

## When humans first plied the deep blue sea

*In a shallow cave on an island north of Australia, researchers have made a surprising discovery: the 42,000-year-old bones of tuna and sharks that were clearly brought there by human hands. The find, reported online in Science, provides the strongest evidence yet that people were deep-sea fishing so long ago. And those maritime skills may have allowed the inhabitants of this region to colonise lands far and wide.*

The earliest known boats, found in France and the Netherlands, are only 10,000 years old, but archaeologists know they don't tell the whole story. Wood and other common boat-building materials don't preserve well in the archaeological record. And the colonisation of Australia and the nearby islands of Southeast Asia, which began at least 45,000 years ago, required sea crossings of at least 30 kilometres. Yet whether these early migrants put out to sea deliberately in boats or simply drifted with the tides in rafts meant for near-shore exploration has been a matter of fierce debate.<sup>1</sup>

Indeed, direct evidence for early seafaring skills has been lacking. Although modern humans were exploiting near-shore resources<sup>2</sup> such as mussels and abalone, by 165,000 years ago, only a few controversial sites suggest that our early ancestors fished deep waters by 45,000 years ago. (The earliest sure sites are only about 12,000 years old.) Among the sceptics was Susan O'Connor, an archaeologist at the Australian National University in Canberra. "The evidence was pretty slim," she says.

That is until she excavated a shallow cave called Jerimalai on East Timor, an island nation just north of Australia. In the earliest levels of Jerimalai, dated to 42,000 years ago, about half of the fish are fast-swimming species, such as tuna and sharks, which live in deep waters. O'Connor's team also found a fishhook at Jerimalai made from a mollusc shell and dated to 23,000 years ago, which the team claims is the earliest definite evidence for line fishing. (There are claims for fishhooks in Europe going back about 20,000 years, but the dating is less certain.)

The new evidence "certainly suggests that people had advanced maritime skills" by 42,000 years ago O'Connor says, at least "in terms of fishing technology". The finds indicate that this mastery of the sea "must have been one of the things that allowed the initial colonisation" of East Timor and other Southeast Asian islands, such as Papua New Guinea and Indonesia. But O'Connor cautions that there is still no direct evidence about the maritime skills of the first people who colonised Australia, leaving open the possibility that they drifted there with the tides.

Archaeologist James O'Connell of the University of Utah in Salt Lake City, who has argued that "a broad range of evidence" points to deep-sea fishing between 45,000 and



*Archaeologists have found evidence of deep-sea fishing 42,000 years ago at Jerimalai, a cave on the eastern end of East Timor (Images: Susan O'Connor).*

50,000 years ago, says that the new evidence from Jerimalai "solidifies the case".

But William Keegan, an anthropologist at the Florida Museum of Natural History in Gainesville, points out that the relatively small size of the tuna found at Jerimalai — mostly between 50 and 70 centimetres long — suggests that they were immature, juvenile fish that might have been caught close to shore.

And Geoff Bailey, an archaeologist at the University of York in the United Kingdom points out that East Timor and the other islands in the area have very steep offshore topography, meaning that the deep waters favoured by adult tuna and sharks are very close to land. These species, Bailey says, "would likely come very close inshore and be catchable without necessarily requiring people to set off in boats".

O'Connor counters that even juvenile tuna are "fast moving", adding that "there is no way they could be speared off the beach or the reef". Fishing hooks and other evidence of maritime technology have yet to be found in the earliest levels at Jerimalai, but she and her team plan to continue excavating there in an attempt to find them.

*Source: Article by Michael Balter in Science Now, 24 November 2011<sup>3</sup>*

<sup>1</sup> See: <http://www.sciencemag.org/content/318/5849/388.full>

<sup>2</sup> See: <http://www.sciencemag.org/content/318/5849/377.1.full>

<sup>3</sup> <http://news.sciencemag.org/sciencenow/2011/11/when-humans-first-plied-the-deep.html#>