

'Peking Man' older than thought

By Paul Rincon

Science reporter, BBC News

Iconic ancient human fossils from China are 200,000 years older than had previously been thought, a study shows.

The new dating analysis suggests the "Peking Man" fossils, unearthed in the caves of Zhoukoudian are some 750,000 years old.

The discovery should help define a more accurate timeline for early humans arriving in North-East Asia.

A US-Chinese team of researchers has published its findings in the prestigious journal *Nature*.

The cave system of Zhoukoudian, near Beijing, is one of the most important Palaeolithic sites in the world.

Between 1921 and 1966, archaeologists working at the site unearthed tens of thousands of stone tools and hundreds of fragmentary remains from about 40 early humans.

Palaeontologists later assigned these members of the human lineage to the species *Homo erectus*.

The pre-war Peking Man fossils vanished in 1941 whilst being transported to the US for safekeeping. Luckily, the palaeontologist Franz Weidenreich had made casts for researchers to study.

Experts have tried various methods over the years to determine the age of the remains. But they have been hampered by the lack of suitable techniques for dating cave deposits such as those at Zhoukoudian.

Open habitats

Now, Guanjun Shen, from Nanjing Normal University in China, and colleagues have applied a relatively new method to the problem.

This method is based on the radioactive decay of unstable forms, or isotopes, of the elements



Original Peking Man fossils were lost in World War II

aluminium and beryllium in quartz grains. This enabled them to get a more precise age for the fossils.

The results show the Peking Man fossils came from ground layers that were 680,000-780,000 years old, making them about 200,000 years older than had previously been believed.

Comparisons with other sites show that *Homo erectus* survived successive warm and cold periods in northern Asia.

Researchers Russell Ciochon and E Arthur Bettis III, from the University of Iowa, US, believe these climatic cycles may have caused the expansion of open habitats, such as grasslands and steppe. These environments would have been rich in mammals that could have been hunted or scavenged by early humans.

Recent revised dates for other hominid occupation sites in North-East Asia show that human habitation of the region began about 1.3 million years ago. The Nature study forms an important addition to this work.

The Peking Man fossils are a vital component of the Out of Africa 1 migration theory, which proposes that *Homo erectus* first appeared in Africa around two million years ago before spreading north and east (modern humans, *Homo sapiens*, would follow much later and supplant all other *Homo* species).

Evidence of the first dispersal comes from the site of Dmanisi in Georgia, where numerous hominid fossils dating to 1.75 million years ago have been unearthed. Finds from Java suggest early humans reached South-East Asia by 1.6 million years ago.

The northern populations represented at Zhoukoudian were probably separated from southern populations represented on the island of Java by a zone of sub-tropical forest inhabited by the giant panda, orangutans, gibbons and a giant ape called *Gigantopithecus*.

These early humans may have survived in island South-East Asia until 50,000 years ago.

Recent discoveries suggest that on the Indonesian island of Flores, *Homo erectus*, or another early human species, became isolated and evolved into a dwarf species called *Homo floresiensis*, nicknamed "The Hobbit".



The Zhoukoudian caves have yielded many fossils of *Homo erectus*



Homo floresiensis survived on Flores until 12,000 years ago

It is not clear whether *H. erectus* ever reached Europe; the earliest European fossils have been assigned to the species *Homo antecessor*. But this classification is disputed, and some researchers believe the Spanish *antecessor* fossils do indeed belong with *H. erectus*.

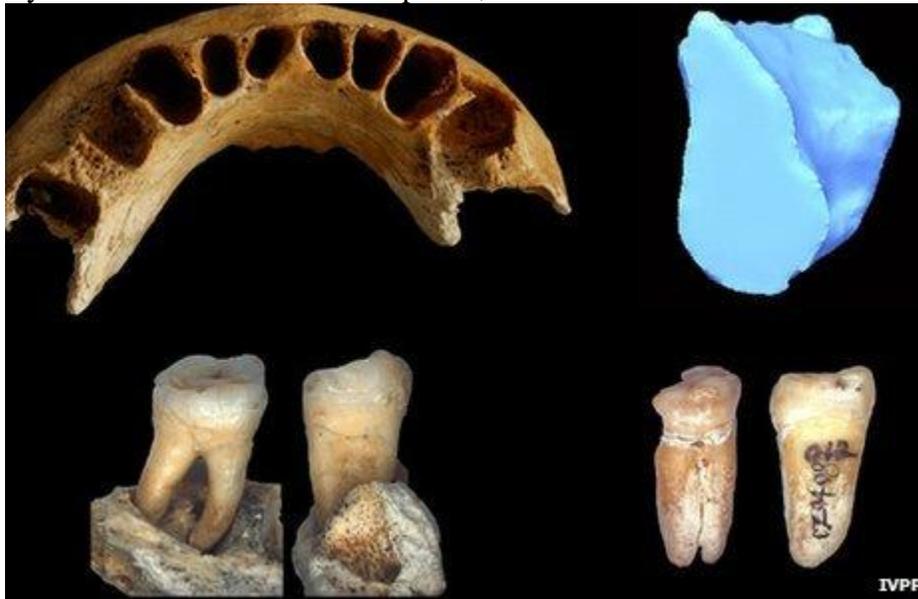
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Early date for Chinese human fossils

By Katia Moskvitch Science reporter, BBC News



Scientists say the chin is distinctly modern in form

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Modern humans could have reached East Asia much earlier than believed, according to new evidence.

An international team analysed fossil teeth and part of a jaw unearthed in southern China in 2007.

In the journal PNAS, the scientists say the fragments belonged to a "modern" human who lived 100,000 years ago.

The study is likely to be controversial: the earliest humans previously known from East Asia were half this age.

Wu Liu from the Chinese Academy of Sciences led the predominantly Chinese team that worked at Zhirendong (Zhiren Cave) fossil site.

US scientist Erik Trinkaus from Washington University in St Louis and R Lawrence Edwards from the University of Minnesota in Minneapolis also took part in the study.

Living together

Dr Trinkaus explained to BBC News that the ancient remains mean modern humans co-existed with our closest relatives - Neanderthals and Neanderthal-like people - across Asia.

"There are some archaic features in the specimen and that suggests to us that these are not just simply modern humans coming out of Eastern Africa, but somewhere along the way they probably intermixed with regional groups of archaic humans," Professor Trinkaus told BBC News.

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“Start Quote

There was something that allowed these modern humans to spread across southern Asia, but at the same time they weren't able to spread further North across Asia or into Europe”

Erik Trinkaus Washington University, St Louis, US

"Previous evidence for co-existence was basically between Europe and Western Asia and adjacent part of Africa, but what this suggests is that the geographical range of co-existence spread all the way across Asia, which is an enormous difference.

"This is the first evidence for that."

The remains were spotted by scientist Chang-Zhu Jin during excavations at a site in Southern China.

The researcher was able to distinguish the valuable fossils among "the bones of a whole bunch of other mammals from a little over a 100,000 years ago".

Professor Trinkaus said that in terms of human evolution, the remains showed distinctive modern human features - a lower jaw with a distinctive chin.

"That means that modern humans spread across at least southern Asia some 100,000 years ago," added the scientist.



The fossils were discovered at Zhirendong in southern China

"It is interesting because we get the persistence of archaic humans, pre-modern humans, further north across all of Eurasia for another 60,000 years.

"It means that there was something that allowed these modern humans to spread across southern Asia, but at the same time they weren't able to spread further north across Asia or into Europe - they did not [have] this overwhelming superiority that is sometimes attributed to modern humans since they clearly didn't spread across all of the old world at this time period."

Possible controversy

Professor Fred Smith of Illinois State University reviewed the paper for PNAS journal. He said that it was possible such a significant discovery could generate controversy.

"It will remain somewhat controversial because it's only one specimen at one site, but the fact is that it is a very important piece of the puzzle," he told BBC News.

"There's always a possibility that a date is wrong or that something has gone wrong. I don't see any [such] indication, but there's always a possibility of complications that weren't noticed or weren't completely understood.

"I'm sure that there will be some controversy, some people that are going to say: 'Well, this is all well and good, but we need more information to be certain'."

To make sure the study is correct, Professor Smith said scientists will continue their efforts to find more specimens of modern human fossils from southern China.

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[Human fossils hint at new species](#)

The remains of what may be a previously unknown human species living just 11,500 years ago are identified in southern China, although the science team behind the discovery is stopping short of a formal classification.

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