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## **Domesticated sheep reached southern Africa over 2000 years ago – new finding**



Archaeological site at Spoegrivier in the Northern Cape.

Photo: Lita Webley

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The transition from hunting to farming – which in south-western Africa took the form of herding of domestic animals – allowed for a more secure food supply that supported human population growth, and in some parts of the world led to the establishment of the first cities, accelerated technological development and more. But when this transition took place in southern Africa – when domesticated animals were introduced from further north in Africa – has been hotly debated.

This is because until recently, reconstruction of this process has relied on visual identification (based on shape and size) of archaeological animal bones as sheep or cattle, as opposed to wild species. A project initiated by the University of Cape Town (UCT) shows conclusively that sheep were present in South Africa more than 2000 years ago.

Using cutting edge biomolecular identification carried out at the GLOBE Institute and the Novo Nordisk Foundation Center for Protein Research in Copenhagen, the archaeological phalanx bone from Spoegrivier dated to just over 2000 years ago was found to indeed be from a sheep. This is the earliest domesticated animal in southern Africa. The study also showed that left-over bone protein extracted more than 25 years ago for the purpose of radiocarbon dating can yield successful zooarchaeology by mass spectrometry (ZooMS) identification ([a low-cost technique which uses preserved proteins to identify the species from which they are derived](#)).

The team used palaeoproteomics and peptide mass fingerprinting to obtain secure species identifications of key specimens of early domesticated fauna from South Africa, dating to ca. 2000 BP ('Before Present' is a scale used in radiocarbon dating).

Speaking on the project, Professor Judith Sealy of the UCT Department of Archaeology shared: "Work such as this is crucial in developing a reliable picture of the beginnings of farming in southern Africa, and in our understanding of precolonial history in the region. Successful species identification using bone extracts prepared nearly three decades ago for radiocarbon dating is particularly exciting. This will enable identification of specimens that are no longer available or are too precious to re-sample."

It can be difficult to distinguish fragmentary remains of early domesticates (sheep) from similar-sized local wild bovids (grey duiker, grey rhebok, springbok – southern Africa lacks wild sheep) based on morphology alone. But analysis using ZooMS revealed a marker (m/z 1532) present in wild bovids that is capable of discriminating between wild bovids and caprine domesticates. The study also showed that minimally destructive sampling methods, simply rubbing the bone with a pencil eraser or polishing film, can also yield enough material to enable species identification.

The study demonstrates the importance of developing appropriate regional frameworks of comparison for future research using ZooMS as a method of molecular species identification.

Dr Alberto Taurozzi of the GLOBE Institute shared: "The identification of a peptide marker capable of identifying domesticates in a rapid and cost-efficient manner is an especially valuable tool for species ID in the region, as DNA recovery is limited by poor preservation in hot climates."

[Access the scientific report.](#)



Oldest sheep in southern Africa, from Spoegrivier, Northern Cape.  
Photo: Neil Rusch

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