

AUSTRALIAN ABORIGINAL LAND MANAGEMENT: CONSTRAINTS OR OPPORTUNITIES?

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Abstract

For many years, natural resource legislation in Australia has paid lip service to the land management principles of Australian Aboriginals, without making any genuine attempt to learn from these practices in areas such as fire management. This is despite the unquestionable sustainability and utility of such land management practices which maintained a civilisation for tens of thousands of years. Yet with the advent of European settlement, many of these techniques, including fire management techniques, were disregarded or discontinued when Aboriginal people were forced off their lands. This has altered the environment, often resulting in land becoming overgrown and subject to intense and damaging bushfires. Fortunately, notwithstanding the failures of legislation to address these issues, the increased attention on climate change mitigation measures, including the Carbon Farming Initiative, provides an opportunity for the recognition of Aboriginal land management practices, and also the ability of landholders and managers to generate an economic return from these practices.

1 INTRODUCTION

Aboriginal Australians have occupied the landmass of Australia and Tasmania for at least 40,000 years,¹ although they may have been there for 60,000 or even 120,000 years.² They constitute the oldest living race on the planet and, in terms of their ability to sustain an ongoing cultural tradition throughout pre-history and recorded history, they represent probably the most successful race in the history of the planet. As such, the Australian Aboriginal has much to teach the broader community in terms of land management.

The focus of this paper is to examine the nature of Australian Aboriginal environmental management in precolonial and postcolonial times and the ability of the communities to maintain traditional management practices in the face of, initially, a European presumption in the early colonial period based in part on underlying biblical and imperialistic injunctions, and in the current period, on Western scientific presumptions. Despite a range of legislation at both Commonwealth and State level paying lip service to Aboriginal land management practices since the 1990s, it is only now, in response to climate change, that projects are supported that provide practical and economic incentives for a return to Aboriginal fire management practices, at least in the northern part of Australia. In this regard, this paper will discuss the Carbon Project being undertaken by the North

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¹ B Gott, 'Aboriginal fire management in south-eastern Australia: aims and frequency' (2005) 32 *Journal of Biogeography* 1203.

² T Flannery, *The Future Eaters* (Reed Books, 1994) 153.

Australian Indigenous Land and Sea Management Alliance (NAILSMA) and other potential projects under the Carbon Farming Initiative.

II PRECOLONIAL ENVIRONMENTAL MANAGEMENT

Although the Aboriginal tribes that were resident on the continent in 1788 maintained an estimated 460 separate languages, it is beyond contention that they shared one aspect of the management of their environment in common. This relates to their almost universal use of fire as a tool to manage the overall environment. Fire was used for a range of purposes.³ These included the removal of understorey vegetation, the retardation of eucalypts forest on open grazing country, and in the north, fire was used to retard the southern advance of what is now the Wet Tropics World Heritage area, and to some extent to create breeding reserves for selected food species. All of these activities, in anthropological terms, occur within the rubric of fire stick farming or mosaic farming. These fires were small and comparatively cool fires, and such controlled burning meant that large fires were prevented.⁴

The recording of fires was a common theme amongst European explorers. Tasman, as early as 1642, saw smoke billow into the sky for days at a time.⁵ The logs of Captain Cook, Captain Phillip and the early explorers provide ample testament to the burning that was occurring throughout the Australian continent since 1770. Cook described the continent as ‘this land of fire’.

On 15 May 1788 Governor Phillip wrote:

In all the country thro’ which I have passed I have seldom gone a quarter of a mile without seeing trees which appear to have been destroyed by fire. We have seen very heavy thunderstorms, and I believe the gum-tree strongly attracts the lightning, but the natives always make their fire, if not before their own huts, at the root of a gum-tree, which burns very freely, and they never put a fire out when they leave the place.⁶

Gammage writes that ‘no newcomer reported the big killer fires typifying Sydney’s margins today’.⁷ Pyne notes that, within limits, Aborigines controlled the productivity and geography of the areas they hunted. They favoured some creatures and some environments over others. He quotes Surveyor-General TL Mitchell, who documented how the burns ‘left tracts in the open forest which had become as green as an emerald with the young crop of grass’.⁸ Writing in 1848, Mitchell cited the consequences that followed the expungement of Aboriginal fire: ‘Kangaroos are no longer to be seen there [Sydney]; the grass is choked by underwood; neither are there natives to burn the grass ...’⁹

³ See generally SJ Pyne, *Burning Bush* (Henry Holt & Company, 1991) Ch 6; PH Nicholson, ‘Fire and the Australian Aborigine – an enigma’ in AM Gill, RH Groves & IR Noble (eds), *Fire and the Australian Biota* (Australian Academy of Science, 1981) 61, 62; DMJS Bowman, ‘Tansley Review No 101: The Impact of Aboriginal landscape burning on the Australian biota’ (1998) *New Phytol*, 140 (3), 385-410.

⁴ T Flannery, P Kendall & K Wynn-Moylan, *Australia’s Vanishing Mammals* (Readers Digest Press, 1990) 13.

⁵ Flannery, above n 2, 217.

⁶ Quoted in Nicholson, above n 3, 67.

⁷ B Gammage, *The Biggest Estate on Earth: How Aborigines made Australia* (Allen & Unwin, 2011), 242.

⁸ Pyne, above n 3, 101.

⁹ Cited by Pyne, *Ibid* 102.

The writings of early Europeans also include many references to the state of the vegetation, with many remarking on the expanses of cleared land. ‘Everywhere we have an open woodland’, wrote Charles Darwin when he came to Australia in 1836. ‘Nowhere are there any dense forests like those of North America’, explained Chambers’ *Information for the People* in 1841.¹⁰ Due to the use of fire, “the trees were no more than accent marks on open country”. Rolls also comments that “Blaxland, Lawson and Wentworth could not have found their way over the Blue Mountains as soon as they did if the country had carried the present dense growth of tall eucalypts”.¹¹ This was not confined to New South Wales. Rolls states that “on the Palmer River in north Queensland early gold wardens and geologists stressed the shortage of timber for mine props, boiler fires, even for camp cooking. The country now carries a thousand trees to the hectare.”¹²

III THE POSTCOLONIAL PERIOD

Flannery et al note that when Europeans forced Aborigines off their lands, the vegetation built up enormously.¹³ Following good seasons, vast wildfires broke out, burning millions of hectares in central Australia.¹⁴ This cessation also impacted on species viability, with Rolls noting that the desert bandicoot and the hare-wallabies of central Australia disappeared when Aborigines went into mission stations and stopped burning.¹⁵

It remains contentious as to what extent Aboriginal fire-stick¹⁶ farming was predictive or opportunistic. An examination of the published material would seem to suggest that, on balance, the use of fire contained elements of both. Certainly, the Australian Aborigines had a holistic approach to the management of ‘Country’¹⁷ which was both non-exclusive and adaptive.¹⁸ They were as prepared, on the one hand, arguably, to participate in the extinction of mega fauna and on the other, in post colonial periods, to incorporate the

¹⁰ E Rolls, ‘More a new planet than a new continent’ in S Dovers (ed), *Australian Environmental History: Essays and Cases* (Oxford University Press, 1994) 23.

¹¹ *Ibid* 23.

¹² *Ibid* 24. See also G Bolton, *Spoils and Spoilers: A History of Australian Shaping Their Environment* (Allen & Unwin, 2nd ed, 1992) 7-8.

¹³ See also B Pascoe, *Dark Emu* (Magabala Books, 2014) 117.

¹⁴ Flannery, Kendall & Wynn-Moylan, above n 4, 13.

¹⁵ Rolls, above n 10, 24.

¹⁶ Anything that could be grasped and could glow was used as a fire-stick. The choice of implement varied by season, place and purpose. Examples of implements used were the stalk of a grass tree, a slab of smouldering mulga bark, ironbark, a decayed branch of eucalypt and a Banksia cone.

¹⁷ D Bird Rose, *Nourishing terrains: Australian Aboriginal views of landscape and wilderness* (Australian Heritage Commission, 1996) 7 explains that ‘Country in Aboriginal English is not only a common noun but also a proper noun. People talk about country in the same way that they would talk about a person; they speak to country, sing to country, worry about country, feel sorry for country, and long for country. People say that country knows, hears, smells, takes notice, takes care, is sorry or happy. Country is not a generalised or undifferentiated type of place ... [it] is a living entity with a yesterday, today and tomorrow, with a consciousness, and a will toward life. Because of this richness, country is home, and peace; nourishment for body, mind and spirit; heart’s ease.’

¹⁸ S Wickman, ‘Land degradation issues and management concerns for Aboriginal communities of central Australia’, Proceedings of the Australian Agronomy Conference, Australian Society of Agronomy, 1998 <<http://www.regional.org.au/au/pdf/asa/1998/plenary/wickman.pdf>> (accessed 6 June 2016).

European honey bee, native lemons¹⁹ and wild pigs and goats, into an overall concept of the use and exploitation of Country.

As indicated above, unrestrained Aboriginal activity came to an end rather quickly after European settlement on the east coast of Australia in 1788, when a set of very European presumptions quickly took precedence over indigenous techniques and aspirations.

The first Governor, Captain Arthur Phillip had, and retained, a high degree of respect for the Aboriginal communities around Sydney Cove. However subsequent policies based around the granting of huge tracts of land to the Governor's favourites and shortly after, by the occupation of massive areas of land in the Monaro and Riverina and elsewhere by what became known as the 'Squatters' quickly resulted in a conflict between the agricultural and grazing needs of the European settlers and the traditional and cultural imperatives of the Aboriginal communities. Historically, the Europeans saw land and land use as an opportunity to generate wealth and capital.

Beyond this individual, materialistic motivation, the early settlers exemplified, in the main, a purely British sense of imperialism which had its genesis in the Judeo-Christian ethic by which the Creator had given man dominance over nature. Dominance, in this sense, tended to be anathema to the Aboriginal tradition which was more categorised as a living and ongoing relationship between all living things including the land itself. This conception of dominance over nature is exemplified by Christopher Hodgson, a parson's son who had farmed the Darling Downs and who wrote of his years in Australia, 'Thus far the Creator of the universe is just, in that He allows the superiority of civilisation over barbarism, of intellect over instinct or brutish reason ... the world was made for man's enjoyment and created not as a beautiful spectacle, or spotless design, but as a field to be improved upon'.²⁰

It was consequently inevitable that the two approaches would fundamentally conflict after a short interval. Combined with the concept of *terra nullius*, which was first enunciated by the Colonial Office as early as 1819, the rights of local Aboriginal clans to effectively manage Country in terms of their own cultural traditions was essentially abrogated by the European desire to expand wool production to cater to the British home market. The Aboriginal insistence that grasses were to be periodically burnt to encourage revegetation after rain and to encourage the local fauna to aggregate was consequently unacceptable. This, despite the fact, that it may have had longer term benefits to the pastoral owners themselves in terms of effective grazing practice. Within a short period of time, probably 30 years after settlement in some areas, traditional Aboriginal fire-stick farming activities had essentially been brought to a halt in large areas of eastern Australia, although they were to remain, for an extended period, in the far western areas of the continent.

IV AUSTRALIAN LEGISLATION AND ABORIGINAL LAND MANAGEMENT PRACTICES

The debate between preservation and conservation, as an environmental ethic, still reverberates today. It is reflected in the tension between the objectives and operative

¹⁹ M Adams, V Cavanagh & B Edmunds, 'Bush lemons and beach hauling: Evolving traditions and new thinking for protected areas management and Aboriginal peoples in New South Wales', Proceedings of the AIATSIS Conference, 2007. This case study is discussed further in this paper in Part IV.

²⁰ Quoted in T Keneally, *Australian: Origins to Eureka* (Allen & Unwin, 2009) 406.

provisions of much of Australia's environmental and natural resources legislation. Essentially the origins of this debate can be traced to the emergence of two conflicting environmental paradigms in the United States in the late 1870s. John Muir, the founder of the Sierra Club, took an ecocentric stance, where compromise was inconceivable and 'preservation' in all its aspects was absolutely paramount. His ideas reflected the thoughts of, amongst others, George Perkins Marsh²¹ and Aldo Leopold.²² A conflicting view was espoused by Gifford Pinchot - whose approach was an anthropocentric one where balance, proportion and sustainability were key factors. Pinchot's approach became identified over time as 'conservation'. Originally close friends, Muir and Pinchot fell out whilst jointly preparing a Forestry Commission survey of woodland that merited protection. Protection, for Muir, meant preservation in perpetuity, from commercial exploitation. In contrast, for Pinchot it meant 'wise management', the concept of 'sustainable yield' (which he coined) and a philosophy of 'use in perpetuity, for human consumption'.²³ Writing in 1901, Pinchot notes that:

Conservation has captured the Nation. Its progress during the last 12 months is amazing. Official opposition to the Conservation Movement, whatever damage it has done or still threatens to the public interest, has vastly strengthened the grasp of Conservation upon the minds and consciences of our people. Efforts to observe or belittle the issue have only served to make it larger and clearer in the public estimation. ... [The Conservation Movement] has taken firm hold on our national, moral sense, and when an issue does that, it has won. ...²⁴

As mentioned before, the debate between preservation and conservation still reverberates today. It is reflected for some in a search for harmony between human beings and nature, which can only be achieved through total preservation and others who believe that environmental effects can often be *managed*. In the context of this polarity, Australian Aboriginal environmental techniques clearly sit more comfortably with the conservation ethic.²⁵ Outright preservation of Country would be inimical, not only to the welfare of the clan or tribe, but to the sustainability of the natural environment as a resource and cultural base for the tribe. Consequently, any consideration of direct Aboriginal involvement in the ecological management of Country must take this historical tension into account.

The question then arises is to what extent is the preservation ethic, which it has been argued does not accord with traditional Australian Aboriginal land management practices, been reflected in current statutory and regulatory norms. To the extent that it is, it will naturally have the effect of precluding any significant or direct Aboriginal 'decision-making' in the management of Country. The conservation ethic may still have similar effects, but arguably more flexibility should be able to be displayed by government instrumentalities if they in fact operate within a conservation paradigm.

'Decision-making' has been placed in parenthesis deliberately. On the basis of experience over the last 30 years, one could suggest that we have gradually incorporated an aspirational overlay into the fabric of social conversation which has much in common with the general participatory ethos which arose in the mid-60s, notably in California. This

²¹ GP Marsh, *Man and Nature*, (ed) D Lowenthal (University of Washington Press, 2003).

²² A Leopold, *A Sand County Almanac* (Oxford University Press, 1949).

²³ P Hay, *Main Currents in Western Environmental Thought* (University of New South Wales Press, 2002) 14.

²⁴ G Pinchot, *The Fight for Conservation* (Harcourt Brace, 1901) 133 cited in Wall Derek, *Green History: A Reader in environmental literature, philosophy and politics* (Routledge, 1994) 231.

²⁵ Although see the comment by Cavanagh that 'conservation' is a 'white man's word': see below n 37.

aspirational factor is now replete with its own terminology – stakeholder; ownership; cultural sensitivity and so on. The question which arises currently is, to what extent direct Aboriginal involvement is merely a function of aspirational norms, and to what extent Aboriginal communities *have* a direct environmental decision-making power in this State, or indeed Australia.

Since the major participant in the environmental management milieu is the state government and regulatory apparatus operating under the state government, the obvious place to research this point is the existing statutory and regulatory frameworks within which environmental management is to take place. The question which has to be asked is to what extent Aboriginal groups and communities are given *real* decision-making power in respect to the ecological management of their cultural areas.

Appendix A summarises the main Acts, Regulations and agencies which impact on natural resource management and the extent to which Aboriginal communities, representatives or agencies are involved in that process. Queensland legislation will be utilised as an example of state government legislation.

It is noteworthy that the principal Commonwealth environmental protection Act provides for the establishment of an Indigenous Advisory Committee (IAC) and for Indigenous representation on the Biological Diversity Advisory Committee. Both have been fulfilled. The IAC is currently comprises seven members and meets twice a year.²⁶ However, in order to objectively determine whether there is adequate Indigenous representation in Commonwealth environmental issues, it is appropriate to refer to the Report of the Independent Review of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which was conducted by Alan Hawke in October 2009. That Review recommended that the object of the EPBC Act be revised, *inter alia*, to ‘recognise the role of Indigenous people in the conservation and ecologically sustainable use of Australia’s biodiversity’²⁷ and ‘promote the use of Indigenous peoples’ knowledge of biodiversity with the involvement of, and in cooperation with, the owners of the knowledge.’²⁸ Specifically in relation to the IAC, it noted:

There is scope for greater Indigenous consultation and involvement under the Act. This consultation role should not be left solely to the IAC. Further work needs to be done to ensure that Indigenous groups are engaged and their values recognised during administration of the processes under the Act. In this respect, proper processes for consultation and negotiation with Indigenous peoples need to be developed. In reviewing the engagement of Indigenous people under the Act and the role of the IAC, the review recommended ... that specific guidelines be developed for consulting and engaging with Indigenous peoples on matters arising under the EPBC Act.²⁹

²⁶ A summary of the Committee’s meeting is published on the Department of Environment’s website. See, for example, <<http://www.environment.gov.au/system/files/pages/8ca21d83-fee7-4093-9459-3a6e79e2df15/files/iac-bulletin7-meeting31.pdf>> (accessed 6 June 2016).

²⁷ A Hawke, Independent Review of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (Canberra, 2009) Recommendation 3, para 5(d), 27.

²⁸ *Ibid* Recommendation 3, para 5(e), 27.

²⁹ *Ibid*, para 20.30, 327.

In relation to the Queensland legislation, it is telling that the principal land clearing legislation (the *Vegetation Management Act 1999*) makes only one reference to Indigenous Australians and that relates to the Cape York area. The object of the Act makes no reference to Indigenous land management practices, or indeed to Indigenous people at all. The *Environmental Protection Act 1994* provides for the ‘consultation’ of ‘Aborigines and Torres Strait Islanders under Aboriginal tradition and Island custom’.³⁰ The more practical body is established by the Queensland Department of Environment and Heritage Protection outside of the legislative framework. That is an Indigenous Land and Sea Ranger program, which currently has 65 Rangers and operates in 14 regional communities throughout Queensland, predominantly in northern and western Queensland.³¹ The Rangers work with local landholders, government and traditional owners to achieve environmental outcomes tailored to that area and raise awareness of looking after Country. Their work includes fire management and the Department notes that one of the outcomes of the program is “better vegetation management, including almost 2.5 million hectares protected through improved fire management”.³² Whilst an independent review of this program has not been published, it is noteworthy that it continues to be funded by governments on both sides of politics. Thus, at least in the areas where the Rangers operate, it can be supposed that the objective of consultation with Indigenous persons is being achieved, at least on an ad hoc basis.

However, to summarise, even on the most charitable of readings, there is very little in the regulations and legislation detailed above that necessarily results in a serious or extensive involvement of Aboriginal communities in day-to-day environmental management across the state.³³ Yet CSIRO scientist, Geoff Stocker argues that we probably still have sufficient information to reconstruct the burning regimes established by Aborigines over most of Australia. “It would require the collaborative effort of meteorologists, fire ecologists and anthropologists. A vital contribution could also be made by tribal descendants, who have preserved in oral tradition the locations of favoured hunting grounds and the seasons in which their ancestors travelled from one to the next”³⁴.

There is however sometimes a tension between Government and Indigenous responses to land management. This is illustrated by Langton, who discusses the conflict on use of fire in Kakadu National Park, a world heritage listed area in Western Arnhem Land, Northern Territory, that is leased by the traditional owners to the Commonwealth government. Langton cites a report prepared by the Aboriginal project Committee for the 1997 Kakadu Region Social Impact Study, which provides:

During the 1996 dry season, Aborigines lit a number of dry season fires that were considered too late by Park staff. One resident commented that Park Rangers had approached him about a fire he had lit after the Parks own burning program had closed. For them, it was a late, hot fire of the kind that they try to avoid. For him, it was a successful dry season hunting fire, within

³⁰ *Environmental Protection Act 1994* (Qld), s 6.

³¹ Queensland Government, ‘Indigenous Land and Sea Ranger program’, 6 July 2015, <<https://environment.ehp.qld.gov.au/land-sea-rangers/>> (accessed 10 June 2016).

³² Queensland Government, ‘Indigenous Land and Sea Ranger program’, 5 March 2015, <https://www.qld.gov.au/environment/plants-animals/community/about-rangers/> (accessed 10 June 2016).

³³ Ironically, one generic piece of legislation – the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth) has proven more practical in encouraging traditional fire management practices. This will be discussed further in section IV of the paper.

³⁴ G Stocker, ‘Fire-stick farming a lesson’, *The Australian*, 17 February 2009.

the proper period, which netted him some kangaroos. Conversely, the Park practice of preserving some areas of spear grass for early wet season burning, in order to reduce the spear grass load in subsequent seasons, is considered by some Aboriginal observers to be contrary to traditional practice. In 1996 a number of these set-aside areas were fired by Aborigines during the dry season.³⁵

Langton concludes that the current Park policy and practices associated with the intention to replicate Aboriginal traditional burning regimes is sometimes perceived by traditional owners as a refined version of their traditions. 'The daily Aboriginal interpretations of, and responses to, their environments and the need for burning is not apprehended by park staff who pursue the cause of conservation science because of their training, and, typically, their southern origins. The traditional owners are thereby disempowered by the application of the values of Western science.'³⁶

A further example, involving evolved cultural practice, is given by Adams et al, in relation to the Bundjalung people of north eastern New South Wales.³⁷ The purpose of this research was to test the definitions of 'native' and 'feral' in the *Threatened Species Conservation Act* in an aboriginal context. The researcher, Ms Cavanagh (a member of this Community of Australian Aborigines) found that culturally significant species included bush lemon trees (a non indigenous species) and honey from 'feral' European honeybees as well as native bees. Cavanagh highlighted the differences between the Department of Conservation's concept of 'nature' and the Bundjalung one. Cavanagh stated:

The ideas and definitions of nature and threatened species from the perspective of the Bundjalung community members vary from the DEC perspective. Bundjalung community members are aware of this disparity and the problems this poses when being involved in nature conservation with non-Indigenous people and organisations. [quoting a member of the community] "But what does 'conservation' really mean. It's a different thing from an Aboriginal persons' perspective to the white perspective. To us, it's things like keeping culture, and the things that Granny taught us, without having to spell it out as being 'conservation'. Conservation is a white man's word."³⁸

V CURRENT USE OF ABORIGINAL KNOWLEDGE AND PRACTICES

This paper has discussed the important role that Aboriginal fire management has played in, as Gammage coins it, 'making Australia'³⁹. Indeed, Wynter believes that a knowledge of traditional Australian Aboriginal fire practices is more vital than ever 'if we are to tackle the problem of massive bushfires in the era of unprecedented climate change, with Australia suffering hotter temperatures and worse and worse fires with even greater loss of

³⁵ M Langton, *Burning Questions: Emerging environmental issues for indigenous peoples in northern Australia* (Centre for Indigenous Natural & Cultural Resource Management, Northern Territory University, Darwin, 1998) 42-43.

³⁶ Ibid 43.

³⁷ Adams, Cavanagh & Edmunds, above n 19.

³⁸ Ibid, quoting research by Cavanagh's research in her B Sc Honour Thesis, School of Earth & Environmental Sciences, University of Wollongong.

³⁹ Gammage, above n 7.

life and property'.⁴⁰ This does not necessarily translate into a maintenance of pre-European management regimes. All cultures evolve. Kirkpatrick cites the examples of north Queensland, where Aborigines have altered their fire management where cattle graze and elements of modern technology have replaced most of the original toolkit. Recently introduced animals that are known to deleteriously affect native species have become major food resources, creating resistance to programs directed towards their control or elimination. Thus, the elimination of buffalo from the Top End was resisted by the local Aboriginal people, and in central Australia the control of rabbit populations is similarly regarded negatively.⁴¹

Yet, as discussed, the benefits of this knowledge is not incorporated into mainstream environmental management practices in Australia. Given the lack of legislative prescription of Aboriginal involvement in natural resource fire management, this will have to be achieved through other mechanisms – particularly economic instruments. The following section discusses some contemporary examples of this management practice.

A Savanna Carbon Projects

Despite the extensive media coverage of southern Australian bushfires, the vast majority of fires occur in the northern savanna region.⁴² Savanna is typically composed of a broken canopy of fire resistant eucalypt trees over understory grasses. The grasses grow quickly in the intense five month wet season and cure during the dry season to form a continuous vegetation layer that can carry fire for thousands of kilometres if uninterrupted.⁴³ The result is generally annual bushfires (mostly caused by human ignitions) occurring late in the 7 month dry season period, whereas 'fire management practice (burning throughout the year, typically under prescribed conditions) was undertaken extensively by Aboriginal people before societal collapse and associated abandonment of traditional practices with the advent of European settlement'.⁴⁴

The bushfires are also a significant sources of greenhouse gas emissions, with methane and nitrous oxide emissions during savanna fires accounting for 14.3 percent of Australia's agricultural emissions in 2009.⁴⁵ Emissions from low-intensity, patchy, early dry-season fires emit about half this amount of greenhouse gases,⁴⁶ and this is also an important reason to reinstate the traditional practices. In 1996, as part of its corporate social responsibility in developing the Darwin LNG project, the multinational Conoco-Philips became involved in the West Arnhem Land Fire Management Project (WALFA). An Agreement was entered into with a group of native title owners in the Northern

⁴⁰ C Wynter, "What's right with Bill Gammage's book", *Green Left Weekly* (No. 1045, 17 March 2015) 26. See also Stocker, above n 33.

⁴¹ Adams, Cavanagh & Edmunds, above n 19, 29-30.

⁴² S Heckbert et al, 'Indigenous Australians Fight Climate Change with Fire', *The Solutions Journal* (Vol. 2(6), Nov. 2011) 50-51.

⁴³ *Ibid* 51.

⁴⁴ North Australian Indigenous Land and Sea Management Alliance, "WALFA – West Arnhem Land Fire Abatement project", 2012, <http://www.nailsma.org.au/walfa-west-arnhem-land-fire-abatement-project> (accessed 3 June 2016).

⁴⁵ Heckbert, above n 42, 51.

⁴⁶ *Ibid*, 51. See also Emissions Reduction Fund, *Participating in the Emissions Reduction Fund: A guide to the reducing greenhouse gas emissions through early dry season savanna burning method*, 2015, p. 6, which states that on average, late dry season fires emit 52 percent more emissions per unit area than early dry season fires.

Territory to use traditional practices to fire manage some 30,000 km² of bush, with a potential offset of some 100,000 tonnes of greenhouse equivalent gases per year.⁴⁷ The land owners are being paid around \$1 million per annum for 17 years to undertake this task, with burning taking place in the early dry season. The project uses a combination of traditional fire management practices together with modern scientific knowledge – what Senior Ranger Otto Campion, a Rembaeenga man working with the Gurruwilling Ranger Group, describes as the “two toolbox” approach to fire management.⁴⁸

Whilst the project was designed to save 100,000 tonnes of greenhouse gas abatement per annum to offset some of the greenhouse gas emissions generated at Conoco-Phillip’s liquefied natural gas plant in Darwin Harbour,⁴⁹ from 2006 to 2010 706,956 tonnes of CO₂ equivalent units were abated – a 140% success against the target.⁵⁰ This project has also won the Caring for Country Indigenous Award at the Banksia Awards in 2011. The judging panel highlighted the importance of this project providing a coherent collaboration between traditional knowledge and contemporary scientific practice – a key reconnection to country and culture.⁵¹ As well as providing an economic benefit, the project has also benefitted biodiversity monitoring and management in the area.

The potential for wider use of offsets was formalised in 2011 by the establishment of the Carbon Farming Initiative under the *Carbon Credits (Carbon Farming Initiative) Act 2011* (Cth). It is a voluntary carbon offsets scheme that allows farmers and land managers to earn carbon credits by storing carbon or reducing greenhouse gas emissions on the land. These credits can then be sold to persons who wish to offset their carbon emissions. In 2014 the WALFA project was formally recognised as an eligible offset program under the Carbon Farming Initiative.⁵² Other projects, based on the WALFA methodology, have been developed with native title owners in four locations in northern Australia, including the northern Kimberley and northern Cape York.⁵³

In 2015, the Commonwealth’s Clean Energy Regulator established an Emissions Reduction Fund register and three auctions have been held in 2015-16 to sell Australian carbon credit units from registered projects. Thirty-three savanna burning projects have sold contracts for carbon abatement in the course of the three auctions.⁵⁴ These projects have now been taken to the international stage, with the Kimberley Land Council

⁴⁷ There is no net gain in greenhouse gas storage since burning releases most of the stored greenhouse compounds. A net gain occurs through pasture improvement: see S Heckbert et al, *Land management for emissions offsets on Indigenous lands* (CSIRO Sustainable Ecosystems, 2008). See also J Russell-Smith, P Whitehead and P Cooke, *Culture, Ecology and Economy of Fire Management in North Australian Savannas: Rekindling the Wurrk Tradition* (CSIRO, 2009).

⁴⁸ NAILSMA, *Carbon Project – Why we burn our country* (5 June 2013) <<http://nailsma.org.au/hub/resources/video/why-we-burn-our-country-2013>>.

⁴⁹ North Australian Indigenous Land & Sea Management Alliance, *WALFA Project* (15 February 2012) <<http://nailsma.org.au/walfa-west-arnhem-land-fire-abatement-project>>.

⁵⁰ Banksia Environmental Foundation, *2011 Winners and Finalist* (30 October 2011) <<http://banksiafdn.com/2011-winners/>>.

⁵¹ *Ibid.*

⁵² Conoco Phillips, ‘Fire with Fire – Capturing the story behind the WALFA project’, 2016, <<http://www.conocophillips.com.au/sustainable-development/Pages/WALFA.aspx>> (accessed 4 June 2016).

⁵³ NAILSMA, above n 48.

⁵⁴ *Ibid.*

attending the Convention on Climate Change Conference of Parties 21 in Paris in 2015, and delivering presentations on savanna burning and climate change offsets.⁵⁵

B *Aboriginal Wetland Burning in Kakadu*

Issues about the incompatibility of traditional Aboriginal management practices in Kakadu were mentioned in Part III. More recently, the CSIRO and the Bushfire Cooperative Research Centre has worked with a family of traditional owners in the Kakadu National Park to examine the cultural and biodiversity benefits of Aboriginal fire management in the floodplains of the South Alligator River. Since the removal of feral Asian water buffalo from Kakadu's wetlands in the 1980s, the native grass Mudja and introduced Para Grass spread, limiting access to water and choking out species normally used for food by birdlife and Aboriginal people. Aboriginal people traditionally used fire to control the density of Mudja by burning multiple times over several weeks and burning at the edge of the floodplains to prevent escape into the surrounding savanna woodland. A Bayesian Belief Network⁵⁶ model has been utilised to record traditional ecological knowledge, apply it to wetland management, and allow its transfer to younger generations. Results reported by the CSIRO in 2014 are that the re-application of traditional fire management dramatically enhances biodiversity and the cultural values of the wetlands for Aboriginal people. The presence of waterbirds are indicators of wetland health and the abundance and richness of water birds were very high at sites burnt during the previous year, moderately high at sites burnt three years ago and very low at long-unburnt sites.⁵⁷

C *Use of Aboriginal Fire Practices in Hazard Reduction Burns*

The CSIRO notes that 'Aboriginal traditional knowledge relating to fire management remains strong throughout much of northern Australia' and hence the emphasis in this paper has been on these examples. Clearly, there are limits and such projects may not be feasible or desirable in the denser forests in the southern portions of the continent, but they do point to the future use of Aboriginal techniques and Aboriginal communities as part of a total fire management service in particular areas.⁵⁸

In 2016 the Australian Capital Territory Parks and Conservation Service has worked with Aboriginal Rangers to identify sacred and significant areas around the region where cultural burning would be appropriate. The fire authority then worked with the Rangers to carry out hazard-reduction burns in a traditional manner and then, using both traditional and modern techniques, carried out a larger hazard-reduction burn. The aim is to put more fire into the environment, in a lower intensity, less harmful way, while giving the Ngunnawai community, as Aboriginal Ranger Brown report it a 'sense of belonging,

⁵⁵ R Foley, 'Paris a step in the right direction', Aboriginal Carbon Fund, 16 December 2015, <<http://aboriginalcarbonfund.com.au/blog/2015/12/15/paris-step-in-right-direction>> (accessed 4 June 2016).

⁵⁶ This is a tool for recording traditional qualitative ecological knowledge.

⁵⁷ A Andersen, et al, "Aboriginal Wetland Burning in Kakadu", *Fire Note* (Issue 36, 2014) 2.

⁵⁸ See generally R Hill et al, 'Aborigines and Fire in the Wet Tropics of Queensland, Australia: Ecosystem Management Across Cultures' (1999) 12 *Society & Natural Resources* 205-223.

knowing that we're back, restoring our country'⁵⁹. Further cultural hazard reduction burns are being planned in the Australian Capital Territory.

VI CONCLUSIONS

Two hundred years of European settlement has fundamentally changed a large portion of the Australian landscape. Where once an early settler could remark that clearing was not necessary for cultivation to begin, large areas of the eastern seaboard are now dominated by an encroaching eucalyptus forest, only held back around the metropolitan regional cities by an ever increasing urbanisation.

No longer is the 14 mile journey from Sydney to Botany Bay an easy walk. With the ending of Aboriginal intervention by fire within 20 years it became a difficult passage through rough bracken and dense understorey. Equally, the ability of the early explorers to gain a passage through the Blue Mountains using horses and pack animals would be difficult, if not impossible, today.

One of the great, indeed mammoth, achievements of the Australian Aboriginal was to essentially terraform large portions of the continent in an ongoing process which stretched over thousands of years. Some of the reasons why this process was undertaken have been indicated previously – the need to create a more open space to facilitate hunting and mobility, combined with other cultural and tribal factors.⁶⁰ However, what the Aboriginal inhabitants sought to achieve was effectively undone by European settlement. Today, traditional hunting using traditional means would be largely impossible given the dense eucalypt forest and dense understorey which currently exists. Queensland State legislation, such as the *Vegetation Management Act 1999*, which in large measure precludes clearing and burning of native vegetation, reinforces preservation as a goal in itself.⁶¹

In a real sense, a managed open range has been exchanged for an increasingly chaotic, but 'more natural' environment. In this context, then, and given the regulatory constraints, one could ask whether there is any conceivable role for traditional Aboriginal environmental management using fire as the traditional management tool. Leaving aside for the moment the question of state regulation, there are practical difficulties to the incorporation of traditional practices into the modern environmental catechism, particularly in the southern and south eastern portions of the continent. Today's landscape has fundamentally changed from that of 200 years ago. Given the present density of flora, unregulated fires could build to an intensity deleterious to many native species, whilst some exotic species might survive these higher temperatures, resulting in a further imbalance in the natural systems. Similarly the social fabric of communities and places has changed with large scale agriculture and grazing, and the establishment of towns. Uncontrolled fire represents a real threat to properties, towns and peoples.

⁵⁹ T. Lowrey, 'Indigenous fire practices used in hazard-reduction burns at significant ACT cultural sites', ABC News, 1 April 2016, quoting Aboriginal Ranger, Adrian Brown.

⁶⁰ BP Murphy & DMJS Bowman, 'The interdependence of fire, grass, kangaroos and Australian Aborigines: a case study from central Arnhem Land, northern Australia' (2007) 34 *Journal of Biogeography* (2007) 237.

⁶¹ Professor D Bowman of Charles Darwin University has made similar observations in relation to fire management practices in the Northern Territory. See 'Learn from Aborigines to control fire, says academic', *AAP Australian National News Wire*, 25 May 2004.

Uncontrolled fires, however, are a constant reality across the continent. In northern Australia, around 355 000 hectares of land is subject to bushfires every year, half of the total occurring in the Northern Territory alone. It is accepted generally that fire management has been neglected in Australia until quite recently – but new approaches are now being trialled which may see, at least in part, a return of traditional Aboriginal fire management practices, particularly in northern Australia. They may also result in an acknowledgement of Aboriginal skill and wisdom in respect of Country and a new commitment of regulatory bodies to apply such knowledge on the ground.

This development owes little to the aspirational norms enthusiastically endorsed by government bureaucrats, but to the global concern over climate change. The panoply of state government legislation and regulation, which has been detailed above may need to adjust to this innovation. If it does, and there is no reason why it cannot, then we may see a gradual return to utilising this ancient body of knowledge to the benefit of both communities and the natural environment.

APPENDIX A

Legislative recognition of Aboriginal Environmental Management in Queensland

Legislation/ Regulation	Section(s)	Provisions for Aboriginal Environmental Management
Environment Protection and Biodiversity Conservation Act 1999 (Cth)	ss 505A, 505B	The Act provides for an Indigenous Advisory Committee to advise the Minister on the operation of the Act, taking into account the significance of Indigenous peoples' knowledge of the management of land and the conservation and sustainable use of biodiversity, and for Indigenous representation on the Biological Diversity Advisory Committee. Indigenous interests should be addressed when bilateral agreements, management plans, recovery plans, wildlife conservation plans or threat abatement plans are being developed, and when permits are issued to Indigenous people permitting them to take listed species.
Environmental Protection Act 1994 (Qld)	s 6	Community involvement in administration of Act – Provides that the Act is to be 'administered, as far as practicable, in consultation with, and having regard to the views and interests of, industry, Aborigines and Torres Strait Islanders under Aboriginal tradition and Island custom, interested groups and persons and the community generally'.
Nature Conservation Act 1992 (Qld)	s 20 s 62 s 93 s 17	Provides for the declaration of National parks (Cape York Peninsula Aboriginal land) . It provides such areas are to be 'managed, as far as practicable, in a way that is consistent with any Aboriginal tradition applicable to the area, including any tradition relation to activities in the area'. 2 national parks on the Cape York Peninsula (Kulla McIlwraith Range and Lama Lama) have been declared national parks (Aboriginal land). Provides for the grant of Aboriginal tradition authorities to take natural and cultural resources in a protected area. Aborigines' & Torres Strait Islanders' rights to take etc protected wildlife – provides that an Aborigine or Torres Strait Islander 'may take, use or keep protected wildlife under Aboriginal tradition or Island custom' (excepting protected wildlife in a protected area.) Cardinal principle for the management of national parks is to 'provide, to the greatest possible extent, for the permanent preservation of the area's natural condition and the protection of the area's cultural resources and values'.
Nature Conservation	ss17, 21, 24,	Matters to be considered when chief executive is granting an Aboriginal tradition authority to take cultural or natural

(Protected Areas Management) Regulation 2006 (Qld)	32- 39	resources in a protected area.
Forestry Act 1959 (Qld)	s 33 s 65	The Cardinal principle of management of State forests - refers to recreational, grazing and water quality but doesn't refer to Aboriginal management or involvement. Control of fires on lands adjoining State forest etc – no obligation to take notice of Aboriginal rights but the rights of graziers and campers are given some protection.
Water Act 2000 (Qld)	s 10	Purpose of Ch 2 – the purpose of this chapter is ‘to advance sustainable management and efficient use of water and other resources by establishing a system for the planning, allocation and use of water’. Sustainable management includes ‘(2)(c)(v) recognising the interests of Aboriginal people and Torres Strait Islanders and their connection with the landscape in water planning’. There is no further mention of Aboriginal involvement in the Act.
Fisheries Act 1994 (Qld)	s 14	Provides that ‘it is a defence in a proceeding against a person for an offence against this Act relating to the taking, using or keeping of fisheries resources, or the using of fish habitats, for the person to prove (a) the person is an Aborigine, who at the time of the offence was acting under Aboriginal tradition ... and (b) ... for the purpose of satisfying a personal, domestic or non-commercial communal need of the Aborigine ...’
Fire and Rescue Service Act 1990 (Qld)		The Act binds all persons. There is no specific reference to Aborigines in relation to the composition of the Emergency Services Advisory Council and no permit granting authority is given to Aborigines. There are no specific permits available for Aborigines.
Aboriginal Cultural Heritage Act 2003 (Qld)		This Act doesn't cover traditional Aboriginal activity. It just provides protection for Aboriginal objects or sites, such as paintings and bora rings.
Land Protection (Pest and Stock Route Management) Act 2002 (Qld)	s 106	Provides for local government to establish a working group to advise it about preparing its draft stock route network management plan. In preparing the plan, ‘the local government must have regard to ... (4)(h) the interests of the local community in its area, including, for example, the interests of land-holders, Aboriginal communities, industry groups and members of the public’.
Specific provisions concerning north		

Queensland		
Wet Tropics of Qld World Heritage Area Conservation Act 1994 (Cth)	s 6 ss 23, 29	Aboriginal representation on the Authority – provides that the Wet Tropics Management Authority is to include ‘one or more Aboriginal representatives who have appropriate knowledge of, and experience in, the protection of cultural and natural heritage’ (as nominated by the Minister).
Wet Tropics Management Plan 1998 (Qld)	s 77	Controls in relation to activities by native title holders. Activities to be consistent with the management principles prescribed under the Nature Conservation Act 1992. Permits may be granted by the chief executive or approved entities
Vegetation Management Act 1999 (Qld)	s 19N	This section (Code for clearing vegetation for special indigenous purpose), is the only mention of Aboriginals in the Act. It provides that the Minister may prepare a code for the clearing of vegetation for development that the Minister is satisfied, under the Cape York Peninsula Heritage Act, is for a special indigenous purpose.
Cape York Peninsula Heritage Act 2007 (Qld)		This Act ‘provides for the identification of the significant natural and cultural values of Cape York Peninsula, and cooperative and ecologically sustainable management of Cape York Peninsula.’ It provides for indigenous community use areas and provides for indigenous membership on various advisory committees for the area. ⁶²

⁶² The Map of the Cape York Peninsula Region is reproduced at http://www.nrm.qld.gov.au/cape_york/pdf/map.pdf (viewed 22 September 2009).