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# The restricted distribution of the Emu (*Dromaius novaehollandiae*) calls for a more nuanced understanding of traditional Aboriginal environmental management

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## Abstract

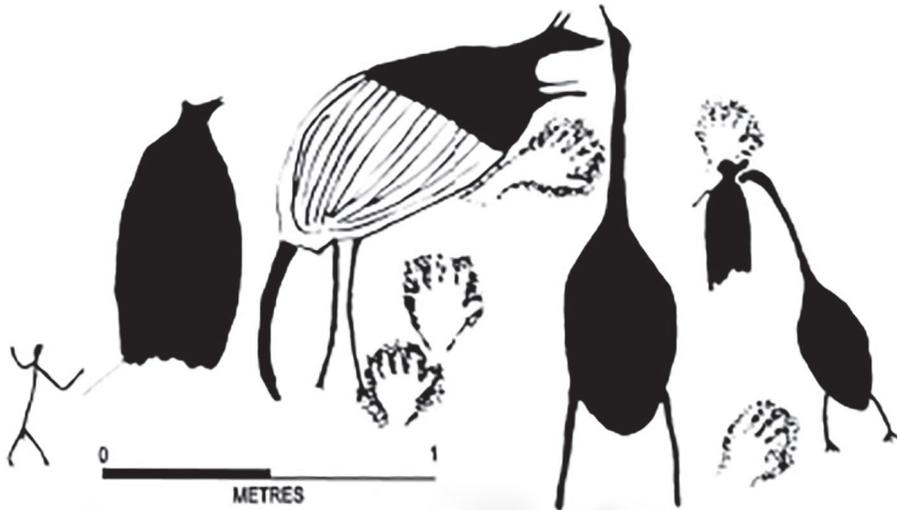
The historical absence of the Emu (*Dromaius novaehollandiae*) on a number of large northern Australian islands is speculated to be at least partially a result of overpredation by Aboriginal people in the late Holocene. If this observation is correct, the prevalent opinion, that traditional Aboriginal society had a totally benign impact on the Australian environment, needs to be reconsidered.

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The jury is still out on whether Aboriginal hunting impacted upon the extinction of Australia's marsupial megafauna in the late Pleistocene, as outlined in Australian archaeological writings in the past 30 odd years (White & O'Connell 1982; Mulvaney & Kamminga 1999; Hiscock 2008). No kill sites have been conclusively identified, whereas in North America many butchery sites have been described, which indicates that human hunting was a major factor in the megafaunal extinctions there. In Australia, climate change is nominated as the primary factor by many observers, but it is argued here that much more recent regional extinctions appear to be due, in part at least, to Aboriginal predation. This observation challenges the current, populist orthodoxy that Aboriginal hunting and resource management practice had a seamless and harmonious interaction with the Australian environment.

Some years ago I was bushwalking on Groote Eylandt and observed paintings of what appeared to be Emus (*Dromaius novaehollandiae*) in the rock art in a sandstone shelter on Central Hill. Frederick McCarthy, anthropologist with the American-Australian Expedition to Arnhem Land in 1949, also noted paintings of Emus, identified by a local indigenous informant, on the adjacent Chasm Island and published a representation of this site (McCarthy 1960) (Figure 1). George Chaloupka also recorded a rock art image at "Anguru" (possibly a misspelling of Angurugu) on Groote Eylandt of what he labelled as an Emu in 1988, which is held in the archive of the Museum and Art Gallery of the Northern Territory (image number 6270.0007.0001). What is noteworthy about these depictions, is that the Emu does not currently live on this large continental island (measuring some 2326 sq km).

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**Figure 1.** Representation of a Chasm Island rock painting including two Emus identified by informants, drawn by Frederick McCarthy (in Mountford 1960: volume 2, figure 32, p. 376). Original image courtesy of Melbourne University Press. This image was adapted from the original by Mike Owen.

Before the area became an island approximately 3000–4000 years ago, the island would have been suitable habitat for the Emu and one can confidently assume that a viable island population was isolated from the mainland at that time. Maps of the current geographic distribution of the Emu indicate this species is highly adaptable with a high reproductive rate and occupies a very broad range of habitats in Australia, ranging from “woodlands to semi-deserts, especially savanna [sic]” (Macdonald 1978). Given the large size of Groote Eylandt, it is highly improbable that, when the sea level stabilised at its current level, a viable population of Emus was not isolated there. The area now covered by the Gulf of Carpentaria was likely to have been a savannah grassland/woodland with lower rainfall before the seas rose. This is a preferred habitat of the Emu and as the sea rose relatively quickly, due to the low gradient of this landscape, the then ‘Groote Eylandt upland’ would have served as a refuge for this species, as for other flightless terrestrial species.

Of course, the Emu depictions in rock art could have dated to a period when these birds did inhabit the island or they could have been painted by people who had visited the mainland and recorded observations made elsewhere. But, in fact, the identification of these motifs as being of Emus is irrelevant; for example medieval British iconography features the African Lion prominently despite its absence from that landscape: it only serves to plant the question in one’s mind: “Why aren’t there Emus on Groote Eylandt anymore?”

As well as Groote Eylandt, Melville Island (5786 sq km) and Bathurst Island (2600 sq km) are similarly-sized isolates, with similar vegetation patterns, and they also now lack this species. [Fraser Island is excluded from this discussion since it is largely forested, thus a less preferred Emu habitat]. I argue these newly created islands, formed after the post-glacial stabilisation of sea level around 3000–4000 years ago, were sufficiently large to support the genetic viability of Emu populations over the long term and that their local extinction was due to unsustainable Aboriginal hunting practices. It is acknowledged, as Gammage (2011) has argued in his *The Biggest Estate on Earth*, that Aboriginal people in traditional times had an intimate knowledge of the environment in which they lived. However, this knowledge has been translated by many in the mainstream press as being a seamless synergy, incomparable to the impact of all other cultures on their environments. Sometimes this understanding seems to suggest that Aboriginal people were uniquely attuned to their complex environment, forgetting the formidable power of fire management, for instance, that humans have held over their environment around the world for perhaps a quarter of a million years.

I assert that the fate of the Emu on Groote Eylandt, and Melville and Bathurst Islands, is the same as the fate of the Dodo on Mauritius and the Moa in New Zealand. As large, isolated, conspicuous and flightless species, they were unable to withstand sustained human predation. The anthropologist Frederick McCarthy speculated that the Emus of Groote Eylandt “may have been exterminated during the period of native occupation” (McCarthy 1960). Other factors, such as the impact of fire, other predators and dwindling genetic diversity may have also been at play. But there are countless references in the historical literature to the desirability of Emu eggs and Emu flesh to Aboriginal hunting parties. Their eggs are large, their nests are easy to detect, and once they were hunted out, being flightless, they could not recolonise these newly-created islands.

It is conceded that the diversity of species on islands is generally lower than on equally sized, nearby continental areas, and in a recent survey of Groote Eylandt’s birds, a number of other species present on the adjacent mainland were not found on Groote Eylandt (Noske & Brendan 2002). It is argued here that, whereas many of these species are not present on Groote due to less diverse vegetation communities on the island, this argument does not explain the Emu’s absence, given its highly adaptable diet and its range of environmental tolerance.

I am not arguing that Aboriginal communities do not have a special insight into the Australian flora and fauna and the continent’s land systems, but I believe the regional extinctions of certain species around the continent suggest that a more nuanced approach to this relationship is required. To suggest that Aboriginal interaction with the environment was uniquely and completely harmonious is a view that is commonplace in a lot of ‘new age’ literature; that denies the community its basic humanity. Of course these communities impacted on their environment less than industrialised societies with more sophisticated technologies and larger populations, but to say they had no impact

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**Figure 2.** An early nineteenth century painting of the now extinct Kangaroo Island Emu/Dwarf Emu (*Dromaius novaehollandiae baudinianus*), derived from the Baudin expedition to Australia of 1803–1804. Image courtesy of the National Gallery of Victoria.

on the environment is, it is argued here, not correct; it is only the scale of the impact that should be in question.

The current distribution of other terrestrial species in Australia may provide further evidence of localised Aboriginal overpredation. The status of the Brush Tail Possum (*Trichosurus vulpecula*) (How & Kerle 2004) and the Echidna (*Tachyglossus aculeatus*) (Augee 2004) on Groote Eylandt are similar to that of the Emu – absent from this large island in historic times, and yet both are common on the adjacent mainland, and both were favoured food species for Aboriginal groups. This same species of possum also existed in the small isolated woodlands of Uluru, surrounded by a sea of Spinifex grassland, until the establishment of a permanent Aboriginal settlement at Mutitjulu in the mid-twentieth century. Shortly after this permanent Indigenous community was established, the possum became locally extinct. Some authors (for instance Breeden 2000) have suggested that this local extinction was due to changed fire regimes and/or introduced pest species, but they do not venture to suggest that Aboriginal hunting may have also played a part. Further south, the first historical record of the Koala occurred ten years after the First Fleet arrived, and Lee & Martin (2004) have argued that this late observation is at least partially due to the cessation of Aboriginal hunting of this docile and conspicuous animal, due to the disruption to the traditional lifeway at that time, and the rebound in numbers of this species (see also Hermes 1992).

Further dispassionate studies into the historical distribution of other terrestrial species around Australia's larger islands may shed more light on the complex relationship between Indigenous people and the continent's biota.

If it had not been for the human occupation of Groote Eylandt and the other northern islands after the post-glacial sea level stabilisation, could we have expected Dwarf Emus (Figure 2) on all of these islands, like those encountered by the first European visitors to Tasmania, Kangaroo Island and King Island off our southern coast? Both King and Kangaroo Islands have Pleistocene Aboriginal histories, but due to a number of possible factors, they were unable to sustain viable human populations in the long term such that by the eighteenth century they were uninhabited.

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