What rabbits can tell us about Neanderthal extinction?

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A Neanderthal skeleton, left, compared with a modern human skeleton. Credit: American Museum of Natural History

When thinking about the extinction of Neanderthals some 30,000 years ago, rabbits may not be the first thing that spring to mind. But the way rabbits were hunted and eaten by Neanderthals and modern humans – or not, as the case may be – may offer vital clues as to why one species died out while the other flourished.

Dr John Stewart, Associate Professor in Paleoecology and Environmental Change at Bournemouth University (BU), is part of a team which analysed data on rabbit bone remains, found in archaeological excavations of caves in the Iberian Peninsula. They found that while rabbits were a crucial part of the modern humans' diet, they were relatively under-utilised by Neanderthals.

"Rabbits originated in Iberia and they are a very special kind of resource, in that they can be found in large numbers, they are relatively easy to catch and they are predictable," said Dr Stewart. "This means that they are quite a good food source to target. The fact that the Neanderthals did not appear to do so suggests that this was a resource they did not have access to in the same way as modern humans."

The fact that Neanderthals – typically associated with hunting large prey over short distances in woodland settings – were seemingly unable to catch and kill such creatures is compounded by rapid changes in the environment. "The climate was changing and the ecology was decreasing in terms of the amount of animals they were able to hunt," Dr Stewart explained. "If Neanderthals were more tied to these large mammals, the loss of them could have driventhem to extinction."

Evidence that modern humans were more able to hunt across large, open spaces – and used technological innovations such as twine and traps to help them catch faster,smaller prey, including rabbits – suggests that they adapted better to this change insurroundings. Dr Stewart said: "Modern humans had more that they could do – they had more possibilities and were more able to cope with the deterioration of climate than Neanderthals were. If modern humans thrivedwhen Neanderthals did not, it must mean that modern humans were better at exploiting resources than Neanderthals."

This ability to adapt to shifting temperatures is particularly pertinent,

with climate change currently threatening to impact upon human life once more. "It does relate to our own situation currently, with humans now in this potentially perilous situation with climate change," said Dr Stewart. "From a long-term ecological perspective, all species go extinct – that is an inevitability. But if we do not want it to happen sooner rather than later, we have to understand this phenomenon."

Dr Stewart's current work looks at how population changes in other species – such as birds and lemmings – at the time may mirror and have impacted upon what happened to the Neanderthals. He has also begun a multidisciplinary project with BU Associate Professor in Psychology Dr Jan Wiener and Senior Lecturer in Creative Technology Dr Christos Gatzidis. This will use computer game and eye-tracking technology to explore
detection of prey in different environments and uncover more about how these abilities first evolved.

The extinction of the Neanderthals, our closest known relative, is a subject that continues to attract fascination and debate, and so it is important to Dr Stewart that his work can be accessed by people who want to find out more. Publishing open access is one way in which he hopes to achieve this. "It is a no-brainer, really," he said. "I do not think that any of us do research and want no-one to read it.

"Neanderthal extinction is one of the big anthropological issues – it's the loss of the best known close relative that we've got, and I think most people have a passing interest. Our understanding of these species is amazing and it's only getting better as we are realising how important it is to ourselves."

More information: "Rabbits and hominin survival in Iberia," *Journal of Human Evolution*, Volume 64, Issue 4, April 2013, Pages 233-241, ISSN 0047-2484, dx.doi.org/10.1016/j.jhevol.2013.01.002

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