

ALL ABOUT WOOLLY MAMMOTHS

Extra fat was stored in this hump to help mammoths survive cold winters.

Mammoths shared the snowy grassland with bison, sabre-toothed cats, reindeer and woolly rhinos.

Could scientists really bring these prehistoric beasts back to life? Read on to find out...



During the last **Ice Age**, the world looked totally different. And not just because humans hadn't invented **farming** or towns yet. **Sheets of ice** covered most of the northern continents, and just south of this vast ice cap was a massive area of cold, dry **grassland** known as the **Mammoth Steppe**. It was called that because – you guessed it – **mammoths** roamed around there!

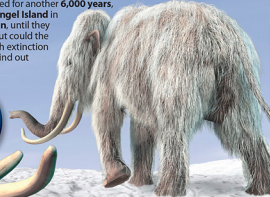
BUILT TO CHILL

Woolly mammoths were perfectly suited to this **tree-less, snow-covered** environment. They had **shaggy fur** to keep them cosy, **small furry ears**, huge **tusks** for **digging up plants** from under the snow (and sometimes **fighting**), and a **thick layer of fat**. All these adaptations allowed them to survive on Earth for **at least 250,000 years**. So why did they become extinct?

EXTINCTION EXPLANATIONS

All the mammoths on the mainland died out about **10,000 years ago**, towards the end of the Ice Age. This could be because a **warming planet** made it **harder for them to survive**. Or early people may have **over-hunted** them as their hunting techniques improved. A small population of mammoths lasted for another **6,000 years**, isolated on **Wrangel Island** in the **Arctic Ocean**, until they perished, too. But could the era of mammoth extinction soon be over? Find out on the right...

Mammoths once lived across most of Europe, including Britain!



Mammoth discoveries

Many mammoth remains have been unearthed in the Siberian permafrosts. Here are the most famous finds...



YUKA

The best preserved specimen ever found, little **Yuka** was uncovered in **2010**. It's estimated that she was **6-9 years old** when she died. Her mummified carcass still had fur and her brain was still intact, despite being about **39,000 years old**. Whoa!



LYUBA

One of two **month-old baby** mammoths discovered in **2007**, **Lyuba** was so well preserved that scientists could detect her **last meal** (her mum's milk). Her mouth contained **mud**, suggesting she choked to death after falling in water **40,000 years ago**. Poor Lyuba!

BACK FROM THE DEAD?

Scientists are working on ways to make woolly mammoths roam the planet once more. We investigate **how, why, and whether they should return...**



THE SCIENCE

Mammoths share **99%** of their genes with **Asian elephants**. Using powerful new technology, scientists plan to **alter the genes** of Asian elephants to give them **fur** and **extra fat** – just like a mammoth! These new genes would be placed in the **embryo** (very early stage of life) of an **Asian elephant**, which would develop inside an **adult female elephant**. The mum would then give birth to a **mammoth-elephant hybrid baby** – a **mammoth**!

BUT WHY?

Scientists think that by **releasing herds of mammoths** on the **Arctic permafrost** (areas of ground that have been frozen since the Ice Age) they could **help stop climate change**! If the permafrost **melts**, harmful **gases** will be released into our atmosphere, quickly **warming up** the planet with disastrous consequences. But experiments have shown that **re-introducing large herbivores** onto the plains can **lower temperatures** by as much as **15°C**. That's because they **encourage steppe grass to grow**, which **reflects sunlight**. Clever!

THE PROS

Stopping climate change!

We need all the help we can get to stop our planet heading towards climate change catastrophe!

We'd help right a wrong!

Humans probably caused mammoths to go extinct in the first place. Isn't it fair that we bring them back?

Other species could be saved, too!

The technological advances made during the mammoth project could help us save other extinct animals in future and save the lives of more people.

And it would be kinda cool to see mammoths!

THE CONS

Endangered animals could be harmed!

Carrying a hybrid baby could cause pain and even death to an already endangered Asian elephant. Or if an 'artificial womb' is used instead, the baby would miss out on bonding with its mother.

We can't predict the consequences!

We don't really understand elephants' social structure – other elephants may react badly to a hybrid. And the hybrid may be in pain or distress.

It raises many ethical questions!

Asian elephants are only as closely related to mammoths as humans are to chimps – would it be acceptable for a human to give birth to a chimp? And if we can 'design' mammoths, does that mean it's ok to make human 'designer babies', where parents choose the IQ or hair and eye colour of their newborns?

It's against nature!

Many people think that we should steer clear of 'playing god' with technology altogether.

What do YOU guys think?

Email kids@kids.co.uk and let us know!