

First Humans in Australia Dated to 50,000 Years Ago

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Analysis of sediments at two grave sites at Lake Mungo confirms that Australia is the site of the world's oldest known burial with red ochre and the oldest cremation, and provides additional evidence that early humans first reached Australia about 50,000 years ago.

Mungo Man and Mungo Lady, as they are known to the local Aborigines, both died and were buried around 40,000 years ago, reports a team of scientists.

"Mungo Man and Mungo Lady are both the same age, inseparable in time," said Jim Bowler, a geomorphologist and professor at the University of Melbourne and lead author of the study. "We now have a picture of a real community on the lake shores at 40,000 years ago (plus or minus 2,000 years)."

Mungo Lady's cremated remains were discovered at Lake Mungo in 1969. Five years later, Bowler uncovered the skeleton of Mungo Man about 1,500 feet (450 meters) from Mungo Lady's grave.

The ages of the remains have been the focus of scientific inquiry—and dispute—for more than 25 years. Mungo Man's remains were estimated variously at 30,000 years old, and somewhere between 42,000 to 45,000 years old. Scientists estimated Mungo Lady to be 20,000 to 26,000 years old.

In 1999, scientists led by Alan Thorne, an anthropologist who had discovered Mungo Lady, extracted mitochondrial DNA from the bones of Mungo Man. The team determined that he was 62,000 years old. The results were extremely controversial.

Debate has been raging ever since. The multi-disciplinary team of scientists reporting in the February 20 issue of the journal *Nature* say not only did the burials occur close to the same time, they also question whether there were humans at the site 62,000 years ago.

"Our study shows that humans were present at Lake Mungo as early as 50,000 to 46,000 years ago," the authors write. "We find no evidence to support claims for human occupation or burials near 60,000 years ago."

The dates matter because they have implications for determining when humans first left Africa, and where they went.

Colonizing Australia

Archaeological, fossil, and genetic evidence support the "Out of Africa" model of modern human origins, which holds that all modern humans evolved in Africa, and then went on to populate the rest of the world, driving earlier hominid species to extinction.

Fossil evidence shows that there were modern humans in Africa by 130,000 years ago. Around 50,000 years ago, whether because of a sudden genetic modification, or simply the accumulation of skills over a period of 70,000 years, humans began to migrate out of Africa. Whether there were earlier, smaller, waves of migrations remains a matter of debate.

Evidence of a human presence in Australia 62,000 years ago at Lake Mungo, which is located in the interior of Australia, was seen by some as a dagger in the heart of the Out of Africa theory.

"Some [scientists] argued that the previous estimate of 62,000 years for Mungo 3 was a problem for Out of Africa, but I didn't think so," said Chris Stringer, director of the Human Origins program at the Natural History Museum in London.

Stringer and colleagues support the idea that at least one wave of migration out of Africa preceded the exodus that occurred 50,000 years ago, and that the earliest journeyers reached Australia.

"Modern humans had plenty of time to reach Australia," he said. "A rate of movement from Africa averaging only one mile a year along the coasts of southern Asia would have got people to within a boat ride of Australia in less than 10,000 years."

The revised dates lend additional credence to the Out of Africa model and are consistent with evidence from other sites in Australia.

"This agrees very well with genetic data suggesting a settlement of northern Australia no earlier than 50,000 to 55,000 years ago," said Spencer Wells, geneticist and author of the recently published book *The Journey of Man: A Genetic Odyssey*. Wells uses Y-chromosome data to trace the paths taken by early humans as they left Africa.

"It's speculation, of course, but perhaps the first Australians moved inland via the river systems of Queensland and southern Australia. The riverbanks would effectively be an extension of the coastal environments they were living in en route from Africa, and could have brought them to Lake Mungo by around 45,000 years ago," he said. "The new dates are exciting, and provide strong support for a recent (post-60,000 years ago) 'Out of Africa' exodus."

Living at Lake Mungo

Today Lake Mungo is a semi-arid landscape supporting saltbush stands, a shrub that thrives in salty or alkaline sites where very few other plants can survive. But 60,000 years ago, vegetation was lush and the

lake's water levels remained relatively high, with only brief and relatively minor changes, for about 15,000 years.

"We believe the lakeshore was populated by small communities, perhaps on a seasonal basis," said Bowler. "They were almost certainly congregating around the disappearing water resources as the country began to dry out in advance of the really big drought that began around 40,000 years ago, immediately after the Mungo Lady and Mungo Man burials."

More than 775 artifacts discovered at the site provide a glimpse of life at Lake Mungo in prehistoric times. The people hunted small game, gathered mussels and other shellfish from the lake and fished for cod and perch, possibly using nets.

"My own view is that most fish were caught during periods in which the lake was falling, increasing the salinity of the water and making the fish groggy and easy to catch," said Bowler.

These early humans also had ritualistic burial practices; Mungo Woman was cremated, the remaining bones smashed, burned again, and then buried. Mungo Man's body had been covered with red ochre prior to burial. Anthropologists consider burying the dead an indicator of a spiritual belief system and a hallmark of modern humans.

Beginning around 40,000 years ago, the climatic and environmental conditions in the region became much harsher: the lake gradually dried up, temperatures were colder, the landscape more barren and inundated with dust. Humans responded accordingly—they moved on.

"They did return several thousand years later during a period when the waters returned," said Bowler. But the climatic changes were part of the long slide into the last ice age, which occurred about 20,000 years ago.

Today Lake Mungo is part of the Willandra Lakes World Heritage Area, and considered a sacred ancestral site of the Aborigines.