

Introduction

A unique prehistoric story was revealed near Thetford in 2002. Archaeologists discovered a site where Neanderthal people had butchered mammoths some 60,000 years ago. It is the most important Neanderthal site ever found in the British Isles and was excavated between April and September 2002 by the Norfolk Archaeological Unit.

This exhibition looks at the colonization of Norfolk by early humans. It explains who the Neanderthals were and how we are related to them.

For much of the last 2 million years the Earth has experienced an "Ice Age" during which the world's climate has changed dramatically many times.

Long and intensely cold periods called 'glacials' resulted in the northern parts of Europe, Asia and northern America being covered with thick sheets of ice. Sea level fell by up to 100 metres as water was locked up in the ice sheets on land.

Between the glacials were shorter, warmer, periods called 'interglacials' when the climate was similar to, or even warmer than, our climate today.

At least three different species of humans lived in Norfolk during the Ice Age.



Only one of the human species is alive today (us!). The other two species became extinct.

We are known as "Modern Humans", and our species is *Homo sapiens sapiens*.

We evolved in Africa and migrated slowly from there about 130,000 years ago.

We reached the Far East and Australia about 60,000 years ago. Our species arrived in what is now the British Isles only about 33,000 years ago.

Before Modern Humans arrived, much of Europe was already inhabited by another species, *Homo neanderthalensis*. These Neanderthals as we call them lived in Europe from about 250,000 years ago to a little over 30,000 years ago. Although they were a different species, they were very similar to us in many respects. They lived in social groups, used tools to prepare their food and made fire. In Europe we occasionally find their skeletons and tools buried in the ground, most often in rock shelters and caves.

Norfolk is one of the best places in the British Isles to look for undisturbed evidence in the ground of all three human species because the rocks and soils beneath our feet are the right age.

centre: A family group of "cavemen", in this instance Neanderthals

Neanderthals in the British Isles

Evidence that Neanderthals once lived in what is now the British Isles is very scarce. Not a single bone from a Neanderthal skeleton has ever been found in this country, just a few teeth and the remains of their tools and meals.

Most early human species made tools – usually sharp chopping and cutting tools made out of flint (a very hard, sharp, stone). The larger of these tools are called "handaxes". They were held in the hand and not used with a handle.

The shapes of these are very distinctive to the trained eye, and we can tell which species of human made which tools.

Thousands of flint tools from Modern Humans have been found in Britain, but Neanderthal tools are much rarer indeed. Most of these were collected over a hundred years ago when standards of recording information were lower during excavations, and fewer items were collect-

ed, so we have very little information to accompany the few handaxes.

We know very little about the lifestyles of Neanderthal people in the British Isles because very few sites have been excavated with modern methods.

How did Neanderthal people make a living in the harsh landscape of the British Isles during the Ice Age?

Archaeologists have been looking for new sites to try to answer this.

The recent discovery of a Neanderthal site near Thetford in South Norfolk in the summer of 2002 was beyond everyone's wildest dreams.



left: Neanderthal man

above: A typical Neanderthal "boot-coupé", or "flat-bitted cordate" handaxe

right: A neanderthal family group



The discovery

Many archaeological objects have been found near Mundford in Thetford Forest where gravel is currently being extracted from a group of pits. The stony gravels were deposited by the old River Wissey tens of thousands of years ago during the Ice Age. Over the last few years in particular, flint handaxes and animal bones have been found in these pits. How old were they? And where had they come from? We didn't know.

To find out, a 'watching brief' was placed on the area. John Lord, a local archaeologist and expert maker of flint tools, was commissioned by the gravel company to visit the site regularly to see if anything interesting was being unearthed.



In March 2002 one of the gravel diggers unearthed something unusual about three and a half metres below the normal surface level. This was a channel of black peaty sediment, not normally found amongst stony gravels. There was something strange sticking out of it.

John Lord recognized this as a tusk of a woolly mammoth, and soon found some

mammoth bone fragments and teeth as well. He called Norfolk Museums and Archaeology Service who sent their mammoth specialist to look at the site.



Whilst collecting the bones of this woolly mammoth skeleton, something even more unusual was found. It was a beautiful black flint handaxe, in perfect condition. It was lying in sediment that clearly had not been disturbed for tens of thousands of years. From the shape, they could tell instantly that it was made by a Neanderthal. This was an incredible and very rare find.

This site, with stone artefacts and mammoth bones together, was what British archaeologists had been waiting for to study how Neanderthal people had lived here during the Ice Age!



*left: Searching through the ancient soil disturbed by the bulldozers, with the original intact channel in the background
top: The first handaxe found at the site
right: carefully removing the gravels overlying the site*

The excavation

Specialists from the Norfolk Archaeological Unit were quickly called in. Volunteers were mobilized to assist with picking through the sediment already disturbed by the bulldozers, and soon another four perfect handaxes were found and dozens of well-preserved bones.

It soon became apparent that there was still a lot of undisturbed sediment left to look through, and that the preservation of the finds was truly excellent. The surfaces of the bones were in good condition. The edges of the flint tools were still razor sharp. Even fantastic iridescent colours could be

seen on the well-preserved wing cases of beetles tens of thousands of years old.

It appeared that not only was this the very best Neanderthal site ever found in the country, but the preservation was good enough to date the presence of Neanderthals in the British Isles with some accuracy – something which had never been done before!

It was immediately very clear this was going to be a site of

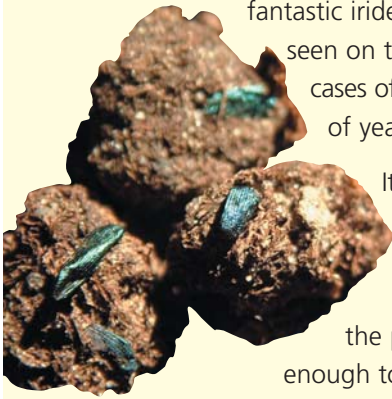
major international significance.

The extraction company stopped work on that side of the pit and allowed the archaeologists to work unhindered.

Funding for a detailed excavation was secured from the Aggregates Levy Sustainability Fund, administered by English Heritage. This was the first project to benefit from a new "aggregates tax", a fund for environmental and educational projects associated with sand and gravel extraction industries.

Within a couple of weeks a major excavation of international importance was underway.

The overlying gravels were removed very carefully, to reveal a black, almost peaty, sediment nearly two metres thick which extended for many metres in each direction. A team of about twenty specialist archaeologists moved in to begin the painstaking excavation, and a steady stream of distinguished research scientists from major universities and National Museums paid regular visits.



*middle left: Beetle wing cases
bottom left: The excavation in its early stages middle right: An unusual flint tool
bottom right: A vertebra of a woolly mammoth*

The excavation

As the archaeologists excavated the channel, the different layers of sediment within it were given individual numbers and described in detail. Every artefact and piece of bone larger than two inches was individually numbered, recorded and its position accurately measured in three dimensions using a laser-emitting surveying instrument.

Smaller finds were labelled and taken back to the laboratory.



Large fragile finds such as mammoth bones and tusks were encased in rigid plaster jackets for protection before lifting and transport back to the laboratory.

Samples of sediment were also taken to recover plant remains and pollen, molluscs, insects and the bones of small animals such as frogs. Nearly all of the sediment in the channel was sieved down to just one millimeter to make sure that even the smallest flint flakes and animal bones



were recovered. Even the tiniest of clues is of the utmost importance when excavating such a rare site as this.

Preliminary results show that other large animals were living in the same landscape as the Neanderthals.

These included:

- reindeer
- bison
- horse
- woolly rhinoceros
- woolly mammoth
- brown bear
- spotted hyaena
- red or arctic fox
- wolf.

The preservation of the plant and insect remains is outstanding.



*left: Creating a protective and supporting plaster jacket for some fragile deer antlers
middle: Canine tooth of a brown bear*

*top right: Three tusks are piled up in the right bottom corner of this picture, and between them and the fourth tusk are many large pieces of woolly mammoth skull, where four flint handaxes were found
bottom right: Excavating the central area – note that the mammoth tusk in the foreground*

The best Neanderthal site in the British Isles

It is unusual to find stone tools and fragments of bone that have remained exactly where they were left tens of thousands of years ago. It is extremely rare to find any evidence of Neanderthals in association with mammoth remains.

This excavation was the most detailed and thorough ever to have been undertaken on a Neanderthal site in the British Isles.

The study of this information will enable some very detailed observations to be made about the lifestyle of these Neanderthals and the world they lived in.

Before this site was discovered the presence of Neanderthals in the British Isles had never been dated conclusively. This site has now been dated to between 64,000 – 67,000 years ago, about thirty thousand years before modern humans arrived in the British Isles.

At the peak of the last major glaciation conditions were too harsh in this country

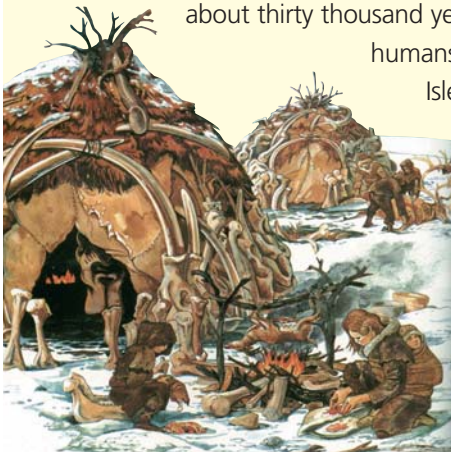
for most animals and human species to survive. Although the Thetford Neanderthals were not living in Norfolk during this coldest period, we do know that they were living in Norfolk during a fairly cold phase because:

- many of the fossils found were from cold adapted species - such as reindeer, woolly mammoth, woolly rhino and some of the insects.
- Well-preserved plant remains show that it was too cold even for trees to grow.

Imagine the whole of Norfolk covered only by grasses, mosses, reeds and sedges. This is all the animals had to eat.

The absence of trees meant that there was no wood and therefore the large, strong bones of the mammoths were a very valuable resource.

It was noticed during the excavation that most of the big limb bones of the mammoths were missing. Spotted hyaenas no doubt ate many of the smaller bones, but they could not have eaten the larger ones very easily. Were the larger bones taken to be used for making tools, building shelters, or perhaps for burning on a fire?



left: 15,000 years ago in Eastern Europe early modern humans built shelters using mammoth bones and tusks as raw materials (From Lister's "Mammoths: Giants of the Ice Age")
middle: mammoth molar tooth

bottom right: Close-up of handaxe lying within a smashed mammoth bone

What is happening now?

Archaeologists have already begun to answer many questions about the enigmatic Neanderthals and the harsh world that they lived in.

But there is still much to learn about this site.

- We know that the Neanderthals were using their flint tools to cut meat from the mammoth carcasses – but was this a single event or are several seasons represented?
- Were they just scavenging the carcasses of animals that had already died from natural causes or had they hunted and killed the mammoths?
- Which bones have the greatest number of cut-marks on them from the flint tools?
- How many individual mammoths died here?
- In what season did these animals die, and what was the average yearly temperature?

These are some of the questions we hope to answer by studying the bones and the flint tools very carefully over the next few years.

The answers will tell us much about the Neanderthals' abilities and social habits.

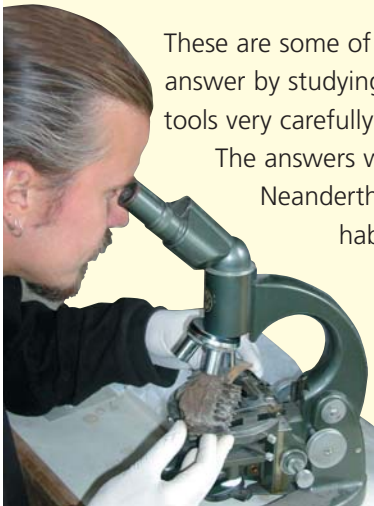
Forty-four handaxes, over seven hundred "worked"

pieces of flint and several thousand pieces of bone were discovered. Digging up the fossils is only the first stage of this very complicated and internationally important project.

Specimens from the excavation are now being conserved (cleaned and repaired) and studied very closely. Archaeologists at the Norfolk Archaeological Unit together with specialists from the Universities of Bradford, Coventry, Durham and London are currently analysing the finds and the information collected from the site. It will take a year of intensive research on the flint artefacts and thousands of pieces of bone before they have answers to all of their questions.



left: All the bones are being studied for evidence of butchery marks made by the flint tools above right: An artists impression of what the site may have looked like 50,000 years ago, with Neanderthals butchering the woolly mammoth carcass in the pond or watering hole below right: A pile of three well preserved mammoth tusks



The Neanderthals

Homo neanderthalensis lived in Europe from 250,000 years ago to about 30,000 years ago, overlapping with *Homo heidelbergensis* to start with and modern humans towards the end. *Homo sapiens sapiens*, or "Modern Humans" evolved in Africa about 200,000 years ago. They spread to Asia and Africa about 60,000 years ago and reached Europe by about 40,000 years ago where they overlapped with the Neanderthals for about 15,000 years.

All of these hominid species made tools from flint. They had their own particular manufacturing styles and "toolkits".

Neanderthals were probably similar enough in appearance to be mistaken for modern humans today, if they were shaven and given modern clothing.

However, there were many physical differences:

- Neanderthals had shorter forearms and shorter lower legs and had a barrel-chest. This gave them a stocky appearance, similar to some native arctic dwellers today.
- Their shape ensured that less body heat was lost, which was useful for life in a cold climate.
- They also had stronger bones, more powerful muscles and broad, strong hands.

All these are signs of an extremely physical life, probably based on very active hunting.

Neanderthals had a low swept-back forehead, thick brow ridges and a weak chin.

Their large noses warmed air before it reached the chest when resting, or enabled lots of cool air to be breathed in when the body was overheated from great physical exertion.

Evidence from sites in Europe shows that Neanderthals lived in communities, made fire, cared for their injured and sick and buried their dead with grave goods. There is no evidence they built shelters, made fireplaces or stored food. Some scientists think their language was probably more primitive than ours.

The Neanderthals were a very successful species which dominated Europe for 225,000 years throughout some of the most extreme climatic conditions imaginable. We do not know for sure why they eventually died out just 30,000 years ago.



top: A recent reconstruction of a Neanderthal child's face (based on an actual specimen from Gibraltar)

bottom left: A skull of an early modern human, *Homo sapiens sapiens*

bottom right: A skull of a *Homo neanderthalensis*

The first humans in the British Isles

Over the past 150 years flint handaxes have occasionally been found on the beaches of Norfolk, from West Runton in North Norfolk all the way round to Caister-on-Sea, near Yarmouth. These handaxes have usually been rolling around on the beaches for some time before being recognized and picked up. They have never been found lying in their original sediment and it is impossible to date them or find out more about them.

These flint tools probably came from sites that are now offshore. They were submerged by rising sea levels at the end of the last Ice Age. What is now the North Sea used to be a wide, low, valley across which herds of deer, bison and mammoths would migrate. Early hunters would have followed them with the seasons until the valley flooded and what we now know as the British Isles became an island. Today, trawlers, dragging their nets across the bottom of this sea often find handaxes, old bones and mammoth teeth in their nets along with the fish!

In February 2000 a local collector was walking along his favourite stretch of Norfolk coast when he found something a little

unusual which would quite literally rewrite history. He found the tip of a flint handaxe just poking through the surface of a peaty sediment – sediment that was in its original position, laid down hundreds of thousands of years ago. This in itself was the find of a lifetime. However, it was to prove one of the most important prehistoric flint tools ever found in Europe.

Until recently, the earliest date for the presence of any human species in North West Europe was about 550,000 years ago.

This was from a site in Sussex, called Boxgrove, excavated in the 1990s. Here *Homo heidelbergensis* had hunted horses and rhino, and left behind literally hundreds of handaxes. It was thought that this species of humans had probably not settled in Northern Europe much before this date.

However, the sediment in which this new handaxe was found is thought to be about 650,000 to 800,000 years old – possibly half as old again as the Boxgrove site and pushing the age of the occupation of North West Europe much further back than was expected.



top: A technical drawing of the oldest known handaxe in North West Europe (by John Wymer)
middle: A fragment of lower jaw of an extinct type of bison from the site

The oldest human site in North West Europe

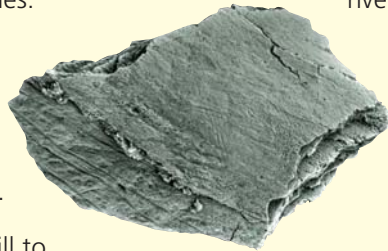
It has not been possible to excavate this ancient site. A close watch is kept on it, as even the tiniest of clues could provide us with a far greater insight to the world of these very distant ancestors. During three years of study we have recovered over thirty pieces of worked flint, and a handful bones. Some of these bones have cut-marks on them, which shows that some species were being butchered and eaten (roe deer, and an extinct species of cattle).

The most important question still to be answered is precisely how old the sediments, and therefore the handaxe, are. The age of the site is well beyond the range of traditional methods such as "carbon dating". However, it is known that the teeth of voles have evolved at a particular rate. If we can find vole teeth at this site, we will be able to estimate the age of the site quite accurately. But over the last three years of looking finds have been very scarce, which is why the exact location of the site is being kept a secret for now.

From our slow but sure forensic investigation of the site we do know that an early human - probably *Homo heidelbergensis* -

made a handaxe at this site, and stayed long enough to re-work some of the flint pieces. Either this hominid, or others, cut meat off a deer bone and the bone of an early cattle, and moved on. They were moving through a gentle, marshy, valley with a slow-moving river containing ducks and frogs.

The plants in this valley included trifid bur-marigold, starwort, sedges, common spike rush, curled pondweed, arrowhead and watersoldier and nearby trees were silver-birches and Norway spruce. These plants and animals indicate a climate very similar to ours today.



centre: A bone fragment from the site, with distinct cut marks from a flint tool in the centre, and along the edge of the bone from the top left to the bottom centre
above right: A skull of Homo heidelbergensis, with distinct similarities to both modern human skulls and Neanderthal skulls
below right: This reconstruction of the site (by Phillip Rye) includes all the species of flora and fauna so far recovered from the site

Mammoths

The two species of elephant alive today, the African and the Asian, are all that remain of a very diverse group of "elephantids". Elephantids evolved and diversified during the last five million years – the same period during which the various human species evolved. The earliest elephantids lived in the tropical woodlands of Africa but later species migrated into Europe, Siberia, Asia and North America.

The elephantids known as mammoths specialized in eating the grasses and shrubs of the cooler areas of northern Europe. When the Ice Ages brought freezing temperatures to most of Europe, mammoths were well adapted to survive.

Norfolk is one of the best places in the world to find mammoth fossils because much of the county contains soils and gravels of the right age.

Mammuthus meridionalis is the ancestor of the three later mammoth species and lived between 3,000,000 and 750,000 years ago in Europe, eating grasses, shrubs and trees.

One group of *Mammuthus meridionalis* migrated to the Americas via North West Russia and evolved into *Mammuthus columbi*, the American Mammoth. This was very similar to Europe's Woolly Mammoth but less hairy.

Mammuthus trogontherii, the Steppe Mammoth, replaced *Mammuthus meridionalis* in Europe



about 750,000 years ago. The famous West Runton Elephant belongs to this species. They mostly ate grasses, but also trees and shrubs. This was probably the largest species of elephantid ever to have lived, standing 4.5 metres high at the shoulder and weighing at least ten tons (the largest living elephants today weigh only about five tons).

During the Ice Ages, about 500,000 to 300,000 years ago, one group of *Mammuthus trogontherii* evolved into *Mammuthus primigenius*. These were the classic "Woolly Mammoths", and they needed their woolly coat to keep them warm. They were able to survive where only grass was available to eat. It is this species we found in Thetford Forest, being butchered and eaten by Neanderthals.

Mammoths died out just 10,000 years ago (except one small group on an Arctic Island which survived until about 3,700 years ago).

Their extinction was probably due to a combination of global climatic changes and the more successful hunting techniques of modern humans.



top: Prehistoric drawing of two mammoths head-to-head from Rouffignac Cave, by early modern humans.
bottom: *Mammuthus primigenius*, the woolly mammoth