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Cave clue to 'first beachcombers'



The cave at Pinnacle Point is about 50m above current sea level

The waste from shellfish dinners discarded in a South African cave is said to be the earliest evidence of humans living and thriving by the sea.

The material was found by scientists working in a sandstone opening at Pinnacle Point on the Cape.

Researchers tell the journal *Nature* the remains were buried in sediments that are 164,000 years old.

The exploitation of coastal resources is thought to have been key in allowing early humans to move across the globe.

"All we find is the trash that was left behind, so we have to interpret what they were doing from the remains," said team member Erin Thompson from Arizona State University (ASU), US.

"[The layer of material] is about half-a-metre deep. It's cemented up against the side of the cave. That would be tens of thousands of years of garbage," she told the BBC.

The team excavated from the cave the cooked remains of some 15 types of marine invertebrate, mainly brown mussels, as well as other animal bones.

Colourful thoughts

The researchers also found pieces of ochre, a soft stone that can be scraped to produce powders with rich pigments.

Ochres are viewed as important indicators of advanced behaviour - the use of colour for symbolism. And although the powders can have a functional use, as an ingredient in glue, the persistent choice of the brightest hues suggests some abstract activity is being undertaken, such as body painting.



Ochre specimens with scrape marks
(Scale bars: 1cm)

Being able to conceptualise - the ability to let one thing represent another - was a giant leap in human evolution. It was the mental activity that would eventually permit the development of sophisticated language and maths.

To unearth worked ochres at Pinnacle Point at this time, near the base of the time period when modern humans (*Homo sapiens*) are thought to have first evolved in Africa about 200,000 years ago, is in itself a remarkable finding.

"There is some potential ochre use earlier than this but Pinnacle Point is much the best context. There is a lot of red ochre and the colour is very striking," commented Professor Chris Stringer, of London's Natural History Museum, who was not connected with the research team.

"Even if some of it might be having a functional purpose, with that amount and the fact they are selecting this particular colour must have symbolic significance, we think."

ASU palaeoanthropologist Professor Curtis Marean said: "We also found what archaeologists call 'bladelets' - little blades less than 10mm in width, about the size of your little finger.

"These could be attached to the end of a stick to form a point for a spear, or lined up like barbs on a dart - which shows they were already using complex

compound tools."

Washed clean

The very earliest human species would have been restricted to a diet of plants, such as berries and tubers, and the meat of animals they could catch.

The expansion to shellfish is one of the last additions of a new class of food to the human diet before the introduction of domesticated livestock meat just a few thousand years ago, the researchers tell Nature.

"Coastlines have few resources to attract hunter-gatherers if their diets do not include shellfish and/or fish. Once they do, coastlines become attractive for settlement and movement," they write.



When did modern humans evolve sophisticated behaviour?

"It has been argued that shellfish exploitation was crucial to a potential early coastal route of modern humans out of Africa via the Red Sea coast."

One of the great challenges for scientists has been to assemble the data to back up this theory. The difficulty is that rising and falling sea levels over millennia have almost certainly washed away key evidence.

The Pinnacle Point cave, although it stands directly on the coast today some 15m above the waves, would actually have been a few km from the shoreline when its inhabitants were eating their shellfish meals.

Settlements directly on or near the beach 164,000 years ago would now be under water.

As well as ASU workers, the research team included members from Israel,

Australia, UK, Greece, and South Africa itself.

One tantalising find was a whale barnacle. "It suggests they might have used whale blubber. They probably weren't hunting the whale but if it washed up on shore they probably thought it was good to eat," said Ms Thompson.