

Humans adapted to living in rainforests much sooner than thought

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The site of Batadomba-lena where the oldest human teeth (c. 20,000 years old) used in the study were excavated. Credit: Patrick Roberts

An international research team has shed new light on the diet of some of the earliest recorded humans in Sri Lanka. The researchers from Oxford University, working with a team from Sri Lanka and the University of Bradford, analysed the carbon and oxygen isotopes in the teeth of 26 individuals, with the oldest dating back 20,000 years. They found that

nearly all the teeth analysed suggested a diet largely sourced from the rainforest.

This study, published in the early online edition of the journal, *Science*, shows that early modern humans adapted to living in the rainforest for long periods of time. Previously it was thought that humans did not occupy tropical forests for any length of time until 12,000 years after that date, and that the tropical forests were largely 'pristine', [human](#)-free environments until the Early Holocene, 8,000 years ago. Scholars reasoned that compared with more open landscapes, humans might have found rainforests too difficult to navigate, with less available food to hunt or catch.

The *Science* paper also notes, however, that previous archaeological research provides 'tantalising hints' of humans possibly occupying [rainforest environments](#) around 45,000 years ago. This earlier research is unclear as to whether those early human dwellers of the rainforest were engaging in a specialised activity or whether they entered the rainforest for only limited periods of time in certain seasons rather than remaining there all year round.

Co-author Professor Julia Lee-Thorp from Oxford University said: 'The isotopic methodology applied in our study has already been successfully used to study how primates, including African great apes, adapt to their forest environment. However, this is the first time scientists have investigated ancient human fossils in a tropical forest context to see how our earliest ancestors survived in such a habitat.'

The researchers studied the fossilised teeth of 26 humans of a range of dates - from 20,000 to 3,000 years ago. All of the teeth were excavated from three archaeological sites in Sri Lanka, which are today surrounded by either dense rainforest or more open terrain. The analysis of the teeth showed that all of the humans had a diet sourced from slightly open

'intermediate rainforest' environments. Only two of them showed a recognisable signature of a diet found in open grassland. However, these two teeth were dated to around 3,000 years, the start of the Iron Age, when agriculture developed in the region. The new evidence published in this paper argues this shows just how adaptable our earliest ancestors were.



Rainforest near site of Batadomba-lena, where the oldest human teeth (c. 20,000 years old) used in the study were excavated. Credit: Patrick Roberts

Lead author, Patrick Roberts, a doctoral student specialising in the investigation of early human adaptations from Oxford's Research Laboratory for Archaeology and the History of Art, said: 'This is the first study to directly test how much early human forest foragers depended on the rainforest for their diet. The results are significant in showing that early humans in Sri Lanka were able to live almost entirely on food

found in the rainforest without the need to move into other environments. Our earliest human ancestors were clearly able to successfully adapt to different extreme environments.'

Co-author Professor Mike Petraglia from Oxford University said: 'Our research provides a clear timeline showing the deep level of interaction that [early humans](#) had with the [rainforest](#) in South Asia. We need further research to see if this pattern was also followed in other similar environments in Southeast Asia, Melanesia, Australasia and Africa.'

More information: Direct evidence for human reliance on rainforest resources in late Pleistocene Sri Lanka, *Science*, www.sciencemag.org/lookup/doi/.../1126/science.aaa1230

Provided by Oxford University

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