New Species Revealed: Tiny Cousins of Humans

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Once upon a time, but not so long ago, on a tropical island midway between Asia and Australia, there lived a race of little people, whose adults stood just three and a half feet high. Despite their stature, they were mighty hunters. They made stone tools with which they speared giant rats, clubbed sleeping dragons and hunted the packs of pygmy elephants that roamed their lost world.

Strangest of all, this is no fable. Skeletons of these miniature people have been excavated from a limestone cave on Flores, an island 370 miles east of Bali, by a team of Australian and Indonesian archaeologists. Reporting their find in today's issue of Nature, they assign the people to a new human species, Homo floresiensis.

The new finding is "among the most outstanding discoveries in paleoanthropology for half a century," say two anthropologists not associated with the study, Dr. Marta Mirazon Lahr and Dr. Robert Foley of the University of Cambridge, in a written commentary in the same issue.

The little Floresians lived on the island until at least 13,000 years ago, and possibly to historic times. But they were not a pygmy form of modern humans. They were a downsized version of Homo erectus, the eastern cousin of the Neanderthals of Europe, who disappeared 33,000 years ago. Their discovery means that archaic humans, who left Africa 1.5 million years earlier than modern people, survived far longer into recent times than was previously supposed.

The Indonesian island of Flores is very isolated and, before modern times, was inhabited only by a select group of animals that managed to reach it. These then became subject to unusual evolutionary forces that propelled some toward giantism and reduced the size of others.

The carnivorous lizards that reached Flores, perhaps on natural rafts, became giant-size and still survive, though now they are confined mostly to the nearby island of Komodo; they are called Komodo dragons. Elephants, because of their buoyancy, are surprisingly good swimmers; those that reached Flores evolved to a dwarf form the size of an ox.

Previous excavations by Dr. Michael J. Morwood, a member of the team that found the little Floresians, showed that Homo erectus had arrived on Flores by 840,000 years ago, to judge from the evidence of crude stone tools. Presumably the descendants of these Homo erectus became subject to the same evolutionary forces that reduced the size of the elephants. The first little Floresian, an adult female, was found in September last year, buried under 20 feet of silt that coats of the floor of the Liang Bua cave in Flores. A team of paleoanthropologists headed by Dr. Peter Brown, of the University of New England in Armidale, Australia, identified the skeleton, which is not fossilized, as a very small but otherwise normal individual, similar to Homo erectus. Because the downsizing is so extreme, smaller than that in modern human pygmies, they assign it to a new species.

In a companion report Dr. Morwood, an archaeologist who is also at the University of New England, estimates that the skeleton is 18,000 years old. He has since found the remains of six more individuals in the cave, with dates ranging from 95,000 to 13,000 years ago, he said in an interview.

Also buried in the cave are a number of objects that illustrate how the little Floresians lived. There are bones of Komodo dragons, beasts 10 feet in length, and of an even larger lizard. The dragons can eat animals the size of deer, but being cold-blooded, they are sluggish at low temperatures and not so hard to kill. There are bones of the pygmy elephant, giant rat, fish and birds.

There is evidence that the Floresians knew the use of fire. And there is a suite of stone tools, considerably more sophisticated than any yet known to have been made by Homo erectus. The tools include small blades that might have been mounted on wooden shafts.

If the stone tools were made by the little Floresians, as Dr. Morwood believes, that is striking evidence of their cognitive abilities. Dr. Morwood says they must have hunted cooperatively to bring down the pygmy elephants. To conduct such hunts, and to fabricate such complex stone tools, they almost certainly had some form of language, he said.

This will be a surprising finding, if true, because the little people have brains slightly smaller than a chimpanzee and similar in size to Australopithecenes, the ape-like ancestors of the human line. Dr. Foley said he would not rule out Dr. Morwood's suggestion but noted that chimpanzees hunt cooperatively without using language. Modern humans are known to have reached Australia by at least 40,000 years ago and were probably in the general neighborhood of Flores at the same time, so it is a plausible alternative that they could have been the makers of the stone tools. "I think it's a big jump" to assume the Floresians had language, Dr. Foley said. He also noted the danger of assuming the Floresians behaved like diminutive people when their nature might in fact have been quite different.

Dr. Morwood said he had found no sign of modern humans in Flores until 11,000 years ago, so he had no basis for associating them with the tools in the Liang Bua cave. Dr. G. Philip Rightmire, a paleoanthropologist at Binghamton University in New York, said he was persuaded that the tools were made by the little Floresians.

"It's a wonderful demonstration of apparently 'archaic' humans adapting to the special conditions on Flores," Dr. Rightmire said. "I wouldn't have supposed that such small-brained people descended directly from Homo erectus would be capable of producing these artifacts, but the evidence is pretty compelling."

The new findings add to the rapidly emerging picture of Homo erectus, which has long been overshadowed by the better known Neanderthals of Europe. Like the Neanderthals, Homo erectus generally disappeared from the scene just before modern humans arrived in their territory.

The little Floresians not only survived long into the modern period but unlike most of the other archaic human populations managed to coexist with modern humans. They also demonstrate the adaptability of the human form and how readily humans conformed to the same pressures toward dwarfism that affected other island species.

Most of the extraordinary finds in paleontology have been surprising because they were so old. "What's exciting about this one is that it's so late, telling us about the processes and patterns of evolution in a way that's deeply informative," Dr. Foley said.

The Floresians of the Liang Bua region seem to have perished after an eruption from one of the island's many volcanoes about 12,000 years ago. But they may have survived until much later elsewhere on Flores, Dr. Morwood believes. Among today's Ngadha people of central Flores and the Manggarai of West Flores there are local stories of little people who lived in caves until the arrival of the Dutch traders in the 16th century.

Photo: A skull, at left, found on a remote island. At right, a modern skull. (Photo by Peter Brown)

Map of Indonesia highlighting Flores: A tiny race lived on Flores, 370 miles east of Bali, to 13,000 years ago. (pg. A8)

Drawings (Illustration by Michael Rothman)(pg. A8)

Chart: "Standing Small"
Skeletons of tiny, archaic humans have been found on the Indonesian island of Flores. Here is a comparison of the stature of the female and the dwarf elephant that also lived on Flores.

MODERN INDIAN ELEPHANT
ANCIENT DWARF ELEPHANT ADULT
SMALL ARCHAIC HUMANS
MODERN ADULT HUMAN

(Source by Nature)(pg. A8)