Early humans linked to ancient Australian extinction

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While the anthropogenic impact on global species diversity is clear, the role of ancient human populations in causing extinctions is more controversial. New data presented this week at the Society of Vertebrate Paleontology meetings in Dallas, Texas, implicates early humans in the extinction of large mammals, birds and lizards in Australia. More precise dating of these extinction events places them 14,000 years after the first arrival of humans in Australia, suggesting human predation was the most likely cause.

Australia was once home to a plethora of large-bodied animals, including a huge monitor lizard, large terrestrial birds, a giant wombat, the marsupial lion, and giant kangaroos. Sometime during the last ice age this once-abundant 'megafauna' disappeared. Though this extinction roughly coincides with the first arrival of humans to Australia, their direct role has been hotly debated, as some research has claimed that humans arrived after some of the animals were already extinct.

To shed light on this controversial issue, paleontologist John Alroy and colleagues, of Macquarie University, New South Wales, and colleagues, set out to more precisely estimate the timing of the Australian megafaunal extinctions. Alroy explains "There's been a lengthy, sometimes heated debate about whether human hunting or other impacts caused the huge mass extinction of large terrestrial vertebrates in Australia during the last glacial period."

Alroy's collaborators dated over 200 fossils by measuring the levels of

radioactive carbon in their bones. Precisely estimating when a species went extinct is difficult because there are gaps in the fossil record. To overcome this problem, Alroy estimated the likely time-range during which the extinction occurred based on the distribution of radiocarbon dates. He found that the megafauna disappeared between 27 and 40 thousand years ago. Using a similar method, he estimated that the first humans arrived between 50 and 61 thousand years ago. This confidently puts humans on Australia when the megafaunal extinctions occurred.

The timings also suggest that there was a 14,000 year lag between the first appearance of humans and their impact on the megafauna. Alroy and colleagues suggest that this delay could relate to the time taken for humans to spread across Australia, or for the technology of early populations to advance enough to hunt large prey.

These findings not only highlight the long-term impact of humans in Australia, but also support patterns seen elsewhere, explains Alroy, "The results are also important because they're consistent with evidence that human hunting caused major extinctions later on in North and South America, in addition to relatively recent extinctions on many islands (such as the loss of moas in New Zealand)."

Provided by Society of Vertebrate Paleontology