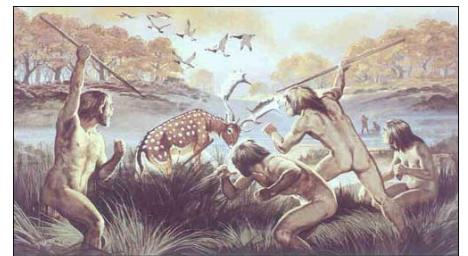


## The Ancient Human Occupation of Britain

**Editor's Introduction** | Humans arrived in Britain over 500,000 years ago but occupation has not been constant since that time. Populations have come and gone in response to environmental factors, the most important of which is climate. The Ancient Human Occupation of Britain project aims to investigate and document the history of the human community in the British Isles and to reveal how those people lived. Chris Stringer of the Department of Palaeontology at The Natural History Museum and head of the project explains what is already known about this fascinating aspect of prehistory and what he and his colleagues aim to discover.

The Ancient Human Occupation of Britain (AHOB) research project is a five-year programme funded by the Leverhulme Trust which began in October 2001. Its aim is to investigate the timing and nature of the human occupation of the British Isles during the Quaternary (the geological period which started about 1.8 million years ago--the Pleistocene is the name given to the part before the warm period in which we live now). The project brings together a range of specialists including archaeologists, palaeontologists, stratigraphers, sedimentologists, and isotope analysts from a core of British universities and national museums.



A group of *Homo heidelbergensis* on the banks of the river at Swanscombe, England, about 400,000 years ago.

The central purpose of the programme is to provide a detailed settlement history of Britain over at least a 500,000 year period. This will be achieved by reconstructing ancient Britain with its former inhabitants, revealing aspects of their technology and behaviour and exploring how and why these changed over time, reconstructing the environments in which they lived and the resources that these provided, and documenting the animals that shared their landscape. By taking this broad sweep in time within a single sub-region of Europe, it is hoped to identify patterns of human social organisation, behaviour, technology, economies, habitat preferences and landscape use. The project takes a multidisciplinary approach towards integrating known archaeological and environmental data with the Quaternary timeframe.

During the Quaternary, the landmass that would become the British Isles witnessed frequent and often dramatic transformations in climate, environment and landscape. The long- and often short-term effects of these factors on human populations must have been dramatic if not catastrophic. Ice-sheets repeatedly advanced and retreated, fluctuating global sea levels led to sporadic isolation from mainland Europe and major changes in the pattern of North Atlantic currents dramatically influenced the nature and rapidity of climate change. Repeated glaciation successively remodelled the British landscape and its river systems. Diverse mammal faunas have been recorded from this time period, containing species as different as hippopotamus and reindeer, while floras varied from temperate woodland to steppe tundra.

Against this background a fluctuating signal of human presence can be recognised over at least half a million years. Abundant archaeology has been preserved at many British sites and faunal remains provide further direct evidence of human activity in the form of butchered or modified bone. These are often found associated on well-preserved occupation surfaces, a rare occurrence in a European context. Although actual human fossils are rare in Britain, those that do occur are well provenanced. Hence there are few better places to examine the many factors influencing and

limiting the distribution of early human populations.

During the peak of the last Ice Age, 20,000 years ago, the northern polar front extended down to the level of Iberia and there were icebergs floating off the coast of Portugal. Britain was locked in an icy regime and during the winter was surrounded by frozen seas. It is thought that people were unable to sustain occupation in Britain during this period. At the times of the lowest sea levels and maximum ice, the continental shelf on which Britain is situated was joined by quite an extensive land bridge to Europe. So potentially, people, animals and plants were able, periodically, to spread from Europe. But when sea levels were high, Britain was either an island or connected to the continent by only a very narrow land bridge. The interaction of these forces can be modelled and so the ability of fauna, flora and people to come to and fro can be charted. Thus as the climate pendulum swung backwards and forwards, profound climatic and geographic changes occurred.

Some of these climatic fluctuations were extremely rapid--some switches of the polar front identified in ice cores from Greenland seem to have occurred in about 10 years. One of the conditions for such switches seems to be an increase in freshwater in the polar North Atlantic. We should beware, as this is one of the phenomena apparently taking place right now as a result of global warming.

About 120,000 years ago, the last major warm stage before the present one occurred and the British landscape in some ways resembled modern day Africa with hippos, elephants, rhinoceros and hyaenas. The sea level was high, similar to or perhaps even slightly higher than the present day. But 100,000 years later, when the polar front had migrated right down to Iberia, the sea had shrunk because much of the Earth's water was locked up as ice. Britain was then a home to snowy owls, arctic foxes, reindeer and lemmings. The landscape was desolate, the climate severe and, as far as we know, no people inhabited Britain at this time.

The Ancient Human Occupation of Britain project developed out of the knowledge that the changing climate acts as a strong signal; a control over the ability of people to come in and out of Britain. Added to this, there are the excellent faunal and archaeological records--the collections in The Natural History Museum are the best in the world for British Pleistocene mammals, while the British Museum houses the best archaeological collections of the humans who were in Britain during this period. But, interestingly, despite the fact that many of the fossils and artefacts come from the same sites, specialist researchers have usually studied one or the other and not both together. So as well as carrying out new excavations, AHOB is bringing together a team of people to study existing collections in unprecedented detail in order to get the maximum information out of them.

Britain could potentially have been populated during each of the last seven warm climatic stages, and completely depopulated during each of the most severe cold stages. However, the real patterns need to be reconstructed from the available evidence.

Evidence of people in southern Europe, about 800,000 years ago, has been found at the Atapuerca site in Spain, and at Ceprano in Italy. But, as yet, there is no evidence that people had come further north at this stage. The species represented by the earliest occupation in northern Europe is *Homo heidelbergensis*, which is known from both African and European specimens. It is thought that in Europe this species evolved into the Neanderthals whilst in Africa, it evolved into our species *Homo sapiens*. The brain volume and dentition of *Homo heidelbergensis* are within the modern size range but the skull is still very different from that of a modern human. It is thick, long and low with a massive brow ridge, a big face and no chin on the lower jaw. So *Homo heidelbergensis* displays a mixture of primitive and advanced characteristics.

A tibia (shin bone) and two incisor teeth, which appear to represent *Homo heidelbergensis*, were found at Boxgrove, Sussex, in southern England. The site dates from about 500,000 years ago. In

the same levels, hand axe tools were found scattered on ancient land surfaces. The early humans living there went to the chalk cliffs of the South Downs nearby, picking out cores of flint, knapping their artefacts and using them to butcher animals including horse, deer, and even rhinoceros. Butchered bones have been found indicating that in this very dangerous, open landscape where wolves, lions and hyenas roamed, these people were able to secure the carcasses of rhinos and systematically disarticulate them using the stone tools they had made.

The evidence at Boxgrove is so good that semi-circular scatters of flint fragments--struck off and dropped by knappers as they made their flint tools--have been found. These remains show exactly how the tools were made. They can sometimes be pieced together and a core can be reconstructed with an empty space in the middle, where a hand axe had been made and taken elsewhere. The human tibia indicates that "Boxgrove Man" was a large, strongly built individual, assumed to be male, although this cannot be definitely established from the material preserved. "Boxgrove Man" is attributed to *Homo heidelbergensis*. Although there is no mandible to compare with the type specimen of *Homo heidelbergensis*, the teeth and tibia fit with what we know of this species. So people were in Britain 500,000 years ago, but were they there any earlier? That's one of the questions AHOB is attempting to answer.

Part of the evidence we are using is that of small mammals such as voles and mice that have evolved through time and can be used to place the sites in relation to each other. Biostratigraphy (the dating of strata using fossil evidence) is very important in trying to establish the dates of some of the earliest British sites because there are virtually no absolute dating methods that can be applied to them. One of these sites is Westbury-sub-Mendip, in Somerset. Biostratigraphic research applied to layers containing artefacts found in a huge cave there has revealed that the site could be a whole interglacial cycle older than Boxgrove (that is, about 600,000 years old).

We are also investigating sites that may have evidence of early human activity of Cromerian age (about 500,000-700,000 years old) in deposits along the coast of East Anglia. Here, we again rely on the biostratigraphy of mammal evolution to date the sites, but there are other markers. One is the main Anglian ice advance, which occurred about 450,000 years ago. So if there are deposits of the Anglian ice advance overlying a site, we know it must be older than that. Furthermore, in the early middle Pleistocene (prior to about 600,000 years ago) there was a huge river system--the Bytham River--running from the Midlands across East Anglia into what is now the North Sea. This river ceased to flow in the Middle Pleistocene due to ice advances, so if we find its deposits we know we are dealing with early middle Pleistocene occupation, at least.

The Hoxnian interglacial period was about 400,000 years ago. There is extensive evidence of human occupation from this time. One of the richest sites for both fauna and archaeology is Swanscombe, south of the River Thames in Kent. Around 100,000 hand axes have been recovered from the gravels of the ancient river at Swanscombe. By this time, the ice of the Anglian advance had come in and swept out the previous populations, so the people who lived at Swanscombe must represent a recolonisation. The back of a human skull was found there, and is thought to be that of a female. The skull is primitive in some respects, such as its thickness, but is more rounded at the back, even showing some features of the succeeding Neanderthals.

Comparing the Swanscombe "skull" with fossils from central Europe, some specimens from this time retain more primitive features and there seems to be a lot of variation in the human populations. This raises the possibility that there could even have been two different human species in Europe and Britain at this time.

We are also investigating the variation in archaeology. In Britain, around 400,000 years ago, there were hand axe industries, as represented in the main gravels deposits at Swanscombe, but also another industry without hand axes, the Clactonian, lower in the sequence. We are trying to ascertain whether these different industries represent the same people carrying out different activities, or whether they could represent separate colonisations by distinct populations, or even

different species of human.

*Homo heidelbergensis* occupied Europe and Britain around 500,000 years ago, and we believe it had evolved into the Neanderthals by about 300,000 years ago. A change in the archaeology can also be identified at this time when a new technology, the levallois technique (named after a French locality), appeared in Europe and Britain. Using this technology, flint knappers mapped out the shape of the artefact they wanted to make in advance by preparing the core, and were then able to strike off a flake of pre-determined shape. This technique, also known as the Mode 3 technique, came into Britain about 300,000 years ago. Rob Foley and Marta Lahr, from the University of Cambridge, believe that the technique came from Africa with new populations. They have proposed that the ancestors of the Neanderthals may have come into Europe in the Middle Pleistocene about 300,000 year ago, bringing this new technology with them. Other researchers disagree and believe it is more likely that the technology evolved in Europe without major population change. AHOB is investigating the appearance of this prepared core technique to determine whether it developed gradually or suddenly and whether there is evidence of the arrival of new people at this time.

Moving forward now to about 200,000 years ago, the archaeological record reveals a surprising decline in the evidence of human occupation in Britain. From the Hoxnian interglacial with its rich sites, each subsequent interglacial indicates a lesser human presence. Pontnewydd Cave in north Wales is one of the few British sites from 200,000 years ago showing human occupation by what seem to be early Neanderthals. The artefacts found there look at first glance rather crude, but in the absence of good local raw materials such as flint, people had to make do with what they could find. They used the prepared core technique to make small hand axes out of local volcanic rocks.

A little later, we come to one of the biggest mysteries of the AHOB project--what happened to the inhabitants of Britain in the millennia after 200,000 years ago? There seems to be a period of at least 100,000 years with no definite evidence of a human presence in Britain. This is very difficult to explain. It seems likely that an ice advance about 150,000 years ago cleared people out of Britain. Then as the climate improved again, sea level may have risen quickly, turning Britain into an island, and people perhaps didn't make it back in time. Fossil evidence has revealed that the area we know as Trafalgar Square was at that time populated by hippos, rhinos and elephants. These megafauna are well documented, but there are no people associated with it, no signs of artefacts or butchered bones. But even when the climate deteriorated again and sea level started to fall, people apparently did not come back straight away, which is very puzzling. AHOB will be using dating techniques such as uranium series, electron spin resonance and luminescence to try to find sites of human occupation in this empty 100,000 year period. Perhaps there are new sites with human occupation or perhaps we have wrongly dated existing sites. Only further research will show how severe and long-lasting was this gap in human occupation.

By 50,000 years ago, people had definitely returned. Neanderthal archaeology has revealed their presence, even though the only physical remains that have been found so far in the British Isles are some Neanderthal teeth from La Cotte de St. Brelade in Jersey.

At Lynford, a site in Norfolk, there is evidence of an association between Neanderthals and mammoths. This is a very exciting site that has only been excavated in the last few months, by the Norfolk Archaeology Unit. It has revealed wonderful remains of several mammoths, and numerous small hand axes made by Neanderthals dating from about 50,000 years ago. One of the research questions to be addressed is that none of the mammoth bones so far seem to have cut marks on them. So is this association accidental? Perhaps these hand axes were being used to butcher other animals elsewhere on the site and were then mixed in with the mammoth remains? Or perhaps the Neanderthals were indeed hunting, or at least scavenging, the mammoths. AHOB is involved in this rich vein of current research.



The two small handaxes on the left are from the Middle Palaeolithic, about 50,000 years ago. The three specimens on the right are from the Upper Palaeolithic, about 20,000 years ago.

The proportions of stable isotopes of carbon, nitrogen and oxygen vary with geography, climate and vegetation patterns. Living creatures constantly absorb such isotopes from their environment, and traces of these remain in fossil bones, teeth and sediments. They can thus be used to reconstruct ancient climates, landscapes and even animal diets, and this research also forms an important part of AHOB.

About 35,000 years ago the archaeological record of Europe changed. The Middle Palaeolithic artefacts of the Neanderthals gave way to new ones, termed Upper Palaeolithic. This change coincides with the arrival of new people called Cro-Magnons, after a famous site of discovery in France. They seem to be part of a dispersal of modern-looking peoples coming out of Africa from about 100,000 years ago. As part of this dispersal, early modern humans reached Australia by about 60,000 years ago, China by at least 30,000 years ago, and later still migrated into the Americas. The modern human dispersal in Europe eventually reached Britain, and around this time (about 30,000 years ago), the Neanderthals died out across Europe. A significant part of AHOB is an attempt at mapping when and where the Neanderthals occupied, and disappeared from, Britain. There is evidence provided by a [radiocarbon date](#) from a fragment of upper jaw found in Kent's Cavern, Torquay, that modern people were in Britain by about 31,000 years ago. But it has not yet been established whether there was an overlap with the Neanderthals in Britain, as there apparently was elsewhere in Europe.

A marvellous burial site from the early Upper Palaeolithic (Gravettian) was found in Paviland Cave on the Gower peninsula of south Wales. It has been dated to about 27,000 years, using radiocarbon techniques. Here, a man was buried along with ivory artefacts and red ochre powder. This indicates that modern humans were well established in Britain at that time. But, by 20,000 years ago, at the peak of the last ice age, it appears that Britain emptied of people once again. The population returned as the ice retreated, as represented by a site at the entrance to Gough's Cave in Cheddar Gorge. Here, rich archaeological evidence of human occupation from the late Upper Palaeolithic (Creswellian) was found, including artefacts made from antler and mammoth ivory, as well as the bones of adults and children dating from about 14,000 years ago. Some of the human bones had been broken up quite forcefully and some show cut marks, suggesting cannibalism or ritual burial practices such as defleshing of the skeleton. But it is not known whether these individuals were killed or died naturally.

Evidence shows that Britain was cleaned out of people one last time, during a short, final cold spell, before the reestablishment of human populations using Mesolithic tools about 12,000 years ago. The interglacial period that characterises our present world, and Britain, today started about 12,000 years ago. A modern human skeleton found at Gough's Cave and known as "Cheddar Man", dates from the start of this warm stage. Mitochondrial DNA recovered from this skeleton shows that the individual is closely related to living Europeans.



The Natural History Museum

Reconstructed head of "Cheddar Man" from Gough's Cave in Somerset. The lump above his eye is a bone infection or tumour.

By the time the AHOB project has been completed, in 2006, we hope to have built up a calendar of when people were in Britain and when they were not here, and to have identified the main factors controlling their presence and absence. We would like to assess what drove population migrations--did they mainly result from chance events? Were people always at the mercy of the environment or are there signs that they gradually adapted to survive under increasingly difficult conditions? Eventually we hope to be able to compare our evidence with that from Europe and beyond in order to better understand whether ancient humans increased their abilities to cope with climatic and environmental changes, and if so, in what ways. And finally, let's hope that we can avoid having to face a severe climatic crisis of our own in the immediate future, one which would test us every bit as much as past crises tested our ancestors.

## **Books:**

Title: African Exodus : The Origins of Modern Humanity  
Format: Paperback  
Author: Stringer, Christopher; McKie, Robin  
Date: 01-JUN-98  
ISBN: 0805058141

Title: In Search of the Neanderthals : Solving the Puzzle of Human Origins  
Format: Paperback  
Author: Stringer, Christopher; Gamble, Clive  
Date: 01-APR-95  
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Title: Human Evolution  
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Author: Andrews, Peter/ Stringer, Chris/ Wilson, Maurice  
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