

Megafauna death: Man wanted

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The mystery of what killed Australia's giant animals - the so-called 'megafauna' - during the Last Ice Age is one of the longest-running and most emotive debates in palaeontology.

Scientists, including Flinders University's Dr Gavin Prideaux, have now published clear evidence from southeastern Australia to show that climate change was not the driving force behind the extinctions, which took place between 50 and 40 thousand years ago. This refocuses attention on humans as the main cause.

The latest study, published in the January 2007 issue of the respected international journal *Geology*, is unique in providing - for the first time - a long-term perspective on the responses of the megafauna in the Naracoorte Caves region of southeastern Australia to cyclical swings in Ice Age climates.

"Climate change was certainly not the main culprit in the extinctions. Our data show that the megafauna was resilient to climatic fluctuations over the past half-million years", said team leader and palaeontologist Dr Prideaux of the Western Australian Museum and Flinders University.

Australia lost 90 per cent of its large fauna, including rhino-sized marsupials, 3-metre tall kangaroos and giant goannas within 20 thousand years of human arrival. Opinions are divided between the relative importance of climatic changes and the activities of humans themselves via habitat disturbance or over-hunting. Unfortunately, the debate has been hamstrung by a lack of basic data on how communities responded to climate changes before humans arrived. The new fossil evidence from Naracoorte reveals surprising stability in the mammal composition through successive wet and dry phases.

"Although populations fluctuated locally in concert with cyclical climatic changes, with larger species favoured in wetter times, most if not all of them survived even the driest times - then humans arrived," said Dr Prideaux.

The Naracoorte Caves World Heritage Area in southeastern South Australia contains the richest assemblage of Pleistocene (1.8 million to 10 thousand years ago) animals anywhere in Australia. What makes the record more remarkable is that it can be directly compared to a 500 thousand-year record of local rainfall preserved in the stalagmites in these caves.

The fossils were dated by two independent methods (optically stimulated luminescence and

uranium-series dating) at the Universities of Wollongong and Melbourne, by geochronologists Professor Richard 'Bert' Roberts, Dr Kira Westaway and Dr John Hellstrom. The multi-disciplinary team also included Dr Dirk Megirian from the Museum of Central Australia in Alice Springs, who studied the sediments for additional clues of the prevailing climate conditions.

"These analyses have allowed us to pinpoint the ages of the fossils and the major shifts in climate. Our evidence shows that the Naracoorte giants perished under climatic conditions similar to those under which they previously thrived, which strongly implicates humans in their extinction" said Professor Roberts.

The research project was supported by the South Australian Department for Environment and Heritage, GreenCorp, the Friends of the Naracoorte Caves, the Cave Exploration Group of South Australia, the Commonwealth Natural Heritage Trust Extension Bushcare Program, and the Australian Research Council.

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