

Archaeologists land world's oldest fish hook

First deep-sea fish supper dated to 42,000 years ago.

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The world's oldest fish hook has been unearthed at a site in East Timor, alongside evidence that modern humans were catching fish from the open ocean as far back as 42,000 years ago.

The discoveries, from a limestone cave site known as the Jerimalai shelter on the north of the island, are published today in *Science*¹.

Sue O'Connor, an archaeologist at the Australian National University in Canberra, and her colleagues found two broken fish hooks made from shells. They dated one to approximately 11,000 years old and the other to between 23,000 and 16,000 years old — the earliest known example of fish-hook manufacture.

The oldest previously known fish hooks are associated with the beginnings of agriculture, which in South East Asia was around 5,500 years ago, says O'Connor.

The team also found more than 38,000 fish bones at the site, dating the oldest back to 42,000 years ago. Some were from inshore species, but almost half were from 'pelagic species' — fish that dwell in the open ocean, providing the oldest known evidence of humans fishing far from shore. The most commonly found pelagic species at the site were Tuna, but there was also evidence of humans eating sharks and rays, among others.



A broken shell fishhook found in East Timor provides evidence that humans were engaging in off-shore fishing much earlier than thought (scale is in millimetres).

"That these types of fish were being routinely caught 40,000 years ago is extraordinary," says O'Connor. "It requires complex technology and shows that early modern humans in island South East Asia had amazingly advanced maritime skills."

Angling for survival

How the pelagic fish were caught isn't known, but the researchers speculate that it was done from boats or rafts using either nets or fibre lines with hooks. The particular hooks discovered by O'Connor and her colleagues don't seem suitable for pelagic fishing, she says, but other types may have been made. Tuna swim too fast for spear fishing to have been successful, she says.

That offshore fishing took place is "perhaps not that surprising" given that humans are known to have been capable of seafaring at that time, notes Christopher Henshilwood, an archaeologist at the University of the Witwatersrand in Johannesburg, South Africa — in fact, people are thought to have first arrived on the island of Australia 50,000 years ago. But O'Connor's find does provide direct evidence for advanced fishing equipment, methods and forward planning.

Fishing skills would have helped early modern humans to cross the ocean to Australia by allowing them to efficiently exploit coastlines and survive on the open sea, says O'Connor.

Far older fish bones have been found at sites in southern Africa — those at the Blombos Cave in South Africa, for example, date from

140,000–50,000 years ago – but they have generally been from inshore species whose capture would require less complex technology². A small number of tuna vertebrae have been found, but these can be attributed to scavenging of fish washed up on beaches, says Richard Klein, an archaeologist at Stanford University in California, who has worked extensively in the region. The oldest known fishing tackle from the vicinity dates from around 12,000 years ago, but it includes only bone gorges (straight hooks) and net sinkers, probably used exclusively inshore, he adds.

O'Connor thinks that coastal sites that could have provided more evidence of early maritime technology in Africa may have disappeared owing to a rise in sea levels over time. The Jerimalai site — which was preserved because it perches high up on the edge of an geologically uplifting coastline — provides a “window into what early modern humans were capable of”, she says.

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References

1. O'Connor, S., Ono, R. & Clarkson, C. *Science* **334**, 1117–1121 (2011).
2. Henshilwood, C. & Sealy, J. *Curr. Anthropol.* **38**, 890–895 (1997).