

SHORT COMMUNICATION

A reply to Benson and Redpath (1997)

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A number of the claims made by Benson and Redpath (1997) in relation to my work *The Future Eaters* (Flannery 1994) are either incorrect or poorly supported. It is my intention here to refute those claims.

In their abstract, Benson and Redpath claim that ... 'explorers' notes ... have been misinterpreted or inappropriately extrapolated ... by Flannery (1994).' Yet I can find no evidence in the body of their paper to support this potentially damaging claim. The single possible exception relates to their citation of my work as quoted in Ryan et al. (1995). The passage concerns the nature of vegetation at Bulli (NSW), what Joseph Banks saw there in 1770, and the very different scene I saw there in 1993. Benson and Redpath's criticism is restricted to Ryan et al.'s selective quotes from Flannery (1994). Remarkably, they did not check the original source in my work, which contains more detailed information that serves to contextualise Banks' and my own observations. As a consequence, their understanding of, and criticism of my work in this area is insufficient, offering no support for the accusation of poor scholarship made in their abstract.

One of the first lessons a scientist learns is not to rely upon secondary sources, but to examine original materials. It is dismaying that so much of Benson and Redpath's criticism of my work is in the context of Flannery as quoted in Ryan et al. (1995).

I am criticised by Benson and Redpath for being quoted in the popular press as having said that there were 20 per cent less trees at settlement than at present. They delve into the same newspaper article (O'Reilly 1996) later in their work, where I am quoted as having stated that 'Until the time the white man arrived, Australia was a vast grassland, extending from northern Queensland to Victoria with trees only scattered and well spaced, the soil rich in species of wild grasses and flowers'. O'Reilly is a journalist writing for the *Canberra Times*. I contend that these words are not my own and that both of these 'quotes' are misquotes. Misinterpretation of one's work is a constant hazard when being interviewed by the press. It is hardly fair to refer to any such material as 'Flannery's statement', then proceed to criticise it as if it were published in a scientific journal.

Benson and Redpath (1997) state that 'Flannery (1994) ignore[s] much evidence that points to climate as being the main determinant in vegetation change over millions of years, with major changes occurring since the onset of aridity in the Miocene but continuing through the last ice age, which coincided with the occupation of Australia by Aboriginal people'. I contest this. I did not ignore the evidence, but simply found that the climatic data did not fully explain the patterns evident to me in nature. My purpose was to see if other data could explain the patterns better. It was not to provide a full exposé of climate-driven vegetation change in Australia.

They also state that 'Flannery (1994) pp. 221–222 refers to several early explorers who encountered fire being used ... for offensive or defensive purposes. However, with no supporting data, he [Flannery] discounts such fires as being a minor proportion of those witnessed'. In my account of fires seen by the explorers, I commented on those that clearly had a defensive or offensive role. They were in the minority. Had I been writing a treatise on fire and explorers, I could have tabulated the accounts to demonstrate my point. This was not the case, however, and consequently *The Future Eaters* was not the place to provide such data.

Further to this point, in October 1997 I was able to interview three elderly Anangu and Pitjantjara men who were involved with, or remember being told of, first encounters with Europeans. When I asked them, through a translator, if fires were lit during such encounters, they said emphatically *No*. Instead, the strangers were secretly tailed and observed undetected, for long periods. The Aboriginal observers did everything they could to keep their presence hidden from the Europeans, including not lighting fires.

Benson and Redpath claim that 'if fires were so frequent ... then it is highly likely that many of the small to medium-sized fauna ... would not have survived due to a lack of hollow logs and dense ground cover' (p. 296). This is a remarkably simplistic gloss of a complex issue. To begin, not all medium-sized mammals are dependent on hollow logs or dense ground cover for survival. Further, frequent fire does not necessarily mean the end of hollow logs and ground cover. Frequent fires can be cool and locally patchy. They may be less damaging to short, dense vegetation and logs than infrequent, very hot fires.

Benson and Redpath claim that 'The popularity of *The Future Eaters* has led to uncritical public exposure of some of the book's more contentious viewpoints, that are mostly conjecture and not based on empirical evidence'. In my Introduction, I make it clear that *The Future Eaters* is a hypothesis to be tested. The same criticism could equally well be levelled at other, similar books, such as Darwin's *On the Origin of Species by means of Natural Selection*. When published in 1859, it too was largely unsupported by empirical data. It, like *The Future Eaters*, was a hypothesis.

In their conclusions, Benson and Redpath state 'the interpretations espoused by Rolls, Flannery or Ryan et al. have not gained currency in the peer-reviewed scientific literature'. This is untrue. The hypothesis I developed in *The Future Eaters* has been tested in the peer-reviewed scientific literature on several occasions. Fullagar et al. (1996) have provided a major test with the announcement of a human presence in Australia at 116 000 years before present. Had this been proven, and a long period of overlap between humans and megafauna established, my hypothesis would have been refuted. Recent redating of the Jinmium site, however, suggests that the human presence there is probably Holocene in age (Roberts 1998, Roberts et al. 1998).

Another test was provided by Van Huet et al. (1998). The Lancefield megafauna site was previously dated to about 26 000 years before present, but doubts as to the accuracy of the date had arisen. If the date had been upheld by Van Huet et al.'s investigation, it would also have been an effective refutation of my hypothesis. The dates obtained, however, suggest that the Lancefield megafaunal material is older than 26 000 years before present — possibly up to 60 000 years before present in age.

Other aspects of my hypothesis are currently being tested through research under way at Cuddie Springs (J. Field pers. comm.). It is notable, however, that an effective test of my interpretation of both Pleistocene and Recent vegetation change is yet to emerge from Australian botanists. Several tests could be undertaken. An adequate test of my ideas about Pleistocene floral change would be to determine whether the change occurs continent-wide at about the time humans arrive, or whether it is a gradual, climate driven event beginning in the centre with the onset of the last ice age, and spreading to the margins, or perhaps conforming to some other climatic pattern. And is it a change from mesic to xeric adapted species, or from fire sensitive to fire tolerant?

Regarding vegetation changes after 1788, various tests are possible. One would be to determine whether the rainforest margins have expanded or contracted, and when the event occurred. This could be done through dating of fire scars on eucalypts 'stranded' in rainforest, and by dating of scleromorph trees (including grass trees) near rainforest margins, or stumps of rainforest trees in scleromorph forest. Studies of fire history and frequency could also give an indication of available fuel loads.

It is tests such as these which will decide whether the science in *The Future Eaters* is valid or not. The kind of criticism offered by Benson and Redpath is not productive of good science. Rather than concentrating on the validity of my published research, it seems instead to be obsessed with and dismayed by the popularity of works such as my own and Rolls'.

It is axiomatic in science that one can never prove a hypothesis. The best hypotheses are those which are easily disproved. The hypothesis developed in *The Future Eaters* is fragile in that just a few critical dates could disprove it. So far, despite several important attempts to invalidate it, that is yet to happen.

References

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