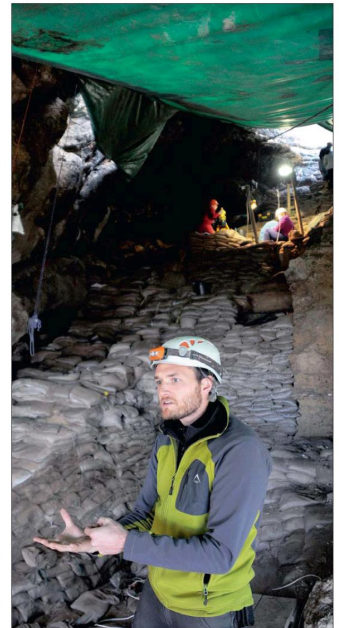




GATHERING OF GATHERERS: Excavation work at site PP5/6, one of the caves in the world-famous Pinnacle Point complex near Mossel Bay, during the 2014 field season.

PICTURES: JOHN YELD



BIGGER PICTURE: Pinnacle Point Fisher site co-ordinator Dr Erich Fisher of Arizona State University, co-field director of the Pinnacle Point caves archaeological investigation, explains excavations at the cave known as PP5/6 during a recent visit to the site by the Friends of the South African Museum.

Archaeological treasure chest

The painstaking recovery of ancient artefacts near Mossel Bay has grown into a full-blown scientific investigation encompassing a range of disciplines, writes **John Yeld**

MOSSEL Bay reputedly enjoys the most equitable climate of any town or city in South Africa, so it's perhaps not surprising that our earliest known ancestors also chose to live along this section of the southern Cape coastline – even though the climate would at times have been very different to today's typically balmy conditions here.

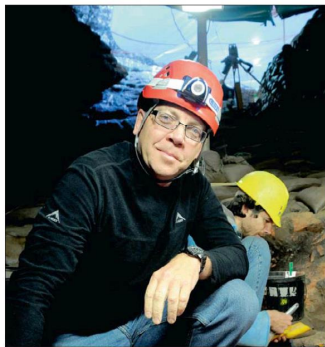
Over millennia, these hunter-gatherers made temporary homes for brief periods in the dozens of caves and rock overhangs carved by wave action into the cliffs at the base of a little promontory called Pinnacle Point, a few kilometres west of Mossel Bay during constantly changing sea levels over a period of at least one million years.

And evidence of these people's presence here, dating from at least 164 000 years ago when the global population of *Homo sapiens* had been reduced to perhaps as few as just 3 000 individuals, is the oldest yet found anywhere in the world that documents the emergence of what archaeologists believe were fully modern humans, marked by complex rational behaviour and creative and symbolic thought.

The true significance of these caves was first realised by archaeologists Jonathan Kaplan and Peter Nilssen during a 1987 survey as part of their heritage impact assessment for the Pinnacle Point golf estate development that was being planned for the cliff-top section of the coastal strip directly above the caves.

Palaeoanthropologist Professor Curtis Marean, associate director of the Institute of Human Origins and professor at the School of Human Evolution and Social Change at Arizona State University in the US, became involved two years later. That marked the start of a comprehensive scientific investigation that has now confirmed Pinnacle Point as one of the world's most significant archaeological sites, as well as a proclaimed provincial heritage site and one of six South African sites making up a proposed nomination as a World Heritage Site.

Starting as a typical archaeological investigation



DIGGING DEEP: Palaeoanthropologist Professor Curtis Marean of Arizona State University has been leading archaeological excavations at the Pinnacle Point caves near Mossel Bay since 2000. He heads what has evolved into the South African Coastal Palaeoclimate, Palaeoenvironment, Palaeoecology and Palaeoanthropology Project, known as SACP4.

based on the painstaking recovery of ancient artefacts during careful excavation, the project has blossomed into a full-blown scientific investigation encompassing a range of disciplines: the South African Coastal Palaeoclimate, Palaeoenvironment, Palaeoecology and Palaeoanthropology Project – SACP4 for short.

"We have a whole series of caves, and what's really neat about these caves is that they all tell a different part of the story. And that story is archaeological, its palaeoenvironmental, it's palaeoclimatic," Marean's co-field director, Dr Erich Fisher of Arizona State University, said during a recent visit to the site by the Friends of the South African Museum.

One of the first caves to be investigated when Marean and his international team started doing detailed fieldwork in 2000 was PP13B, and it proved to be an archaeological treasure chest.

Artefacts recovered from this cave proved that the hunter-gatherers were living there about 164 000 years ago, during a period of severe global glaciation when much of the

rest of the world would have been uninhabitable.

These artefacts, such as layers of seashells, showed that the inhabitants had systematically harvested shellfish like mussels and limpets from the nearby intertidal zone – providing part of their high-quality diet that included omega-3 fatty acids, crucial for brain function and normal physical development – and that they were also using complex stone bladelet technology to produce complex tools and regularly using ochre for creating symbols.

All of these are among the very earliest evidence of modern human behaviour. "And the record there in PP13B goes from approximately 167 000 years ago to 90 000 years ago," said Fisher. "Then a big dune system blew in and actually blocked the entrance to that cave." When that happened, speleothem or driftstone was able to form on the back side, and so we're able to get a very good age of that event."

A detailed analysis of the isotopes in these speleothems – mineral deposits that form as stalactites and stalagmites and that can be used as climate



UNIQUE: Pinnacle Point has been confirmed as one of the world's most significant archaeological sites, as well as a proclaimed provincial heritage site and one of six South African sites making up a proposed nomination as a World Heritage Site.

proxies – has enabled the researchers to recreate palaeoenvironmental and palaeoclimatic records that show the shifts between the different kinds of grasses and vegetation and between the different winter and summer rainfall regimes, during the glacial and interglacial periods over millennia.

"What Curtis was primarily trying to do at that time (2005/6) was to push the record back further in time, and also bring

'We're able to come up with brand new insights into how they lived'

it forward – from 90 000 years ago and to link it up to the Later Stone Age (that started around 50 000 years ago)," said Fisher. So the team started to work in a different area, in PP5/6 – two caves later found to be connected in a single system – and where they were still working this year.

"In the early days we had a big wooden platform, like window washers use, and everyone was just working away. And we started to

discover more of the site, and more and more each year. What none of us, no one, even imagined was that by the time we were done getting to the bottom of the sequence (of archaeological layers), it would stand 14 vertical metres. That's huge, absolutely huge," said Fisher.

"We now have high resolution imagery in 3D models of this entire area, and it shows repeated visitation, occupation and use of this site

multiple times. "There's a very excellent record of pre-history here in South Africa, built upon some amazing intellectuals who have worked here for the last 100 years. And everyone has been able to provide something a little bit different."

He cited "a very simple situation" – "Ten years ago, most people the world over thought that marine intertidal seafoods were a starvation resource, something that you'd go to when all of your other terrestrial resources were locked up by other people or

were unavailable because of climate change or whatever. No one really thought this was a primary resource and that it was actually used so far back into the past."

But Marean's groundbreaking research paper published in the prestigious journal *Nature* in 2007 "really up-ended a lot of our thinking about the coastline, how productive these coastlines were and how these people were able to survive here when they weren't able to survive in other parts of Africa during some of the glacial periods", he said.

"So the project switched in late 2005 from focusing only on these caves to the SACP4 Project that focuses on all the interconnections – with the climate, with the environment, at changing sea levels."

For example, there's been a 130m change in the sea level at Pinnacle Point over the past 200 000 years.

"Some 3 000 years ago, it was 3m higher than it is now; in other periods, it was so low that the Agulhas coastal plane extended 35km out from the caves (this plain extended 70km in the Cape Town area).

"Now the project is evolving



TO THE BOTTOM OF IT: Leesha Richardson uses a chispeck to gently excavate part of the archaeological sequence at Pinnacle Point cave PP5/6.

yet again – we're starting to look at how these people were interacting with other people in the mountains and all across the southern Cape coast," said Fisher.

"And we're always pushing the edge with our methods here and so we're able to come up with brand new insights into how these people lived."

"They were pretty simple people, bands of hunter-gatherers of maybe 20 or 30 people at the most, coming and going for perhaps a few days at a time, bringing in with them their stone tools, some game, maybe some other bits of shell or whatever, before moving on again. But stuff like that is really tough to detect archaeologically."

"So, as our methods are evolving and becoming much more precise, and as we're getting more out of that archaeological record, we can revisit the older questions and now provide a lot of clarification on how these people lived, how they evolved – and basically, how we came to be who we are today."

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