

## Giant Wombats and Red Herrings

STEPHEN WROE and JUDITH FIELD  
conclude the debate on the cause of Australia's  
megafauna extinctions.

Last month two articles were published in *Australasian Science* in response to our previous criticism of a paper by Dr Richard Roberts and colleagues, who have claimed that megafauna became extinct in Australia by around 46,000 years ago, despite the fact that they dated six sites containing megafauna at considerably younger ages. The responses published last month concentrated on showing that one of the six younger sites, Cuddie Springs, may be older. This is a red herring.

The arguments of Roberts, Gillespie and David (AS, October 2001, pp.40-A3) regarding both disturbance and the age of Cuddie Springs are misleading and misinformed, but space restrictions demand a specific response to this elsewhere. However, we do point out that casting doubt on Cuddie Springs does not disprove its younger age; even if it did, this does not form a logical basis for discounting other younger sites.

This "argument" is founded on the spurious principle of guilt by association, as follows. The ages of Cuddie Springs and another younger site, Lancefield, have been contested (not disproved). Because these two don't have articulated remains, we can therefore glibly overlook all sites without articulated skeletons. But, in reality, each site has to be judged on its merits. In itself, the presence or absence of articulated remains is not a basis for either dismissal or inclusion. Unfortunately, many of the sites analysed by Dr Roberts are unpublished, so the rigour of his team's methods can't be checked.

Yet even if Roberts' approach could be countenanced, the analysis of the sites remains fundamentally flawed, in that his team dumps evidence for megafauna on this pretext but accepts evidence for human arrival from sites without articulated remains. This primary objection was not addressed, nor was the fact that a selected sample of nine sites is insufficient to generate results in which confidence can be placed.

Drs Gillespie and David allege that we misunderstood a basic and convenient tenet of Dr Paul Martin's blitzkrieg hypothesis, which argues that kill sites would be scarce if humans wiped out the megafauna quickly. We assure the

good doctors that we are astride this one, but maintain that it is a hollow argument. Sure, the lack of kill sites does not disprove blitzkrieg. We never suggested that it did. However, there is no getting around the fact that many will remain sceptical in the absence of direct evidence. Kill sites are plentiful in New Zealand, which is the only instance in which blitzkrieg is generally accepted. But, more to the point, we don't just lack kill sites in Australia; until 6000 years ago we have none of the stone spear/arrow tips that are typical of big mammal hunting elsewhere. Dr Martin's hypothesis does not explain this.

In our original critique (AS, September 2001, pp.21-25), we proposed an alternative explanation for the results obtained by Dr Roberts: that aridification, beginning in Central Australia by 45,000 years ago and progressing outward in succeeding millennia, reduced the incidence of fossilisation thereafter. Dr Roberts contends that the presence of "numerous" fossil sites less than 45,000 years ago, in a restricted area, disproves this hypothesis. It does not. To test our proposition, data from many more Pleistocene sites, continent-wide, must be analysed.

If extinction was climate-driven then we further predict that large browsers first disappeared from Central Australia, with the vestiges of this fauna dying out in wetter regions last. This is consistent with the data presented by Dr Roberts, as well as previous work suggesting that a big bird became extinct in parts of the now and semi-acid zones by 50,000 years ago. Five of the six sites dated at less than 46,000 years by Dr Roberts lie outside this region.

Dr Roberts observes that his data do not rule out the possibility of blitzkrieg. This is another empty statement and another red herring. Strictly speaking, nothing can be ruled out. But no matter how you wash it, the dates forwarded by Dr Roberts render blitzkrieg most unlikely.

Based on a selected sample of nine sites, Dr Roberts attempted to prematurely shut down the debate over megafaunal extinction in Australia. Our motivation in criticising this work was to demonstrate that much more data were needed before even fundamental questions could be answered. For example, as Drs Gillespie and David point out, it is not yet clear that humans were present in Australia earlier than 40,000 years ago. Consequently, the megafauna may have disappeared before humans even arrived!

We don't purport to have the answers, but are glad to see that our objective has been achieved. All parties now concede that more must be done before any significant issues are resolved. It is time to stop the chest-pounding and get some data.

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