

Tusk suggests greener, wetter Arabian Desert in the past

11 April 2014



A 300,000-year-old elephant tusk was excavated from the Nefud Desert in Saudi Arabia. Credit: Palaeodeserts Project

A joint international research team led by the University of Oxford, in collaboration with the Saudi Commission for Tourism and Antiquities (SCTA), has discovered a giant tusk in the Arabian Desert.

The two pieces of tusk, which together measure six feet (2.25m) in length, are thought to have belonged to a now extinct genus known as *Palaeoloxodon* (the so-called 'straight-tusked' [elephants](#)).

An elephant's carpal bone located five metres away from the pieces of tusk was also recovered from the same [sand layer](#) at an excavation site in the Nefud Desert. The sand layer was dated to around 325,000 years before the present day in recently published work by a Swiss team (Rosenberg et al in 2013), and the Oxford team says this suggests that the elephant remains found there are also about that age.

These finds are among the first to be discovered at the site since excavations started in 2013. The researchers say the finds are hugely significant because they suggest that in order to support the life of big beasts, today's arid terrain was much wetter and greener in the past.

Project leader Professor Mike Petraglia, from the School of Archaeology at the University of Oxford, said: 'The discovery of the elephant tusk is significant in demonstrating just how much the climate could have changed in the Arabian Desert. Elephants would need huge quantities of roots, grasses, fruit and bark to survive and they would have consumed plenty of water too.'

'Although the sand dunes in the Nefud Desert carry on for miles in the present day, indeed across an area the size of England, around 325,000 years ago it seems the landscape would have been very different.'

The findings were revealed at the Green Arabia conference at Oxford University, at which scientists are examining the latest evidence on how early humans and animals are likely to have been affected by past climate change in the Arabian Peninsula.

Attending the opening of the conference was HRH Prince Sultan bin Salman, Secretary General of the SCTA. He and Professor Ali Ghabban, Head of Antiquities at SCTA, have supported the project by approving the archaeological work undertaken by the research team.

As a starting point for the research, the team analysed satellite imagery which reveals a network of ancient rivers and lakebeds in the Arabian Peninsula. Using this photographic evidence, they selected sites near ancient water sources for their excavation work as these sites are where animals and [early humans](#) are likely to have gathered.

From the size of the carpal bone, the researchers have made initial conservative estimates on the body size of the elephant and believe it came from an individual that weighed 6000-7000kg and stood over 3.6m at the shoulder. A living African elephant weighs between 3000-6000kg, with males averaging around 3.3m at the shoulder.

Researchers were able to identify the genus by comparing the bones of the feet with museum collections elsewhere.

The research team also discovered other animal remains in the same sand layer, including a big cat, thought to be a now-extinct jaguar, and the remains of a member of the horse family, as well as oryx – antelope species which are still native to the Arabian Peninsula today.

Oxford researchers have collected further samples in order to date the 'burial' layers of sand where the elephant remains were found using luminescence dating methods. By measuring how much radiation the grains of sand have absorbed and the rate at which this energy is deposited, they can work out how much time has elapsed since the elephant was buried. Based on the preservation of the bones, the researchers say the elephant was probably buried soon after death.

Provided by Oxford University

APA citation: Tusk suggests greener, wetter Arabian Desert in the past (2014, April 11) retrieved 24 May 2019 from <https://phys.org/news/2014-04-tusk-greener-wetter-arabian.html>

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