

Unlocking the genetic secrets of Ice Age horses found in Kents Cavern

Prof Alan Outram from the archaeology department at the University of Exeter and Torquay Museum

Recent advances in the analysis of ancient DNA have revealed that the horses which roamed Devon's Ice Age landscape some 12-13,000 years ago were genetically almost indistinguishable from those in France during the same period.

As such, we can probably take the famous Upper Palaeolithic cave art scenes from France and Spain as good representations of British horses at that time.

Back then, because so much water was land-bound as ice, sea levels were lower and there was a land connection to the continent.

That said, there was still a formidable channel river but it appears that this was insufficient a barrier to cause deep division

between horse populations, as occurred in other regions with significant geographical barriers.

The ancient DNA was successfully extracted and sequenced from a horse tooth by a team led by Prof Ludovic Orlando of Paul Sabatier University, Toulouse in collaboration with Prof Alan Outram from the archaeology department at the University of Exeter and Torquay Museum.

It was part of vast new study recently published in the journal Nature last October about the genetic history of horses that also showed the origins of modern domestic horses to be rooted in the Pontic-Caspian steppes of Southern Russia, some 4-5,000 years ago.



A depiction of an Ice Age horse from the cave of Lascaux in south-western France

Picture: TORQUAY MUSEUM

The analysis revealed a little more detail about the Kents Cavern horse.

We know, from the presence of a y chromosome, that it was a stallion.

It was also possible to distinguish some physical characteristics from the genetic sequence, though this is not without complexity.

Most horses in the Ice Age had bay or dun-coloured coats, but there were a few rare exceptions to this, some even having dark-spotted white coats.

The Kents Cavern horse carries a section of genetic coding or 'allele' for coat colour that is unusual for the time period and

potentially associated with a silver coat.

Frustratingly, from this allele alone we can't be totally sure this stallion was silver, but it adds to our understanding of the coat colour gene pool at the time.

So what became of these wild, Ice Age horses, if our modern riding horses have Eastern European origins?

Potentially, as a result of both climate change at the end of the Ice Age and human hunting for food, numbers dwindled.

Horses were perhaps the second most numerous hunted animal, after reindeer, in the later Ice Age in Western Europe, and the warming climate into the

Holocene period reduced appropriate open grassland environments.

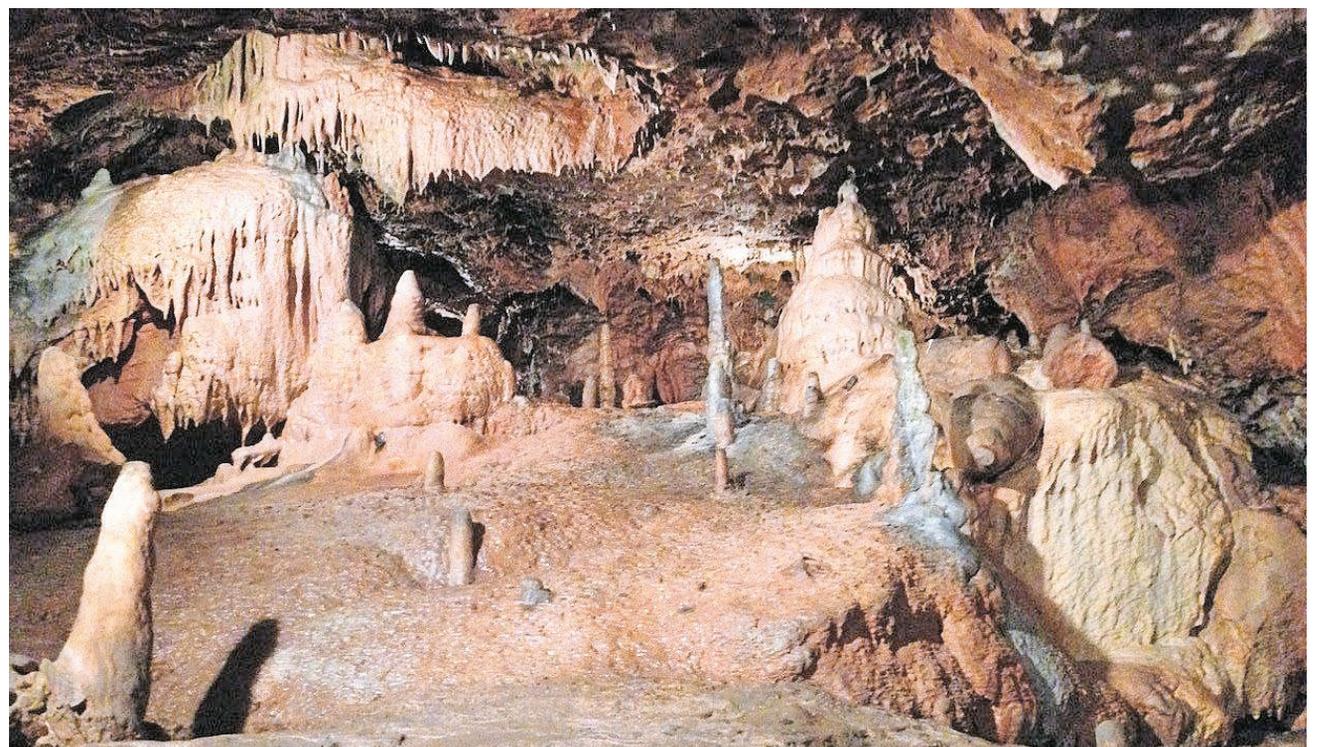
While wild horse populations persisted longer in places Iberia, Anatolia and the Eastern European and Central Asia Steppes, ice melt causing rising sea levels cut Britain off from these 'refugia'.

While we have evidence for horses surviving a few thousand years into the British Holocene, it appears they likely went extinct before the first Neolithic farmers arrived, with horses not being seen again on our shores until domestic horses were reintroduced by people during the Bronze Age using boats.



The Ice Age horse tooth from Kents Cavern that provided ancient DNA for the project (P9392)

Picture: TORQUAY MUSEUM



Science has revealed details about the Kents Cavern horse

Picture: SUBMITTED