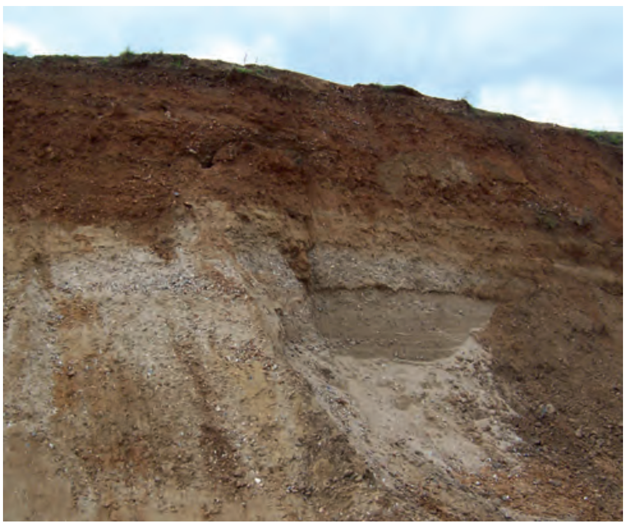

Plate 3.7 Taplow quarry, Buckinghamshire, *copyright Buckinghamshire County Council*

phases of lower energy deposition and overbank flooding represented by sand and silt beds within the predominantly gravel sequence (as at Taplow, Buckinghamshire; Plate 3.7). These braided river gravels rarely yield artefacts in primary or near-primary context. Contained artefacts have typically been regarded as rolled from downstream transport and possibly reworked from unknown earlier sediments or land-surfaces (see Hosfield, 1999; Hosfield and Chambers, 2002).

This does not, however, mean that artefact remains from fluvial gravels are of no use for archaeological interpretation. Fluvial deposits that contain archaeological material from a reasonably wide catchment area provide a more representative sample of the range of artefacts produced over the period of occupation than evidence from a single undisturbed site, which might represent just one event. Downcutting phases would lead to some reworking of older artefacts into the new channel-bed, but the majority would be left in the correct part of the terrace sequence, preserved for the future. Older derived specimens are likely to be a rare component of assemblages from a terrace body, and also be distinctive through their greater degree of abrasion. Thus the stone tool evidence in sequences of river terraces in different basins can give a useful insight into the overall trajectory of regional cultural change and hominid presence through the long Palaeolithic period.

Artefacts from fluvial contexts may, however, be less disturbed than generally presumed. An alternative model would see artefacts as relatively immobile within the sediment load, being substantially more angular (and in the case of most handaxes, significantly larger) than most of the accompanying sand/gravel. Under this alternative model, artefacts would be subject to "churning" as channel-braids shifted, becoming abraded in the process, but would not be transported significantly downstream. Depending upon the energy of the river stream, and the vagaries of channel shifting, many artefacts may be rapidly incorporated into the forming gravel body, and not subsequently disturbed. In this case, we would need to reappraise our perspective on the interpretative potential of artefact collections from gravel bodies, as they would represent more constrained concentrations of Palaeolithic activity than is currently widely believed. Furthermore, braid bars might well have represented valuable sources of raw material, as well as being associated with river channels that provided water and attracted game animals, so where there was rapid burial and minimal disturbance it is possible that valuable and minimally disturbed, concentrations of knapping debris might survive, particularly near former floodplain edges.

Finer-grained fluvial sediments are preserved much more rarely but, when present, can provide a plethora of valuable evidence, including fossils and datable materials, as well as better-preserved artefacts. These sediments will often represent the warmer parts of the Pleistocene, when the rivers would have had considerably less energy and would have flowed in narrower single-thread channels. The best preservation will always be in fine-grained fluvial sediments, such as the infills of abandoned channels and floodplain overbank sediments, within which artefacts can be preserved in a condition good enough to preserve signs of use-wear, and bones can be sufficiently well-preserved to reveal cut-marks.

Fluvial Terrace deposits are abundant in the region (Table 3.8), mainly associated with the Thames and its tributaries (particularly: the Thame, Cherwell, Blackwater, Loddon and Wey) and the north bank of tributaries of the Solent River (particularly: the Avon, Test and Itchen). In addition, there are fluvial deposits associated with restricted headwater stretches of the Great Ouse (in Buckinghamshire) and the western Rother (in east Hampshire).

As summarised in Table 3.8, and reviewed in more detail in the individual county resource assessment reports (cf. Table 3.1), Palaeolithic remains are abundant in many fluvial Terrace deposits, particularly: (a) along the middle Thames in Berkshire and southern Buckinghamshire; and (b) in the southern Test Valley in Romsey and Southampton. There are also a number of relatively isolated sites where great quantities of artefacts have been recovered, for instance Woodgreen on the Avon, Wolvercote on the upper Thames, on the northern outskirts of Oxford, and Priory Bay. There are also a few sites with rich mammalian and other palaeo-environmental remains, for instance Stanton Harcourt (in Oxfordshire) and Marsworth and Stoke Goldington (in Buckinghamshire) (Plate 3.8). Unfortunately we have yet to find a site that combines rich archaeological and biological remains, although no doubt such a site exists

Table 3.8. The Lower/Middle Palaeolithic resource, Solent-Thames region: fluvial sediments

County zone	*Abundance (deposits)*	*Key areas*	*Abundance (Palaeolithic remains)*	*Key sites*	*Notes*
BU1	++	Great Ouse (upper)	+	Stoke Goldington	Key site has rich palaeo-environmenal remains, but no artefacts known
BU2	+	Thame Valley; Thame/Ouzel/ Lea headwaters	-	Marsworth, Pitstone Quarry	Key site has rich palaeo-environmental remains, but no artefacts known
BU3	-	-	-	-	-
BU4	+++	Middle Thames Valley (Iver, Marlow, Burnham, Slough)	+++	Deverill's Pit; Cooper's Pit; Danefield Pit; Baker's Farm Pit; Lavender's Pit; Station Pit, Taplow	Overlap of this zone with Oxon and Berks; v abundant material from Boyn Hill and Lynch Hill terraces

Table 3.8. The Lower/Middle Palaeolithic resource, Solent-Thames region: fluvial sediments (continued)

County zone	*Abundance (deposits)*	*Key areas*	*Abundance (Palaeolithic remains)*	*Key sites*	*Notes*
OX1	+	Evenlode terrace patches	-	-	-
OX2	++	Upper Thames Valley; Oxford;	++	Stanton Harcourt, Dix Pit and Gravelly Guy Pit; Wolvercote brick pit; Cornish's Pit, Iffley	Raw material type and source is a key concern in this zone; also provenance, integrity and taphonomy of artefacts; potential for very good preservation and variety of biological material
OX3	++	Caversham Ancient Channel (most of it)	+++	Highlands Farm Pit; Kennylands Pit	
BE1	-	-	-	-	-
BE2	+++	Caversham Ancient Channel (part of it); Middle Thames Valley terrace deposits (Reading-Maidenhead-Slough)	+++	Roebuck Pit (MTV-1/67); Farthingworth Green Gravel Pit (MTV-1A/9); Smiths Pit (MTV-1A/20); Toots Farm (MTV-1A/28); Grovelands Pit (MTV-1A/ 52); Danefield Pit (MTV-2/8); Cannoncourt Farm Pit & Cooper's Pits (MTV-2/17); Bakers Farm Pit (MTV-2/45)	A classic area for Lower/Middle Pal archaeology: clear terrace sequence, rich archaeological material, well-researched and documented
BE3	++	Kennet and Enborne terraces; gravels between Pang and Kennet	+	Crowshott	-
BE4	++	Extensive terrace spreads associated with Blackwater and Loddon	+	Cluster of handaxe findspots at Wokingham	Needs more intensive, controlled investigations
HA1a	++	Terrace outcrops associated with upper reaches of Blackwater and Loddon	-	-	No Pal finds known, but lack of investigation
HA1b	+	Terrace outcrops Wealden headwaters of Wey (and Godalming Wey) and western Rother	-	-	No Pal finds known, but lack of investigation
HA2	+	Terrace outcrops associated with stretches of Bourne, Dever, Test, Itchen and Meon	+	Some finds at Longparish	Few Pal finds known, but lack of investigation – possibly an important, unappreciated resource (cf. Harnham)
HA3	+++	Solent river and tributaries; Avon, Test, Itchen, Hamble; plus extensive gravel spreads across New Forest	+++	Romsey Pits: Test Road, Belbins, Dunbridge; Soton sites: St James Church Pit, Highfield Pits; Portswood (mammoth reported); Warsash; Avon sites: Woodgreen, Ringwood	Are clusters (eg. at Woodgreen, Romsey, Southampton and Gosport) real patterns, or do they just reflect intensity of investigation?
IoW1a	-	-	-	-	-
IoW1b	-	-	-	-	-
IoW2	++	Yar (western); Newport	++	Afton Farm; Great Pan Farm	Levallois at Afton Farm and Great Pan Farm; not sure from which terrace level at Afton Farm
IoW3	++	Yar (western), upper stretch above Brook Bay and Chilton Chine; Yar (eastern)	+	Black Pan Farm; Ninham; mammoth teeth at Chilton Chine	-
IoW4	++?	Between Lymington and Yarmouth	++	-	Various findspots in Solent (Wessex Archaeology 2004)

[+++ Abundant; ++ moderately common; + scarce; - none known; ? Uncertain]

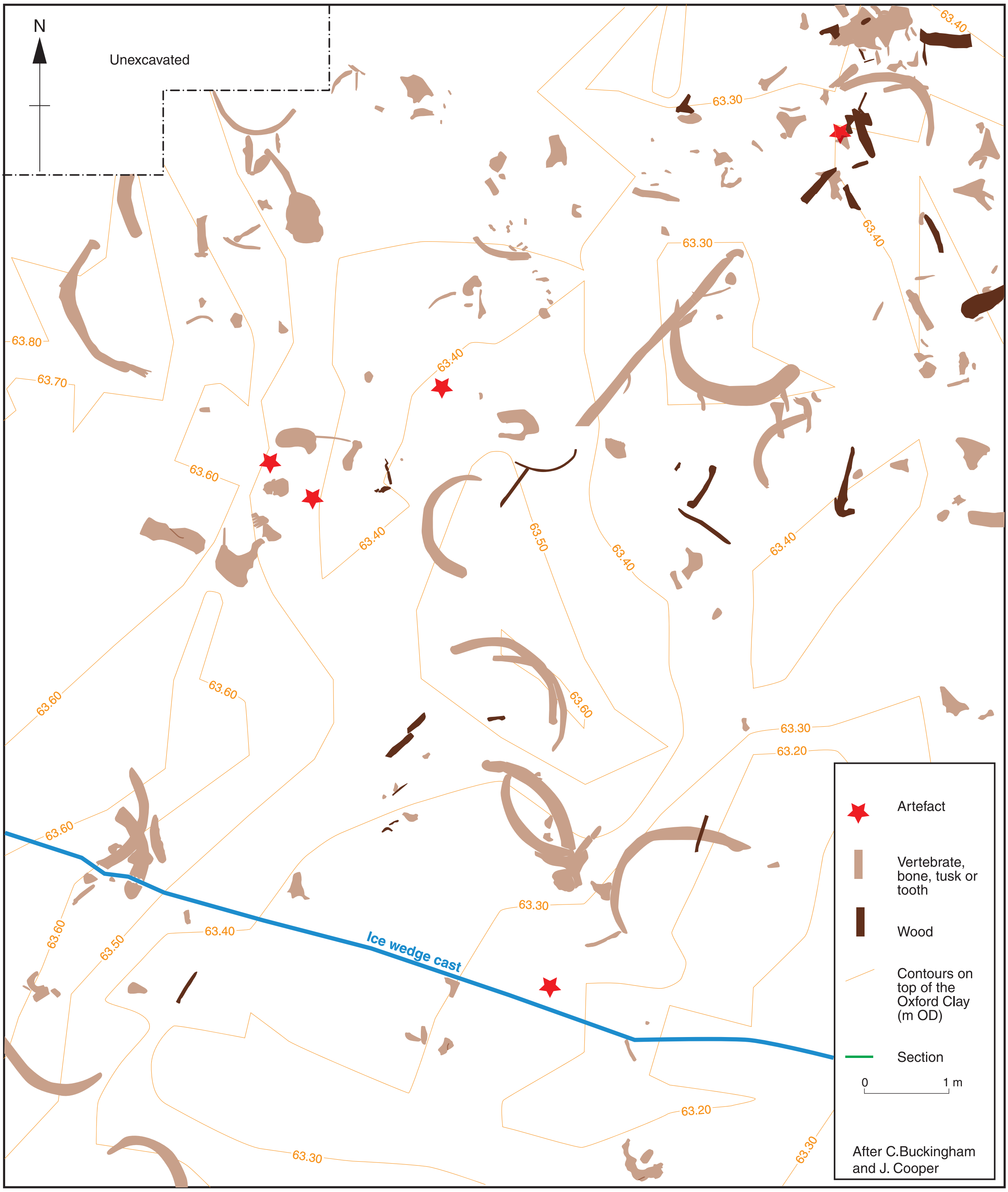

Plate 3.8 Plan of deposit in the Stanton Harcourt Channel, Oxfordshire, *adapted from Scott and Buckingham 1997*

somewhere in the region. Biological remains appear to be less common and less well-preserved in the southern part of the region. Rather than dismissing their potential to be present, however, this should heighten the importance attached to their discovery.

Despite the recorded richness of Palaeolithic remains in some areas, and in some terrace bodies, particularly Boyn Hill and Lynch Hill deposits in the Thames Valley, and T6 to T3 sediments in the Test Valley, there remain substantial stretches of Terrace deposits, even in areas with a generally rich record, where few finds are recorded. This highlights two key problems in the study and interpretation of Palaeolithic material from fluvial terrace deposits, which are that: (a) despite the relatively well documented records we have of previous discoveries, we actually have very little idea of the texture and scale of artefact clustering within terrace bodies; and (b) we don't know whether the patterns we observe represent genuine archaeological distribution, or merely reflect differential intensities of recovery and investigation.

Plate 3.9 Phil Harding recording a palaeolithic deposit at Dunbridge, Hampshire, *copyright Wessex Archaeology*

For instance, at a large-scale, there are rich concentrations of findspots in Solent River (and tributary) deposits at Bournemouth (just west of the Solent-Thames region) and in Southampton. However, there are very few finds in the intervening stretches of Solent River Terrace deposits covering the New Forest. At a smaller scale, reinvestigations of specific deposits with a rich record of previously discovered finds, for instance as at Dunbridge in the Test Valley, Hampshire (Plate 3.9) have often been relatively unproductive (Harding 1998). This emphasises that we currently know too little about the distribution of artefactual material within gravel deposits. The lack of material in some otherwise rich deposits suggests that concentrations may be tightly clustered, and represent real sites, rather than be an ubiquitous background noise. If so, this would increase the interpretive potential of any clusters that were discovered.

A second point to make about the Palaeolithic potential fluvial Terrace deposits is that it may be misleading to focus upon the better-mapped and more extensive deposits of larger river channels, such as the Solent River gravels that occur across Southampton. Although generally proven to be rich in artefacts, these represent substantial depositional events by a major river, and thus any contained archaeological remains are perhaps more likely to be churned, fluvially transported or reworked. In contrast, small remnant outcrops associated with tributaries may be a more fruitful hunting ground for Palaeolithic sites, even if they appear insignificant on geological mapping, or perhaps are too small to appear at all. Although (in the former case, only just) outside the Solent-Thames region, the sites of Harnham (in Wiltshire) and Cuxton (in Kent) both exemplify this point. Harnham (Whittaker *et al.* 2004) is near to a small patch of mapped terrace gravel outcropping above the Avon, but there is no indication from the geological mapping of any reason to suspect an important site – although it is within a corridor where one could predict the likely presence of unmapped terrace outcrops. Cuxton, in contrast, is situated on a mapped outcrop, but still one so small that it is hardly noticeable compared to many other outcrops up and down the Medway Valley (Cruse 1987; Wenban-Smith 2004a). The important corollary of this is that significant Palaeolithic sites may be present, or even abundant, in tributary valleys where Pleistocene terrace deposits are scarce, minimal or even apparently absent.

High-level/plateau gravels

There are various spreads of high-level gravel patches across southern England, often capping areas of higher ground, that do not appear to be residual deposits, and yet are not sufficiently closely related to the modern drainage pattern to be identified as associated terrace deposits. These are often mapped as plateau gravels, for instance in southern Hampshire and the Isle of Wight. They can be accepted as significantly older than most deposits mapped as Terrace gravels, dating to the early Middle Pleistocene or before. The Northern Drift of Oxfordshire can also be included under this category of deposit. Palaeolithic artefacts have often been recovered from these areas (Table 3.9); several have been found on patches of plateau gravel on the Isle of Wight, for instance, and there have been a recent spate of discoveries on the Northern Drift. Other high-level gravels of pre-Anglian date associated with artefact finds include the Silchester Gravel (Berkshire) and various Solent and Test gravels in Hampshire. The key question concerning these remains is whether they are essentially later, deposited on the surface of these deposits, or whether any actually come from within these early deposits, and hence represent evidence of very early occupation of Britain?

Clay-with-flints and other residual sediments

Residual deposits can be found capping high ground where there has been little Pleistocene deposition, but the surface has been subject to exposure throughout the Pleistocene, leading to the development of sediments. The best-known residual deposits are the Clay-with-flints material that mantles the Chalk uplands in various parts of the Solent-Thames region, particularly Hampshire and Berkshire. This is now known to include a mixture of Chalk solution residue homogenized with fine-grained Tertiary sediments, representing remnants of soils built up throughout the Tertiary and Pleistocene and periodically subject to sub-aerial weathering and degradation accompanying climatic oscillations. The Clay-with-flints

Table 3.9 The Lower/Middle Palaeolithic resource, Solent-Thames region: high-level/plateau gravels

County zone	*Abundance (deposits)*	*Key areas*	*Abundance (Palaeolithic remains)*	*Key sites*	*Notes*
BU1	-	-	-	-	-
BU2	-	-	-	-	-
BU3	-	-	-	-	-
BU4	-	-	-	-	-
OX1	++	Northern Drift	++	Combe; Freeland	Need to establish whether Palaeolithic artefacts are residual surface finds, or are contained within Northern Drift
OX2	-	-	-	-	-
OX3	++	Winter Hill terrace	++	Kidmore End; Sonning Common	Need to establish whether Palaeolithic artefacts are residual surface finds, or are contained within terrace outcrops
BE1	-	-	-	-	-
BE2	-	-	-	-	-
BE3	++	High level Enborne terraces; Silchester gravel	++	Wash Common; Hamstead Marshall; Crowshott	Need to establish whether Palaeolithic artefacts are residual surface finds, or are within these deposits
BE4	+	High level Blackwater and Loddon terraces	+	Pine Hill	Need to establish whether Palaeolithic artefacts are residual surface finds, or are within deposits
HA1a	++	Southern edge of Silchester Gravel; Yateley Common	-	-	-
HA1b	-	-	-	-	-
HA2	-	-	-	-	-
HA3	++	Higher gravel spreads in New Forest; T8+ patches in Southampton	+	Midanbury Hill	-
IoW1a	+	Patches near Newport and Calbourne	-	-	-
IoW1b	-	-	-	-	-
IoW2	++	Extensive spreads around Cowes; various other patches, eg. in Parkhurst Forest	++	Rew Street; Norris Castle; Wootton	Need to re-assess blanket group of 'plateau gravel', and to establish whether Palaeolithic artefacts are residual surface finds, or are within these deposits
IoW3	++	Various spreads, esp. between Ventnor and Newport, and west of Sandown airport	+	Bleak Down	Need to see if any original Bleak Down gravel can be found and re-examined to establish date and formation process
IoW4	-	-	-	-	-

[+++ Abundant; ++ moderately common; + scarce; - none known; ? Uncertain]

has long been known to contain Early Palaeolithic artefacts (Dewey 1924; Willis 1947), abundantly in some locations (Halliwell & Parfitt 1993; Scott-Jackson 2000). Residual Lower/Middle Palaeolithic finds have been made across the region (Table 3.10), with rich concentrations of material known from Cliddesden and Ellisfield (near Basingstoke) and Holybourne Down (east Hampshire).

The understanding and interpretation of material from residual contexts is, however, fraught with difficulty (cf. Wenban-Smith 2001a). Any artefacts within residual deposits may have been reworked within the sediment by repeated freezing and thawing, but not been subject to down-slope movement or fluvial transport. Accordingly any archaeological evidence found in residual deposits such as Clay-with-flints, which often caps chalk on high ground in Hampshire and Berkshire, has probably been deposited close to where it was found. There is rarely, however, any precisely stratified material, and Neolithic, Mesolithic and Palaeolithic finds can all be contained within the same horizon. Thus the archaeological material from residual deposits comes from a palimpsest representing 500,000+ years of intermittent occupation. This is not to disregard or belittle the value of such a palimpsest, whose spatial integrity over such a long period could open interesting avenues of research, but its nature needs to be recognised and understood as a prerequisite for such research. Important points for future research are to investigate whether it is possible to date artefactual material from residual deposits, and whether (and if so, how often) residual deposits contain Lower/Middle Palaeolithic material in sealed stratigraphic contexts.

Table 3.10 The Lower/Middle Palaeolithic resource, Solent-Thames region: residual sediments (Clay-with-flint)

County zone	*Abundance (deposits)*	*Key areas*	*Abundance (Palaeolithic remains)*	*Key sites*	*Notes*
BU1	-	-	-	-	-
BU2	-	-	-	-	-
BU3	+++	Stokenchurch; plateau N and S of River Misbourne	+	Brick Kiln Farm, Chartridge	-
BU4	-	-	-	-	-
OX1	-	-	-	-	-
OX2	-	-	-	-	-
OX3	++	Chilterns, E of Wallingford Fan Gravels	-	-	Need to investigate for Palaeolithic material
BE1	++	North Berks Downs	+	-	-
BE2	+	-	+	-	-
BE3	++	South Berks Downs	+	Hungerford-Newbury	-
BE4	-	-	-	-	-
HA1a	-	-	-	-	-
HA1b	-	-	-	-	-
HA2	+++	South of Basingstoke; East Hants	++	Cliddesden, Ellisfield and Holybourne Down	Need to see if clusters occur; need to disentangle palimpsest of Palaeolithic and later material
HA3	-	-	-	-	-
IoW1a	+++	Brighstone Down; Cheverton Down; Westridge Down	++	Cheverton Down	More than one handaxe from Cheverton Down
IoW1b	+++	Week Down; Boniface Down	-	-	-
IoW2	-	-			
IoW3	-	-	-	-	-
IoW4	-	-	-	-	-

[+++ Abundant; ++ moderately common; + scarce; - none known; ? Uncertain]

'Brickearth'

The region includes several spreads of deposits mapped as 'brick earth'. This is often presumed to be of aeolian, or loessic, origin, although such sediments are highly mobile once deposited and are often reworked by colluvial processes, perhaps often intermingling with alluvial deposits in the process. Thus most spreads of brick earth are the result of an uncertain combination of colluvial, aeolian and/or alluvial processes. Aeolian sediments are poorly represented within the British Pleistocene record, with the exception of last glacial (Devensian) coversands and loess accumulations. These are sand and silt-sized material blown out from glacial outwash plains during periods of severe climate, and then deposited at particular parts of the landscape where wind-speed dies (Catt 1977). Loess from earlier in the Pleistocene is of great importance as an archive of palaeo-climatic data (from alternations of cold-climate loess and interglacial soils) elsewhere in the world, especially central Europe and China (eg Kukla, 1975) but also including the nearby River Somme valley (Antoine *et al.*, 2007). Much loessic material, even the majority, rapidly becomes colluvially or even fluvially reworked, rather than remaining as primary aeolian loess. From the Palaeolithic archaeological point of view, loessic deposits are potentially significant because they form progressively, burying any archaeological evidence very gently and preserving it undisturbed.

Brickearth sediments are generally scarce in the Solent-Thames region, being slightly more common and occurring as larger patches in the southern part of the region (Table 3.11). Artefactual finds, including Levalloisian material, are associated with colluvial/alluvial brickearth spreads overlying Terrace deposits of the Middle Thames at Burnham, Marlow and Slough. These deposits can be broadly equated with the Langley Silt complex of the Middle Thames, associated with rich Palaeolithic sites at Yiewsley, a little further east in the London region (Wymer 1968: 255). Thus, although not a lot of material is known from these deposits in the Solent-Thames region, they should be regarded as of high potential.

In Hampshire, there is a substantial spread of brick earth covering Solent River terrace deposits on the Gosport peninsula, in the vicinity of Fareham. No Palaeolithic artefacts are known in association with these deposits. However, a short distance to the north, on the south-facing slope of Ports Down Hill, a thick sequence of colluvial deposits is known to occur (in an area mapped as chalk bedrock); and this sequence of deposits buries the undisturbed Palaeolithic occupation floor at the Red Barns Palaeolithic site, which has produced thousands of mint condition artefacts from a very restricted area (Wenban-Smith *et al.* 2000). The key points arising from discovery of this site are: (a) that geological mapping of Pleistocene deposits is often erroneous; and (b) that highly significant sites can occur in unexpected situations, including (in this instance) on a slope mapped as chalk bedrock.

Finally, although entirely unmapped, recent excavations at Priory Bay have demonstrated the presence of mint condition artefacts, probably associated with an undisturbed palaeo-landsurface, within, and at the base of, fine-grained brickearth deposits exposed in the cliff section (Plate 3.10). As above, this discovery demonstrates the inadequacy of relying entirely upon geological mapping to model accurately the Palaeolithic potential of landscapes, although it can definitely provide a useful fuzzy starting point to second-guess the range of sediments likely to be present.

Head/solifluction gravels

Mass slope-movement and solifluction gravels incorporate rocks and pebbles of all sizes alongside finer grained sands and silts. The Palaeolithic remains they contain have varied depositional histories and interpretative potential. Deposits occur at the base of slopes, on the surface of valley-sides, in dry valleys and in hollows in the landscape, anywhere, in fact, where sediment destabilised by severe climatic conditions and/or de-vegetation has slipped downslope and accumulated. Despite their sometimes coarse nature, many colluvial/solifluction deposits have slipped only a short distance, leading to the relatively gentle burial of archaeological material. Others have moved a longer distance, and may also include derived material from significantly older deposits, for instance

Plate 3.10 Section at Priory Bay, Isle of Wight, *copyright Francis Wenban-Smith*

Table 3.11 The Lower/Middle Palaeolithic resource, Solent-Thames region: head/valley brickearth

County zone	*Abundance (deposits)*	*Key areas*	*Abundance (Palaeolithic remains)*	*Key sites*	*Notes*
BU1	-	-	-	-	-
BU1	-	-	-	-	-
BU2	-	-	-	-	-
BU3	-	-	-	-	-
BU4	√√	Burnham; Marlow	√√	Dorney Wood; Great Western Pit	Associated faunal remains at Dorney Wood; Levallois from brickearth at Marlow (possibly equivalent to Langley Silt)
OX1	-	-	-	-	-
OX2	-	-	-	-	-
OX3	-	-	-	-	-
BE1	-	-	-	-	-
BE2	√	Slough	√	Langley Marish, Langley	Contains Levallois material, and equivalent to Langley Silt
BE3	-	-	-	-	-
BE4	-	-	-	-	-
HA1a	-	-	-	-	-
HA1b	√	Small patch at Bentley	-	-	-
HA2	-	-	-	-	-
HA3	√√	Extensive spread near Fareham, Gosport peninsula; and on slopes of Ports Down Hill, esp. S-facing	√	Red Barns	One very prolific (and in situ) site at Red Barns, buried under >2m slopewash sediments – a worrying case-study exemplifying difficulty of predictive modelling of high potential locations
IoW1a	-	-	-	-	-
IoW1b	-	-	-	-	-
IoW2	+	Small patches at: Newport, Downend, and behind cliffs between Nettlestone Point and Bembridge Foreland	+	Priory Bay; Bembridge	*In situ* horizons at Priory Bay; finds from brickearth outcropping east of Bembridge school
IoW3	++	Large spread associated with upper Yar (western), above Chilton Chine	-	-	-
IoW4	-	-	-	-	-

[+++ Abundant; ++ moderately common; + scarce; - none known; ? Uncertain]

Table 3.12 The Lower/Middle Palaeolithic resource, Solent-Thames region: head/solifluction gravels

County zone	*Abundance (deposits)*	*Key areas*	*Abundance (Palaeolithic remains)*	*Key sites*	*Notes*
BU1	-	-	-	-	-
BU2	-	-	-	-	-
BU3	-	-	-	-	-
BU4	-	-	-	-	-
OX1	-	-	-	-	-
OX2	++	Wallingford Fan Gravels	++	Benson, (Turners Court); Ewelme, Rumbolds Pit	Thought to be of Anglian age (MIS Stage 12)
OX3	-	-	-	-	-
BE1	-	-	-	-	-
BE2	+	Remenham	-	Remenham Church Pit	One very prolific site in solifluction deposits over terrace
BE3	++	Savernake	++	Knowle Farm	Very prolific site at Knowle Farm
BE4	-	-	-	-	-
HA1a	-	-	-	-	-
HA1b	-	-	-	-	-
HA2	-	-	-	-	-
HA3	-	-	-	-	-
IoW1a	-	-	-	-	-
IoW1b	-	-	-	-	-
IoW2	++	Priory Bay; Bembridge raised beach section	++	Warner Hotel; Bembridge School; Whitecliff Bay	Abundant material at Priory Bay and at Bembridge School
IoW3	-	-	-	-	-
IoW4	-	-	-	-	-

[+++ Abundant; ++ moderately common; + scarce; - none known; ? Uncertain]

when a landslip cascades down a dry valley tributary across a series of terrace deposits of different ages.

Solifluction gravels are recorded in Oxfordshire, Berkshire, and are known to occur, although not mapped as such, on the Isle of Wight. However deposits of this nature are likely to be significantly more abundant than shown on the geological mapping, as numerous dry valleys on the chalk downland that is common in the region are likely to be filled, at least in part, with solifluction deposits. The most notable of the solifluction deposits recorded are the Wallingford Fan Gravels in Oxfordshire, thought to date from the Anglian glaciation, which are associated with moderately abundant lithic artefacts (Table 3.12). Isolated, but prolific, sites are also known from solifluction deposits in Berkshire at Remenham Church Pit. and at Knowle Farm, Savernake, Wiltshire, close to the Berkshire border.

On the Isle of Wight, a substantial spread of solifluction gravel deposits can be observed in the Bembridge raised beach cliff section (cf. below), and these have produced artefactual remains. A substantial number of handaxes have also been produced from deposits at Bembridge School that are probably of solifluction origin. This would be of interest in its own right, if a stratigraphical relationship could be established between the artefact-bearing deposits and a datable horizons such as the Steyne Wood Clay. It is also of potential interest as indicating that there might be in the vicinity a source deposit with undisturbed remains. Coarse-grained solifluction deposits are also present in the artefact-bearing sequence in the cliff section at Priory Bay, and these too contain abundant Palaeolithic remains.

Marine littoral sediments (raised beach, estuarine, intertidal zone)

Marine littoral sediments include deposits that have undergone a range of depositional processes. Material incorporated in pebble storm beaches is likely to have undergone severe churning by wave action, and can be so severely abraded that individual artefacts are scarcely recognizable as such. In contrast material incorporated in rapidly forming fine-grained sediments in the intertidal zone, as for instance in various horizons at Boxgrove (cf. Roberts & Parfitt 1999), can be preserved entirely undisturbed. In the Solent-Thames region, marine littoral sediments occur at two locations (Table 3.13). Firstly, at Portsd own Hill, two distinct pebble storm beach deposits are preserved at two different levels, an upper level broadly equivalent to the Boxgrove raised beach, and a lower level of uncertain date. No artefactual remains are associated with either of these deposits. Secondly, at Bembridge on the Isle of Wight, the main marine sediments comprise a substantial raised beach exposed in section on the south-facing stretch of coastline west of Bembridge Foreland. This includes a major pebble storm beach, and associated offshore fine-grained sediments that contain pollen remains. The altitude of the storm beach, and the range of pollen grains, combine to suggest an Ipswichian (MIS 5e) date for the storm beach, confirmed by a recent OSL dating investigation (Wenban-Smith *et al.* 2005). A short distance to the northwest, in deposits developed a little inland, and well above the Ipswichian raised beach, the estuarine Steyne Wood Clay occurs, which has been dated as broadly equivalent to the

Table 3.13 The Lower/Middle Palaeolithic resource, Solent-Thames region: marine littoral sediments

County zone	*Abundance (deposits)*	*Key areas*	*Abundance (Palaeolithic remains)*	*Key sites*	*Notes*
BU1	-	-	-	-	-
BU2	-	-	-	-	-
BU3	-	-	-	-	-
BU4	-	-	-	-	-
OX1	-	-	-	-	-
OX2	-	-	-	-	-
OX3	-	-	-	-	-
BE1	-	-	-	-	-
BE2	-	-	-	-	-
BE3	-	-	-	-	-
BE4	-	-	-	-	-
HA1a	-	-	-	-	-
HA1b	-	-	-	-	-
HA2	-	-	-	-	-
HA3	+	Ports Down Hill	-	Cams Bridge; M27 junction 11	No Palaeolithic finds known associated with marine littoral sediments
IoW1a	-	-	-	-	-
IoW1b	-	-	-	-	-
IoW2	++	Bembridge School; Bembridge-Foreland cliff section		-	Bembridge School; Warner Hotel. Two v different sites and sets of deposits, both with good biological remains: (a) pre-Anglian Steyne Wood Clay (estuarine) at Bembridge School; (b) Ipswichian raised beach and intertidal zone, exposed in cliff section
IoW3	-	-	-	-	-
IoW4	+?	Between Bembridge and Selsey Bill?	-	-	Needs investigation

[+++ Abundant; ++ moderately common; + scarce; - none known; ? Uncertain]

Boxgrove deposits. No artefactual remains are associated with either of these deposits, although they are relatively abundant in the vicinity of the Steyne Wood Clay, suggesting that undisturbed horizons may perhaps be present not too far away.

Site distribution and concentration

A number of patterns are apparent in the distribution of Palaeolithic sites in the region. Firstly, at the largest scale, there is a broad correspondence between the occurrence of chalk bedrock and the occurrence of Palaeolithic artefact find spots. As most Palaeolithic artefacts were made out of flint, and as chalk bedrock is the source of most flint raw material, then this confirms that the majority of lithic artefacts were made and abandoned in the same general area. However, it is difficult to monitor mobility within the Chalk/flint zone. This means that extra importance should be attached to discoveries of concentrations of flint artefacts out of the chalk bedrock zone, for instance as at Wolvercote, or Priory Bay, as these sites may have important information to contribute about the mobility of Palaeolithic hominins, and the extent to which they anticipated their need for lithic artefacts, and transported them around the landscape.

Secondly, as discussed above, there are distinct areas of Pleistocene fluvial sediments where Palaeolithic artefacts seem particularly abundant, in particular, Middle Thames terrace deposits and Test Valley deposits at Romsey and Southampton, as well as a number of more isolated, but very prolific sites, such as Woodgreen in the Avon Valley. However, we are completely in the dark as to whether these apparent distributions represent a genuine archaeological reality, or whether they are wholly a reflection of differential investigation – this uncertainty needs to be urgently investigated through controlled and systematic sieving programmes.

There are also prolific but isolated sites in residual Clay-with-flint deposits (eg. Holybourne Down, Hants), head/solifluction deposits (eg. Knowle Farm, Savernake, Wilts) and on some high-level/plateau gravels (eg. Bleak Down, Isle of Wight; Silchester Gravels, Berks). Again, we need to carry out more controlled investigations and establish whether these are genuinely isolated occurrences.

Current understanding

Regional settlement history and cultural trends

As emphasised above, we are uncertain whether the apparent distribution of sites (Fig. 3.1) is a genuine representation of archaeological reality, or merely a reflection of the differential survival of artefact-bearing deposits and their subsequent varied histories of investigation. This disclaimer having been made, certain coarse patterns can be identified.

There is little evidence of hominin presence in the northern part of the region, in the clay lands of northern Buckinghamshire. Hominin presence seems strongly correlated with the river valleys of the Middle Thames and the Test, with occasional sites in other valleys, and

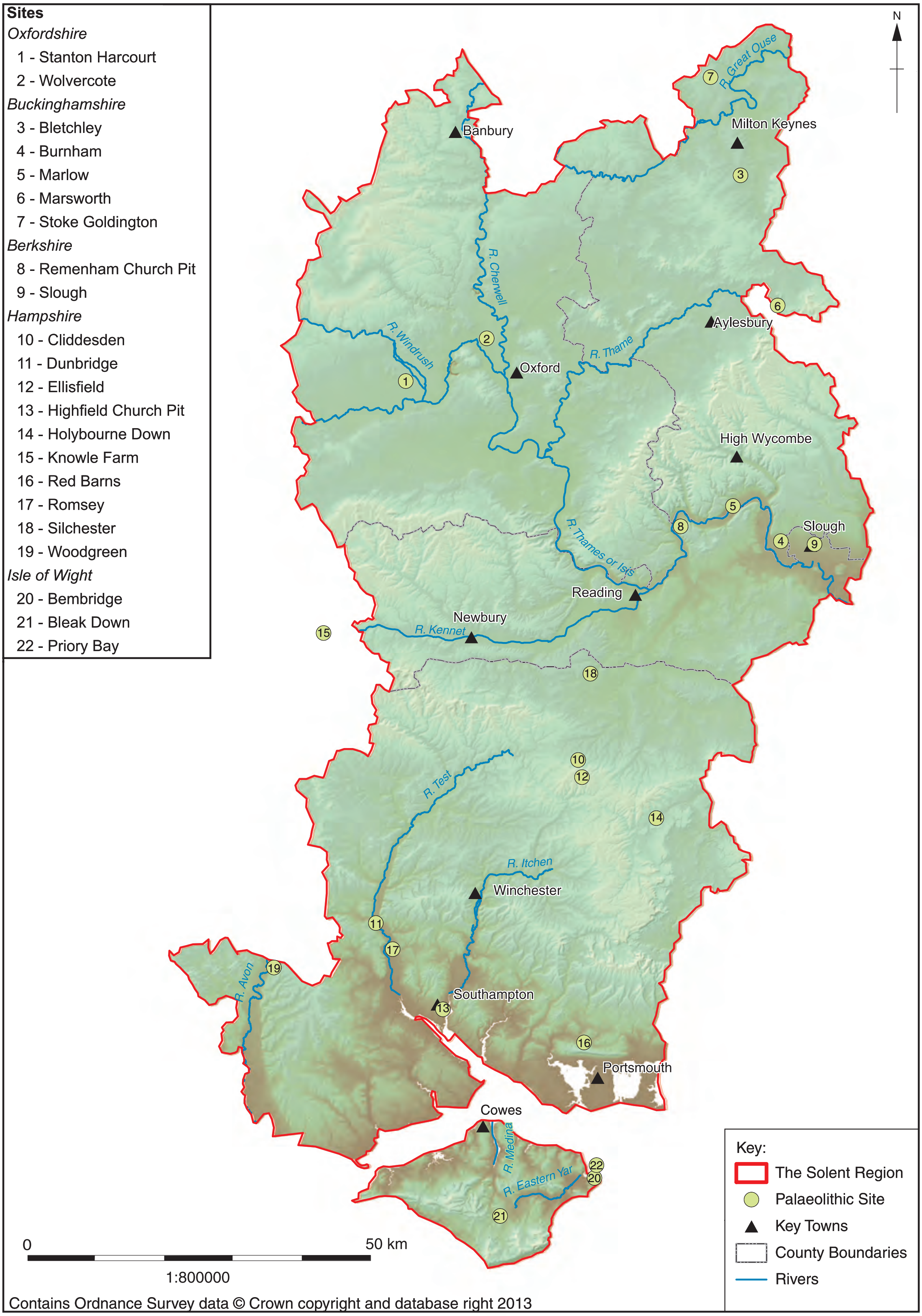

Figure 3.1 Lower and Middle Palaeolithic sites

occasional forays into the chalk uplands represented by handaxe finds from residual Clay-with-flint deposits. A key common factor in almost all areas of artefact concentration is the local availability of a good supply of flint raw material, and this may, therefore, have been a key constraint upon hominin mobility. A notable exception to this pattern is the site at Wolvercote, where an assemblage of flint handaxes apparently occurs well to the north of the nearest outcrop of chalk bedrock. This anomaly merits further investigation.

There is a consistent pattern of the earliest reliable evidence of occupation occurring in late Anglian deposits across the region (Plate 3.11). Artefacts come from the Harefield terrace of the Great Ouse (Buckinghamshire), the Wallingford Fan Gravel and Caversham Ancient Channel (Oxfordshire), the Gerrards Cross Gravel and Silchester Gravel (Berkshire) and terrace 8 of the Test Valley (Hampshire). The typological characteristics (large, well-made ovates, often with tranchet sharpening) of many handaxes from the Caversham Ancient Channel are similar to those from Boxgrove, known to date from a pre-Hoxnian interglacial episode. There are, however, also hints of earlier occupation. In Oxfordshire, a number of artefacts have been found from the surface of the Northern Drift, a deposit that formed substantially before the Anglian period, although it is uncertain whether any

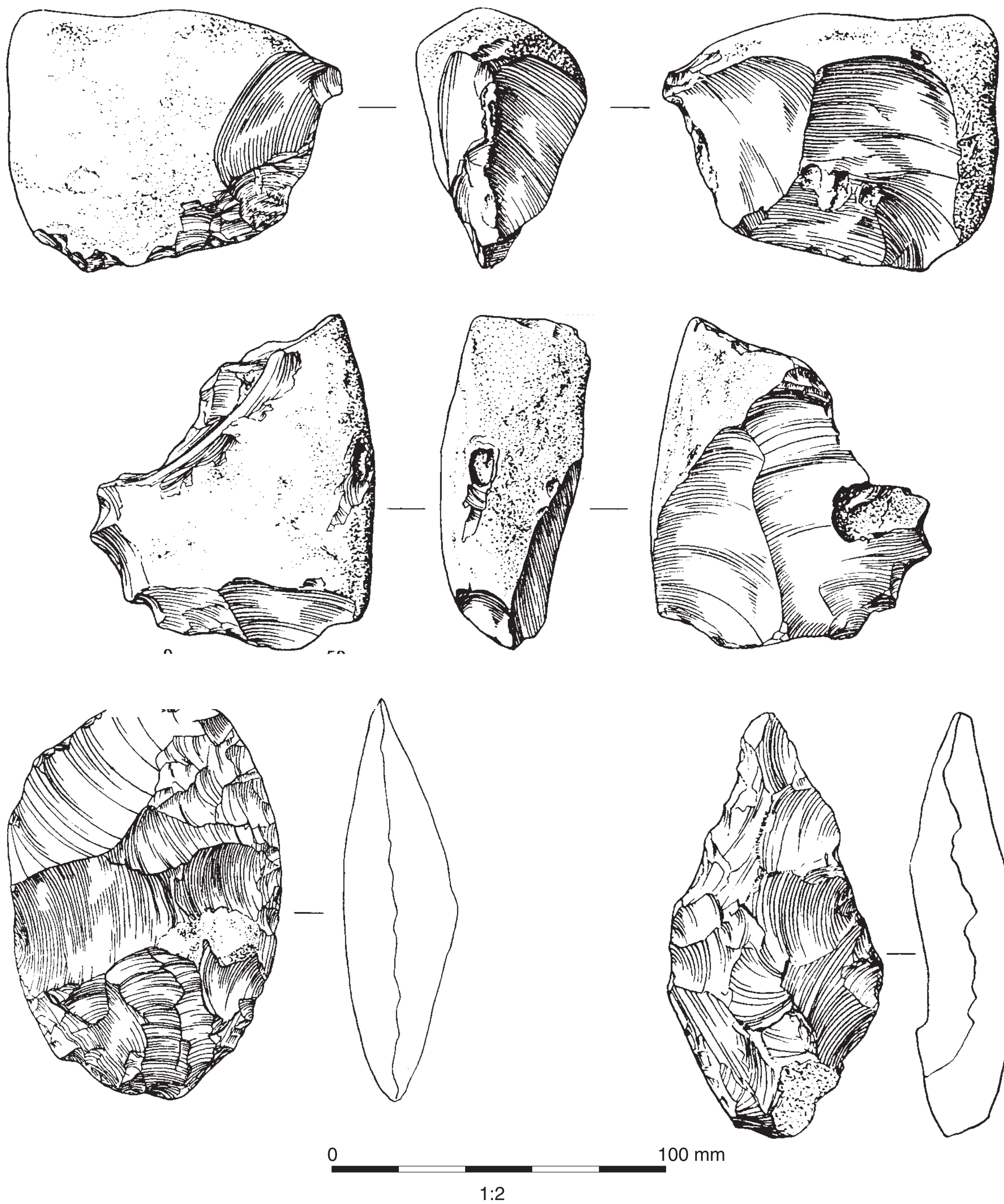

Plate 3.11 Tools from the Anglian glaciation: Highlands Farm pit, *copyright Wymer 1999, 51, fig. 13 with permission Wessex Archaeology*

artefacts originate from within the deposit, rather than being intrusive surface finds of later date.

Secondly, a large collection of handaxes was recovered from within the gravel deposits that cap Bleak Down, on the Isle of Wight. These were described as stratified

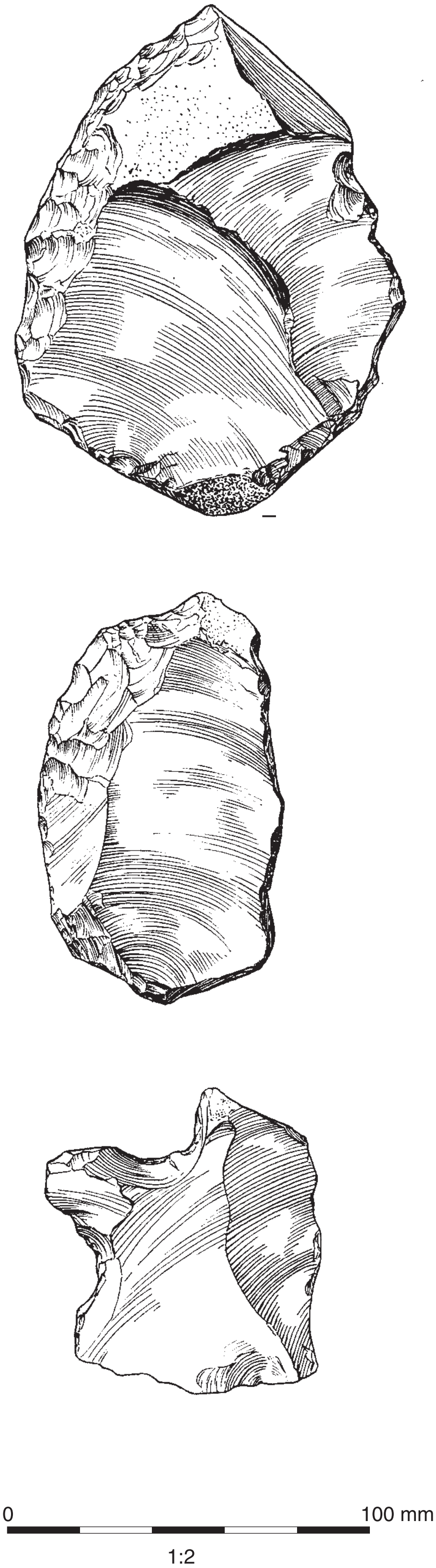

Plate 3.12 Grovelands Pit, Reading, *copyright Wymer 1968 with permission Wessex Archaeology*

fluvial deposits when first exposed early in the 20th century, but no accurate drawings were made, and no exposures have been seen in modern times. If genuinely fluvial, the high altitude of these deposits would make them substantially pre-Anglian in date. Considering the recent discovery of a simple flake/core industry at Pakefield (Parfitt *et al.* 2005) in other substantially pre-Anglian deposits, it is perhaps now time to start paying greater attention to the archaeological potential of early, high-level gravel deposits previously dismissed as of no possible archaeological importance. Handaxes appear to be a characteristic aspect of cultural adaptations in later pre-Hoxnian populations, although not of the earliest Pakefield occupation. This is perhaps another reason for the difficulty of recognising earlier activity, as handaxes are relatively easily discovered compared to small simple flakes and cores.

The climate and environment in Britain would without doubt have been too inhospitable for hominin occupation in the peak cold stages of the Anglian. After the final retreat of Anglian ice, Britain seems to have entered a relative golden age, with prolific evidence of sustained occupation in the Hoxnian (MIS 11). By far the most abundant evidence of early hominin presence in the Solent-Thames region occurs in the post-Anglian and pre-Ipswichian terrace deposits of the Middle Thames valley (Boyn Hill, Lynch Hill and Taplow terraces; Plate 3.12) and the Test valley (T7 through to T2). A case-study of artefact abundance in the Middle Thames, controlled as far as possible for intensity of investigation, has suggested that population suffered a steady decline through the period MIS 11 through to MIS 8 (Ashton & Lewis 2002). Handaxe-dominated assemblages occur throughout this period (see Plate 3.14 below), with Levallois technology first appearing in the Lynch Hill terrace. It is currently uncertain when this phase of occupation came to an end, although we are generally confident that Britain was unoccupied by the Ipswichian (MIS5e). It is widely held that Britain was unoccupied through MIS 6, and indeed there are no unequivocally dated occupation sites within MIS 7, and certainly none within the Solent-Thames region, despite a couple of rich palaeo-environmental sites (Stanton Harcourt and Marsworth).

Following the Ipswichian, Neanderthal occupation in the last glaciation is indicated by the presence of *bout coupé* handaxe finds across the region (Tyldesley 1987; White & Jacobi 2002). Most finds come from brickearth or gravel deposits broadly associated with the last glaciation, but none come from an accurately and independently dated context (see Plate 3.6 above).

Solent-Thames in national context

The overall picture of hominin colonisation and settlement in the Solent-Thames region is broadly similar to that known from other parts of Britain. In addition, many aspects of the lithic cultural record through the Lower and Middle Palaeolithic apparently mirror our understanding from other parts of Britain. However, on closer scrutiny, it becomes evident that the national understanding is primarily based upon the rich record of the Middle Thames as it passes through the Solent-Thames region, making this apparent conformity entirely illusory. The seminal surveys of both Wymer (1968) and Roe (1981), for instance, both explicitly take the record from this region as representative of Britain as a whole. Some aspects of the East Anglian record, such as the pre-Anglian occurrence of the unifacial High Lodge industry and the preponderance of twisted ovate dominant sites in MIS 11, are not represented in the Solent-Thames region. Other regions of Britain, particularly various valleys in the Solent basin – the Test Valley, the Wiltshire Avon and the Stour – have a relatively rich record of Lower/Middle Palaeolithic artefact finds, but have not yet been systematically studied for comparative purposes. A small number of studies on material from the Test Valley suggest both similarities and differences with typological patterns in the Middle Thames region. Roe (2001) identifies a co-occurrence of cleavers with sharply pointed ficron handaxes in broadly contemporary sites in both regions. In contrast, Wenban-Smith (2001b) identifies a distinctive occurrence of unifacially worked handaxes on large side-struck flakes in T4 of the Test, at Highfield Church Pit. This is clearly a topic where further work is required.

Lifestyle and behaviour

One of the fundamental questions concerns whether we can think of early hominins as 'people' at all, or whether we need to try and imagine some kind of bipedal chimpanzee, technically skilful, but lacking a level of consciousness that we would regard as typically human. Despite lack of achievements often regarded as defining 'humanity', such as animal carvings and dramatic pictures on cave walls, we should not jump to the conclusion that they lacked a human degree of consciousness. Firstly, consider the irrelevance of the lack of material evidence for technological and artistic development. Anatomically modern humans have been around for over 100,000 years, yet it is only in the last 30,000 years that cave-painting has proliferated, and only in certain parts of the world, establishing that its absence does not necessarily imply a lack of human capability. Developments during the last 10,000 years such as writing, pottery, use of metals, television, computers and space travel are not so much signs of an evolving species, but of development of technical and information storage systems, which in turn facilitate increasingly swift and complex technological change. No-one would argue that the diverse peoples of the world today are not all part of the human species, yet there are considerable contrasts, in an archaeological sense, in visible material culture between nomads of the Saharan desert, inhabitants of the Amazon rainforest and the denizens of the Solent-Thames region in the twenty-first-century.

It is also necessary to consider the positive implications of the evidence that we do have. Chimpanzees and other animals have developed a range of tool-using behaviours that exploit the innate potential of naturally found objects, sometimes with a small amount of trimming or modification, for instance trimming twigs from a branch to leave a denuded stick. The ability to make even the simplest stone tools requires, however, the much greater ability to foresee the transformation of an innately useless lump of blunt and asymmetrical material into an entirely different sharp-edged object. Even with a clear intention in mind, the ability to achieve the desired end-product depends upon an understanding of how one specific type of stone will fracture when hit, and the ability to transmit this knowledge from one generation to the next. These abilities were developed two million years ago in Africa.

Manufacture of the sophisticated handaxes by some of the earliest inhabitants of Britain depended on visualising how the removal of single flakes would contribute to the shaping of the final artefact. Although knapping depends upon being able broadly to predict how a flint nodule will fracture, there is always some uncertainty. Tiny variations in the force or location of percussion, together with the almost incalculable complexity of how a single flaking blow will impact on the nodule as a whole, affected by factors such as supporting hand pressure and overall three-dimensional shape and balance of the nodule, lead to a certain amount of unpredictable variation. As knapping progresses, short-term objectives are being continually developed and modified to reflect the specific, and sometimes unwelcome, outcomes of attempted individual flake removal. In fact, making a handaxe is very similar to playing chess, with the same mixture of deliberate planning, often several moves ahead, and almost unconscious strategic action, based on years of experience. It seems inescapable that the Archaic hominids of the Lower and Middle Palaeolithic were capable of thought processes broadly similar to modern humans, and that their lack of technological development was fundamentally ignorance and lack of necessity rather than stupidity.

This has implications for how we understand their behaviour. While some still see the Archaic world as one of a fifteen-minute attention-span, with tools made, used and abandoned as required, it is questionable whether such strategies could have worked in the seasonal climates of north-west European latitudes with their patchily distributed raw material resources. Moreover, there are sites which show clear patterning as locations of handaxe manufacture/export or handaxe discard incompatible with a strategy of tool use and discard to meet immediate expediencies (Wenban-Smith 2004a and b). We can, therefore, reasonably imagine an Archaic world involving foraging parties going on excursions, targeting specific resources, tooling up at certain well-known raw material sources *en route* or in advance, and habitually returning, laden with food, to specific base locations or temporary camps for overnight stays (Plate 3.13). Some scarce or labour intensive equipment, such as knapping pebbles or wooden spears, was probably either cached at specific locations around the landscape or carried and cared for as personal equipment.

Socially, these Archaic humans would have functioned within a group, and life would have been dominated by

Plate 3.13 Reconstruction of a Homo Heidelbergis site, *copyright OA, drawn by Peter Lorimer*

maintaining and negotiating social status and sexual relationships within the group, embedded within day-to-today subsistence activities. Items of personal equipment such as handaxes and spears could well have been significant weapons in this social battleground, and the incredible attention paid to the size and symmetry of certain handaxes or Levallois cores probably reflects their function in the social arena rather than any practical concerns in relation to butchering efficiency. Cut-marks on animal bones from certain sites, and in particular Boxgrove, confirm the long-standing assumption that meat-eating was central to diet, an argument supported by our omnivorous dentition and the necessity for a high protein diet to support our brain development (Aiello and Wheeler 1995; Stanford and Bunn 2001). There is no sign of the controlled deliberate use of fire until late in Neanderthal development, so, through most of the Lower and Middle Palaeolithic, meat would have been eaten raw, emphasising the continual need to acquire it fresh.

A number of studies over the last decades have suggested for the Lower Palaeolithic group sizes reaching 20–40 individuals with a home territory of *c.* 30 x 30 km, with group sizes increasing to 60–80 and territorial range to *c.* 50 x 50 km in the Middle Palaeolithic (Gamble and Steele 1999).

Finally, what was the size of these early humans and what did they look like? The fragments of skeletal material that we have are sufficient to confirm a fully bipedal hominid with a brain size approaching our own, or even exceeding it in the Neanderthal era. The tibia from Boxgrove indicates the extreme robustness of at least one very early Briton, perhaps similar to an international rugby player, and the fairly large number of continental Neanderthal remains gives a clear image of the general robustness, heavy brow ridges, long head and forward-jutting face of the final Archaics. Skeletal material from the intervening period, however, is restricted to very few specimens, none of which allows facial or post-cranial reconstruction. Look around the diversity in any gathering of more than a few people in the present day, and it is clear that the small quantity of material we have is insufficient for any generalisations concerning whole Archaic populations. It is possible that post-cranial proportions would have varied with climatic change, with cooler conditions encouraging squatter body shapes, as is the case with Neanderthals. The large size of many handaxes, hammerstones and waste knapping debitage provides an indicator, based on experience from modern experimental knapping, that Archaic hominids would have been more robust and stronger than the majority of the present-day population (Plate 3.14).

There are no archaeological indications of any form of clothing, and bearing in mind the cold climate (usually colder than the present day), one has to consider how survival was possible without fire or protective clothing in the latitudes of north-west Europe. A number of animals that colonised more northerly latitudes from a tropical origin developed increased fat and body hair to aid

Plate 3.14 Giant handaxe from Furze Platt, Berkshire *copyright Trustees of the London Natural History Museum*

survival. These included the woolly rhinoceros and woolly mammoth, the remains of which have been found in the arctic permafrost. It seems highly likely, therefore, that Archaic humans would have been adapted in a similar way, and possessed increased subcutaneous fat and a thick furry pelt over the whole body.

Transition to the Upper Palaeolithic

The last British Mousterian occupation of Britain is represented by occasional Neanderthal incursions during the last glaciation in the time range 100,000 to 50,000 BP, mostly identified through their convenient habit of manufacturing the typologically distinctive *bout coupé* handaxe (see Plate 3.6). The Upper Palaeolithic commences with the arrival of modern humans and their associated range of lithic and bone/antler artefacts, characterised as Aurignacian after the site of Aurignac in France (Mellars 2004). The first influx into Europe seems to have occurred from the south-west in MIS 3, *c.* 40,000 BP. There are a number of British sites with Upper Palaeolithic evidence dating between *c.* 30,000 and 26,000 bc (uncalibrated radiocarbon years), particularly Kent's Cavern in Devon and Paviland Cave on the Gower peninsular in Wales (Jacobi 1999). Early Upper Palaeolithic sites in Britain are concentrated in the south-west, and it seems possible that the route of Upper Palaeolithic colonisation of Britain was by the Atlantic sea-board. Britain appears only to have occasionally been visited by both Neanderthals and early modern humans, and never, as far as we know, contemporarily with each other. Southern Spain seem to have been the last refuge of the Neanderthals (Finlayson *et al.* 2006), and their range seems to have contracted in conjunction with the expansion of the early modern human range. It is unlikely that these two events are unrelated, although the precise nature of any competition or interaction between these two hominin groups is uncertain. It is most likely that ecological factors lie behind their apparent inability to occupy the same terrain, rather than more romantic notions of overt competition. However, there is no *a priori* reason why Britain might not have been another refuge where Neanderthals remained as early modern humans colonised increasing swathes of mainland continental Europe, and this should perhaps constitute one final question upon which to focus further research in the region.