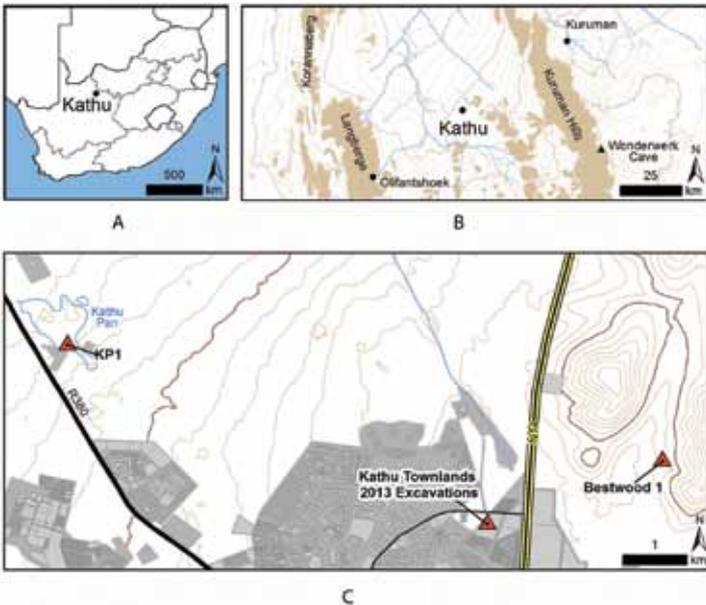
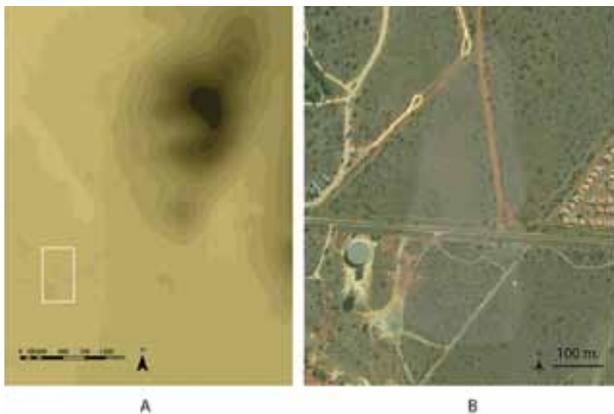


EARLIER STONE AGE ARTEFACTS *found in Northern Cape*



A. Location map within South Africa. B. Location map with relation to the regional topography and Wonderwerk Cave. C. Topographic context of sites of the Kathu Complex discussed in this article. Grey shading indicates developed areas and areas undergoing development. Note that the boundaries of Kathu Pan are approximate and do not indicate the limit of areas of archaeological potential. Image: doi:10.1371/journal.pone.0103436.g001



A. Digital Elevation Model (DEM) showing the topographic context of Kathu Townlands. Square shows the approximate area shown in B. (DEM courtesy of Stephen Wessels, The Zimani Project). B. Aerial photo of Kathu Townlands. White shading indicates approximate limits of the declared locality. Asterisk indicates location of 2013 excavations. Image dated 5/27/2011 predates recent development south of Frikkie Meyer St. Image source Terraserver. C. View of Townlands site north of Frikkie Meyer St. D. Detail showing scatter of artefacts on the surface of the site north of Frikkie Meyer St. Image: doi:10.1371/journal.pone.0103436.g002

The importance of intensive archaeological research to heritage conservation. QUEST with the University of Cape Town and the University of Toronto.

Excavations at an archaeological site at Kathu in the Northern Cape province of South Africa have produced tens of thousands of Earlier Stone Age artefacts, including hand axes and other tools. These discoveries were made by archaeologists from the University of Cape Town (UCT - South Africa) and University of Toronto (Canada), in collaboration with the McGregor Museum in Kimberley (South Africa).

The archaeologists' research on the Kathu Townlands site, one of the richest early prehistoric archaeological sites in South Africa, was published in the journal *PLOS ONE* on 24 July 2014. It is estimated that the site is between 700 000 and one million years old.

History versus modern development

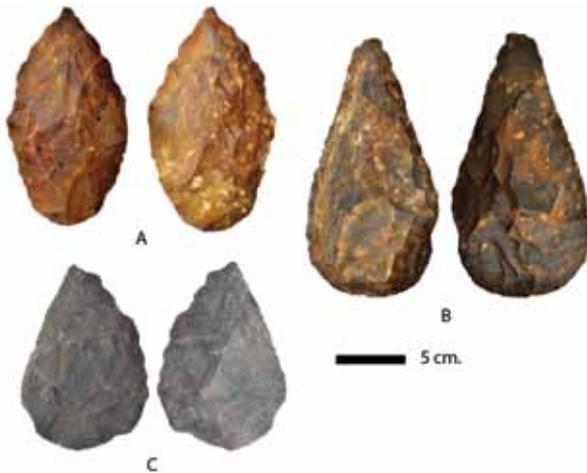
One of the important features of this site is that it is an example of an ancient settlement that appears to have been formed because the geology of the area makes it perfect for the manufacture of stone tools. Kathu Townlands is situated between the Kuruman Hills to the east and the Langberg mountains to the west on a low hill. The surface of the site is literally covered in the artefacts (lithics) produced by intensive manufacture of stone tools, interspersed with exposed bedrock, calcrete and sand. The presence of these areas of intense manufacturing and probably transport of stone tools also provides information – and raises questions – about how and why groups of people settled in particular areas and how they lived in these areas.

However, the threat to this important site is that the town of Kathu is rapidly expanding and this development is directly threatening Kathu Townlands. The site was designated a Grade 1 National Heritage site in 2013, but the threat to the deposits that are present beyond the declared area is serious. Today, Kathu is a major iron mining centre. 'The fact that such an extensive prehistoric site is located in the middle of a zone of intensive development, poses a unique challenge for archaeologists and developers to find strategies to work cooperatively', says Steven James Walker from the Department of Archaeology at UCT and lead author of the journal paper.

An early indication of the potential threat to the preservation of archaeological remains was, in fact, the way in which the site was brought to the attention of scientists in 1980. It was Naas Viljoen, the manager of the property on which Kathu is situated, who saw workmen using gravel that was made up primarily of artefacts to repair roads.



Steven James Walker from the Department of Archaeology at UCT extracts a sample at the interface between the overlying red sands and the Earlier Stone Age archaeological deposits at the Kathu Townlands site. Image: Vasa Lukich



Hand axes from surface collection. A-B. Banded Ironstone. C. Quartzite. Image: Steven James Walker and colleagues

Archaeologists are also still not sure exactly how extensive the deposit is and the total extent of the deposit, particularly beneath the surface sands, is still to be worked out.

Walker goes on to say, 'The site is amazing and it is threatened. We've been working well with developers as well as the South African Heritage Resources Agency to preserve it, but the town of Kathu is rapidly expanding around the site. It might get cut off on all sides by development and this would be regrettable.'

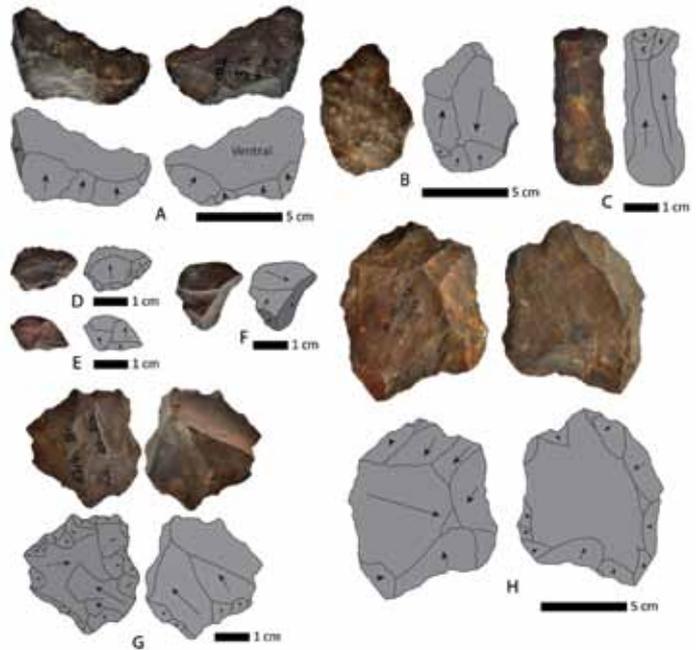
The Kathu Complex

The Kathu Townlands site is one component of a grouping of prehistoric sites known as the Kathu Complex. Other sites in the complex include Kathu Pan 1 which has produced fossils of animals such as elephants and hippos, as well as the earliest known evidence of tools used as spears from a level dated to half a million years ago.

Professor Michael Chazan, Director of the Archaeology Centre at the University of Toronto, emphasises the scientific challenge posed by the density of the traces of early human activity in this area.

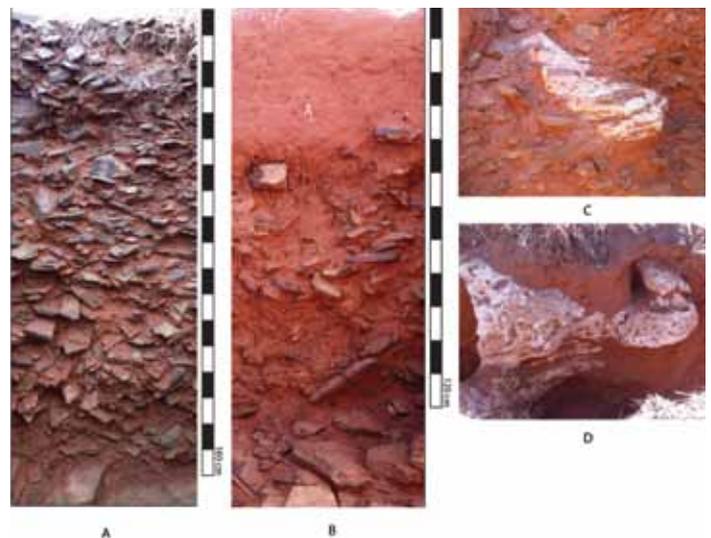
'We need to imagine a landscape around Kathu that supported large populations of human ancestors, as well as large animals like hippos. All indications suggest that Kathu was much wetter, maybe more like the Okavango than the Kalahari. There is no question that the Kathu Complex presents unique opportunities to investigate the evolution of human ancestors in Southern Africa,' says Professor Chazan. **Q**

Flakes and cores from Kathu Townlands, Beaumont Excavation



A: Large flake off the edge of the core consistent with biface shaping removal. B: Large flake with centripetal dorsal scars. C: Blade, note that there is some cortex (indicated by C in the sketch) and that scars are not parallel. D-F: Small flakes, note that F is off the edge of the core. G: Disoidal core with removals off both faces. Break on one edge (upper edge in right view). H: Disoidal core with one large flake removal. Note that on the right-hand face the working is unclear and it is possible that this is a natural surface. Image: Steven James Walker and colleagues

Profiles from the 2013 excavation



A. Trench A: Square 1. Massive deposit of Banded Ironstone rubble and artefacts overlying bedrock in a sandy matrix. Note lack of bedding or sorting.
 B. Trench I: Square 5. Shallow massive deposit of Banded Ironstone rubble and artefacts overlying bedrock with overlying deposits of sand.
 C. Trench E: Square 3. Discrete calccrete nodule that developed near the interface of the rubble/artefact deposit and underlying bedrock. Note parallel bedding of the Ironstone within the calccrete nodule. Approximate width of image 50 cm.
 D. Trench J/K. Discrete nodular calccrete developing in the sand and into the underlying Banded Ironstone rubble. Does not exhibit parallel Ironstone bedding found in (c). Approximate width of images 50 cm.

Image: Steven James Walker and Colleagues