

Special Feature: Indigenous Perspectives

Original Contribution

Ecohealth and Aboriginal Testimony of the Nexus Between Human Health and Place

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Abstract: The spread of industrial civilizations has been particularly traumatic for the last remaining hunter-gatherer societies. Manifestations of this include expatriation from ancestral lands, sickness, poverty, and environmental degradation. Northern Australia has been no exception despite remaining a stronghold of Aboriginal cultures and still containing vast areas of relatively intact landscapes. Most Aboriginal people reside in remote settlements where they remain on the negative extreme of basic indicators such as life expectancy and educational attainment. In addition, biodiversity declines are being documented from loss of Aboriginal fire management and invasion by feral species. There has been little consideration of potential health, social, economic, or environmental benefits of routinely hunting, gathering or being on their land. This reflects a Western philosophical position that segregates land management and health policy, a view at odds with Aboriginal peoples' testimony of the indivisibility of people and land. Here we report perspectives from Arnhemland gathered through observation and unstructured and semistructured interviews. Themes that emerged included the high level of detailed, complex knowledge of their traditionally owned lands, the perceived urgency about passing this on to younger people, and the need that both land and people have for each other for the well-being of both. Primary motivations for returning to traditional lands were gathering food, escaping from stresses, and educating young people. The many barriers included no transport, family problems, frequent funerals, and other cultural or family obligations. This work forms part of a larger transdisciplinary research program that aims to inform policy about sustainable futures in northern Australia.

Keywords: Aboriginal health, landscape ecology, qualitative research, natural resource management, health policy

INTRODUCTION

The global spread of industrial civilizations has been particularly traumatic for the last remaining hunter-gatherer societies. Sickness, expatriation from ancestral lands, and

poverty are all manifestations of the collision of worlds and cultures. The Northern Territory (NT) of Australia, which was colonized in the late 19th century, remains a stronghold of Aboriginal cultures. Here approximately 50% of the land is held in communal title by Aboriginal people (Fig. 1) and many Aboriginal groups also have customary rights (Native Title) to areas with other land tenure. Over 60%



Figure 1. The images of early photographers such as Donald Thomson depicted people who looked lean and healthy. Photograph by D.F. Thomson, Arnhemland, 1935. Reproduction courtesy of Mrs. D.M. Thomson and Museum Victoria.

live on or near their ancestral lands (Madden, 1995; Linacre, 2004). Since 1969 Aboriginal people have received full rights of Australian citizenship including welfare payments, state-provided free education, and First World health care. *Prima facie* this situation should signal an exception to the global rule of Indigenous social disadvantage and poor individual health and well-being. Sadly this is not the case. Aboriginal people in northern Australia and elsewhere in Australia are on the negative extreme of basic indicators of health and well-being, such as life expectancy, educational attainment, and incarceration rates. For example, only 3% of Aboriginal Australians achieve education to the level of Bachelor's degree, an estimated 35% of adults have been charged by police at some time, and incarceration rates are 12 times higher than among non-Indigenous Australians (Linacre, 2004; Australian Bureau of Statistics, 2006).

The collapse in health status has been particularly dramatic in the north given that only 50-100 years ago most Aboriginal people were living as nomadic hunter-gatherers who were noted as being strong, lean, and healthy (Fig. 2). Their active lifestyle promoted good health and bush foods were nutritious with low energy density (O'Dea,

1984). As recently as the 1950s a survey of 713 people in a community in northern Australia found few skin diseases, only one person with obesity, and one with elevated blood pressure (Hoy et al., 1997). However, the health of Australia's Indigenous people today is unacceptably poor in comparison to both other Australians and to Indigenous groups within other Westernized societies such as North America and New Zealand. Unlike these latter groups there has been little improvement over the last 20 years (Anderson et al., 2006). Life expectancy remains at least 15 years shorter than for non-Indigenous Australians and infant mortality rates are more than double (Australian Bureau of Statistics, 2005). In the Northern Territory (NT) hospital admission rates are about five times greater for Aboriginal people, in spite of the younger demographic profile (Australian Institute of Health and Welfare, 2006).

Causes for the deterioration of Aboriginal health are manifold. The abrupt transition from hunter-gatherer lifestyle to occupying large remote settlements brought dependence on mission and later welfare payments such as unemployment, sickness, or parenting benefits. Expatriation from traditionally owned lands created many cultural and social stressors, particularly from bringing together peoples who had traditionally been separate and sometimes enemies or rivals. Major lifestyle changes included reduced levels of physical activity and a considerable increase in the intake of highly refined foods. In the early 1990s sugar, meat, flour, and bread provided over 50% of energy intake in northern coastal communities and sugar consumption was approximately double the national average (Lee, 1992). Indigenous people in Australia are now more than three times as likely as non-Indigenous to have some form of diabetes. As a group they also have disproportionately higher prevalence rates of heart disease, smoking, elevated blood pressure and excess weight (Trewin and Madden, 2006). Moreover, the higher rates of poor mental health and depression, major problems in their own right, also further increase the risk of developing heart disease (Swan and Raphael, 1995; Bunker et al., 2003). Along with declines in overall physical and mental health has been a rise in social dysfunction, violence, and substance misuse (Memmott et al., 2001). For example, Indigenous women have been estimated to be at least 12 times more likely than non-Indigenous women to be victims of assault (Blagg, 2000).

Despite over 20 years of medical research, the health gains for Aboriginal people have been minimal. Clearly, standard biomedical approaches have met an impasse and

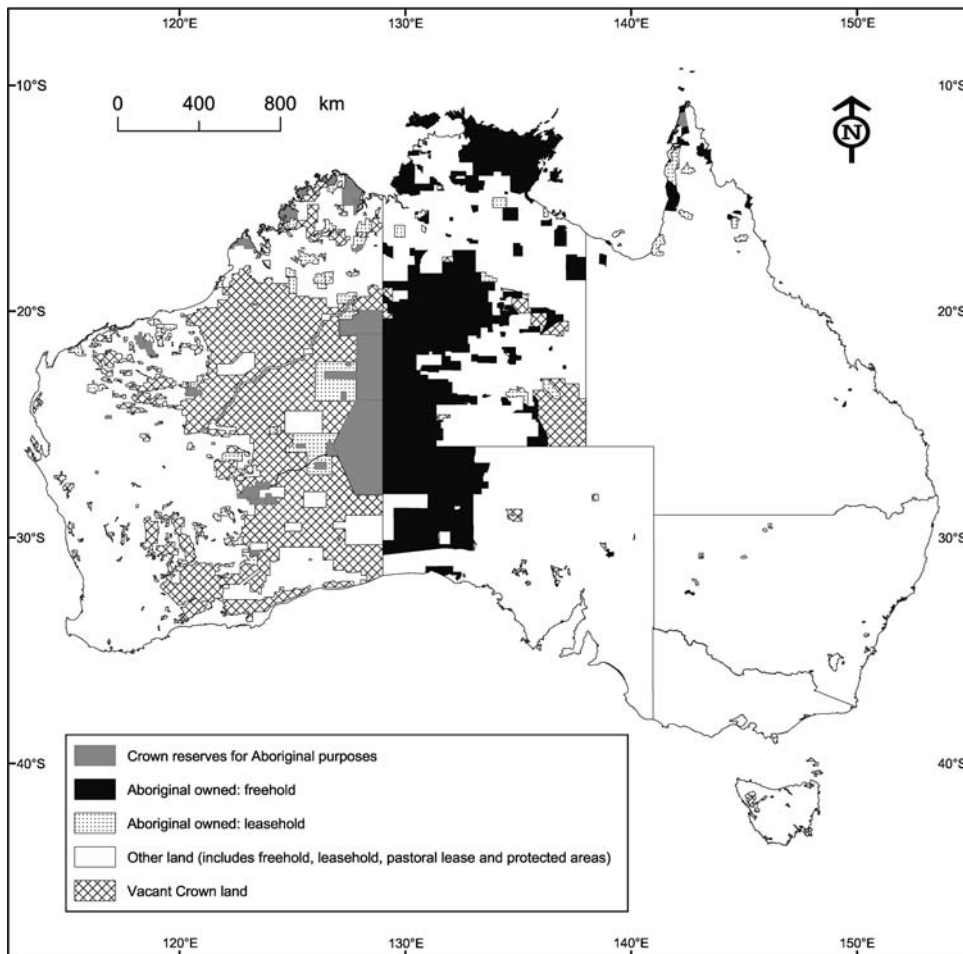


Figure 2. The dark shaded areas show regions currently under Indigenous ownership in Australia. Potentially, Indigenous NRM could occur on other types of land tenure including crown land and pastoral leases (map adapted from Geosciences Australia 1993).

new ways of thinking about and tackling the problems are required (National Health and Medical Research Council, 2002). One poorly explored avenue concerns the nexus between human health and landscape health. These two perspectives of “ecohealth” have never been effectively coupled in Aboriginal health research or policy perspectives. A critical exception was the discovery 20 years ago that Aboriginal people with chronic diabetes symptoms improved when they returned to their lands and resumed traditional practices of hunting and gathering (O’Dea, 1984). However, since then there has been remarkably little consideration of the health benefits of Aborigines residing on or routinely managing their lands. Perhaps more perplexing is that anthropologists have long recorded the widespread belief of Aboriginal peoples that land and human health are inextricably linked. Indeed, the complex interconnectedness of country, identity, and spirituality has been argued by a leading Aboriginal health professional as fundamental to understanding Aboriginal health in Australia today (Anderson, 1995).

The purpose of this article is to provide contemporary Aboriginal testimony on the nexus between people and lands in northern Australia and reflect upon how this might relate to the more limited Western concepts of human “health” (often expressed as rates of physical and mental illnesses) and landscape health (e.g., indices of biodiversity). This qualitative analysis forms part of a larger transdisciplinary project (*EcoHealth*, 2005) established in response to Aboriginal concerns about the nexus between the well-being of themselves and their country. Other elements include quantitative ecological and biomedical research programs that respectively seek to (a) determine if landscape health is different under contrasting Aboriginal and non-Aboriginal land management regimes (Franklin et al., 2007), and (b) compare the health and well-being of Aboriginal participants in land management compared with nonparticipants. The final part of the project (currently in progress) consists of synthesis and interpretation of results by Aboriginal and non-Aboriginal members of the research team. This includes a critical evaluation of

policy options for land management contributing to the development of sustainable Indigenous futures in Australia.

STUDY SETTING

The location for this research program was the coastal Aboriginal community of Maningrida, a settlement originally established in 1949 as a government trading post. The regional population of approximately 2,600 includes those living in Maningrida as well as the many dispersed “outstations” or “homelands” where smaller family groupings of 10-100 people live on their traditionally owned lands known in Aboriginal English as “country.” The main settlement has many government services including a health center, while the homelands are supported by a central resource center with many functions, including the building and maintenance of infrastructure and provision of mobile grocery supplies. The people living in Maningrida come from many different cultural and linguistic groups with over ten languages in common usage. The distinct spatial clustering of houses reflects this diversity and areas within the town are usually named after the language commonly spoken by their residents. There is considerable mobility of individuals to and from outstations, as well to more distant towns and settlements. Strong cultural traditions remain intact, including the complex system of kinship relations that define many aspects of day-to-day life such as roles, responsibilities, and potential marriage partners (Berndt and Berndt, 1970; Keen, 1991). Individual identity is strongly determined by connection to country. Land is usually inherited through paternal descent, and individuals also have links and responsibilities to their mother’s country (Rose, 1996).

Like many large Aboriginal settlements throughout northern Australia, the region is marked by socioeconomic disadvantage and population health is poor. In the 1960s the Australian government attempted to establish a forestry industry based on the harvest of native conifer (*Callitris intratropica*), although this project failed and was terminated in the early 1970s (Haynes, 1978). Since then there has not been equivalent employment programs beyond schemes based on government service, special-purpose grants, and working for cash unemployment benefits. In many remote Aboriginal settlements there has been development of a “hybrid economy” where government funding has been combined with traditional cultural activities. Examples include traditional harvests and sale of art works,

often marketed nationally and internationally through cultural centers (Altman, 2001). More recently ranger programs have been initiated with a range of roles including land management to enable commercial exploitation of wildlife on Aboriginal lands (e.g., safari hunting, fishing tours, and harvests of crocodile eggs for crocodile skin farms).

PARTICIPANTS AND APPROACH

Prior ethical approval was granted by the joint Human Research Ethics Committee of the NT Department of Health and Community Services and Menzies School of Health Research, and also the Human Research Ethics Committee of Charles Darwin University. The content and focus of this qualitative research was informed by the views of Aboriginal people, including traditional land owners, following more than a year of consultations conducted during 2002 and 2003 as part of planning and directing the larger project (Burgess et al., 2004). The study site was selected after wide support from individuals and invitation from key local organizations to proceed with the project was received.

The primary field researcher (AV) initially worked for several months assisting health data collection for the biomedical component of this project and was able to use this time to make contact with a range of individuals and groups within the community. She then spent another four months joining activities with local groups, including the school, women’s center, aged care, and outstation resource center. Data were gathered in a number of ways, including continuous observation and unstructured conversations conducted by AV and other members of the research team. AV additionally conducted 13 semistructured interviews using a digital voice recorder with 11 women and two men aged from 22 to 51 years. This predominance of women reflected the gender of the primary field worker. The two men who participated did so together with their wives. Additional views from other men were included through conversations with male members of the research team without the use of an audio recorder.

The bulk of the work took place from August through November, corresponding to the hot and humid time of year prior to the monsoon rains. The interviews were typically made while traveling to or working on traditional lands as these activities facilitated conversations about country. Exceptions concerned people too frail or otherwise

indisposed to visit their country. Permission to visit lands was always obtained from an appropriate land owner and verbal and written consent for observation, photography, and voice recordings was obtained from each participant. All members of the research team were allocated a skin name, bush name, and moiety which allowed them to be placed within a local frame of reference and facilitated ongoing interactions with a range of people. Wide-ranging informal conversations were then recorded with additional clarification sought when topics relating to either land or health came up. Subsequently, the themes from discussions and observations were summarized and reviewed by participants at a later feedback visit to ensure that they reflected the ideas that had originally been expressed. For unforeseen reasons professional interpreters were unavailable at the time of the study. Most participants spoke English as a second or third language and younger family members often acted as interpreters for older people. This inevitably limited the depth of conversation possible. The full transcripts of the interviews have been lodged with the Australian Institute of Aboriginal and Torres Strait Islander Studies.

RESULTS

Several major and often overlapping themes emerged from our recorded interviews and opportunistic observations. Below we use these, in conjunction with the writings of other workers, to reflect on the Aboriginal perceptions of the nexus of people with land and how this affects the well-being of both.

THE STRESSES AND CONSTRAINTS OF LIVING IN LARGE SETTLEMENTS

Our interviews and observations consistently demonstrated how our informants and their families were torn between the demands of urbanized and traditional lifestyles and how these tensions had a manifest impact on many people's sense of well-being. Remote Aboriginal urban settlements are axiomatically challenging for a culture that was traditionally based around the seasonal tracking of natural resources. Hunting and gathering has become constrained by the tempo of urbanized life, particularly welfare payments such as unemployment benefits, and the accessibility of motorized transport. Many people find themselves in the paradoxical situation of being unable to live on their land,

or indeed regularly visit their land, because of the increased dependence on motor vehicles and the tug of urban living. For example, it was observed that the need for supplies, including welfare payments, medicines, and store items, particularly sugar, flour, and tobacco, drove people back to town. These issues came up frequently in conversation: "My country's out a long way and I don't have a house. It's easier to live in town." "Maybe it's more easy for them in town than out at bush because of the clinic and all that, the shops." "Some people got their own truck, they going out. But no truck, they staying home, they playing cards."

Our informants also had a clear understanding of many cultural and psychosocial factors that explain their greater sense of well-being and desire to be on their lands. For example, we recorded a comment by an old lady that being in town was boring and made her homesick and lazy but when she was on her tribal lands she was able to hunt which made her fitter and happier. "I get my energy back." Avoiding stress and "humbug" (Aboriginal English for unreasonable/incessant demands from relatives) were reasons commonly given by those who chose to live and raise their children on country. These views are concordant with recent surveys that have documented frequent funerals, overcrowding, violence, and substance abuse as commonly experienced stressors in remote Aboriginal settlements (Australian Bureau of Statistics, 2002).

Detailed Ecological Knowledge Including the Use of Natural Resources and Fire

Returning to country, even for brief visits, satisfied a complex cluster of motives. At the most basic level people were able to gather traditional foods; this was the most common practical reason for visiting country. Informants were very willing to share their detailed knowledge of their country, the seasons, and the availability and location of resources. An example of such knowledge was the comment by one of our informants about the availability of magpie goose (*Anseranas semipalmata*) that are prized for hunting. "Maybe two or three rains, then it will be right for the goose to come back." Similarly, when asked by a non-Aboriginal visitor to find some "bush tucker" (wild food), the response of one of our informants was: "You're standing on it, it's everywhere." While food was often eaten once it was procured, we observed that some was always saved for sharing with relatives back in town, providing a wider benefit from the activity and fulfilling wider cultural obligations of sharing bush food with relatives and owners

of the land from whence the food was taken. In addition, wood, fiber, and dyes for arts and crafts were also frequently collected, most of which will enter the cash economy via the Aboriginal art market.

All members of the research team regularly observed deliberate burning of the landscape by Aboriginal people. These fires were set for a range of reasons, including the hunting of animals such as turtles, clearing land to facilitate walking, and promoting new green grass shoots to attract game. Participants were very willing to explain how and why they use fire. One man described hunting for water rats as follows: “We’re waiting for that first rain and then we’ll burn all the grass, go out and kill’m, go back home with a full bag of all the rats, cook’m and eat’m!”

Physical Activity and Healthy Food Intake

We observed that the collection of wild foods unfailingly required a lot of hard physical work, such as chopping, digging, and walking as illustrated by the comment: “There is good food everywhere, it takes a lot of hard work to do. Heavy one, I need a forklift, next time you bring forklift!” Similarly, another informant said: “My grandma and my aunt, they get up in the morning, go hunt. They start digging from morning right up (to the) afternoon.” Clearly, participation in bush harvests provides a culturally appropriate way to attain Australia’s physical activity recommendation for adults of just half an hour of moderate activity each day (Department of Health and Ageing, 1999). Furthermore, regular bush tucker harvests are a powerful way to avoid excessive weight gain and the associated medical conditions because of the combination of healthy food and physical activity. Recent work in a remote Aboriginal community setting has demonstrated that maintaining a low body weight can delay or prevent the onset of diabetes (Brimblecombe et al., 2006). The high nutrient value and health benefits of bush foods has been well described (O’Dea et al., 1988). Our informants were well aware that their traditional foods are far healthier than the typical urbanized diet that is so rich in sugar and fat. This was succinctly put by one woman with diabetes who liked being in the bush because she was “away from Balanda [white people] food, lot of sugar” and an older man said: “In our generation, our blood should have been honey and water, running like that. But today it’s running like not only white sugar, it’s oil, all sorts.”

Identity and Culture and Spirituality

Indeed, a key motivation to hunt and gather was not simply to get sustenance but to deal with issues of Aboriginal culture and identity. As one informant succinctly stated: “I was listening to my mother and she was telling me old people are tired eating all this Balanda [European] food and I just wanted to go out and get food from bush and bush tucker...long yam, yam, chestnut, waterlilies....” The gathering of traditional food reinforces identity, not only because the food is so different from Balanda foods but because the very action of harvesting and eating is linked to specific places, stories, and ceremonial events. This central role of culture in the determination of food choice in all people has been well explored in Indigenous and non-Indigenous cultures throughout the world (Kuhnlein and Receveur, 1996). For example, one mother explained to us that she was not eating long neck turtle at the moment because her son was participating in ceremonial business. “When my son goes in for his first few ceremonies I can eat little fish, not big ones. Because they worship the animals, like all those animals that have flesh, like kangaroo, like crocodiles. But after he goes in for three or four ceremonies I can eat anything.”

Fundamentally, being on country allowed fulfillment of the obligation to care for land and the needs of the land itself for human engagement. A senior man explained this as follows: “It’s like taking care of your husband, taking care of nature. It’s not only nature, it’s us, because that’s where we came from. We are the dust of our lives and that’s where we going to go back. So, our land where we live, it’s our mother.” This comment also helps explain why loss of connection to country brings changes to people far greater than reduced opportunities for healthy food and physical exercise; it inherently brings the loss of a part of one’s own identity and an inability to fulfill cultural and spiritual obligations. As one of our female informants simply said, “That’s better when someone’s staying there. Our country will be happy.” The notion that humans and land communicate was well illustrated when informants called out loud to introduce AV to the deceased “old people” and spirits of the country, explaining her purpose in visiting their country. It is a well-documented anthropological feature of Aboriginal culture that strangers need to be introduced to the country by the appropriate person to ensure that dangerous supernatural forces are not disturbed (Rose, 1996). As one participant explained, “If I take Balanda (white person) out with me, something might hap-

pen without asking, without letting them (spirits) know..... Balanda might get killed or get bitten by snake or crocodile.”

Concern for Younger People

A major stress in the lives of adult Aboriginal people concerns the loss of understanding and respect for traditional culture by the younger generation. Returning to country is understood by adults as a powerful way to educate and deepen respect for their traditional culture. Concern for young people was well put by an informant who said, “You see, I seen big mob young people they’re missing their culture. They don’t know how to clear up their country [with landscape fire]. ...It might be they lose their culture and they might lose their country.”

In summary, we observed many functions and outcomes associated with the physical presence of people on their country. These included maintaining and sharing detailed knowledge of natural history, including spiritual connections with and obligations to country, maintaining practices of landscape burning, maintaining physical fitness, promoting a more healthy diet, and providing a potent outlet to escape the social stress and boredom of urban life. The many barriers to being on country, for themselves and their children, constituted a major ongoing tension in their daily lives.

DISCUSSION

Our study is consistent with previous anthropological research that has stressed the profound interconnection between Aboriginal people and their lands. This connection is achieved through very specific localized knowledge of a region’s natural history that is coupled with complex layers of past personal and family experiences and a deeper connection to the past and therefore to Aboriginal identity via traditional stories and beliefs (Rose, 1996). This nexus between land and people is ongoing through hunting and gathering and simply being on country.

A fundamental methodology in Aboriginal subsistence is landscape burning. This was frequently observed during this project and has been well documented in the literature (Bowman et al., 2004). For example, women will burn a swamp to find turtles and men use fire to create habitats to attract game (Murphy and Bowman, 2007). But, as explained by John Bradley following his work with the Yan-yuwa people of the Gulf of Carpentaria, burning also indicates active human presence in the land. “Smoke pro-

vides for people a way of seeing that the land is still being cared for, it tells people that there are other people who are moving over the landscape and that by the use of fire they are maintaining the integrity of the landscape and the people associated with it” (Bradley, 1994). In the longer term, the presence of burnt and unburnt patches also indicates to others that the country is being looked after (Head, 1994). Bradley also describes how the sight of smoke and appropriately burnt country can arouse strong emotion, evoke memories of the past and of long-dead people, and provide an important symbol of continuity, that the country is still being burnt. He also describes how country that has been long unburnt is perceived as being closed or shut up by “old people” (spirits of the deceased) angry that the land has not had appropriate care. This in turn can also cause people to become “weak” (Bradley, 1994). Thus, landscape burning fulfills social and spiritual requirements and provides critical ecological manipulation of habitat (Yibarbuk et al., 2001). Indeed, Rose (1996) identified the skillful use of fire as one of two key land management resources used by Aboriginal people throughout Australia, second only to the intimate, detailed, long-term knowledge of local country. The use of fire is central to engagement with country and has many ecological consequences. There is mounting ecological evidence that Indigenous people living a more traditional lifestyle where they continue to practice fire management have country with a superior abundance and diversity of animal and plant foods (Whitehead et al., 2003). Conversely, loss of Aboriginal fire regimes has been proposed as a critical factor in the increasingly rapid population declines of mammals in this north Australian savanna biome (Woinarski et al., 2001; Pardon et al., 2003), the decline of some plant species (e.g., *Callitris intratropica*), and population explosions of flammable annual grasses (fire weeds) (Bowman, 2005; Bowman et al., 2001, 2007). Ecologists and land managers are increasingly recognizing the potentially important role that Aboriginal-maintained landscapes have in the conservation of biodiversity in Australia’s vast tracts of relatively intact savanna vegetation (Bowman et al., 2007; Whitehead et al. 2003). Supporting Aboriginal people to be on and manage their lands has been argued as a relatively low-cost option when compared with managing large national parks (Altman and Whitehead, 2003).

The Aboriginal views expressed during this study about the interconnectedness between people and country and how this promotes the well-being of both are consistent with previous accounts from Aboriginal people. The

interconnectedness of spiritual life, responsibility for country, use of country, and individual autonomy and well-being have been repeatedly explained to non-Aboriginal people from early colonization to the present (Keen, 1991; Anderson, 1995; Rose, 1996). For this reason alone, integrating the concept into health interventions would be an important and culturally relevant strategy. Burgess et al. (2005) have argued that natural and cultural resource management provides a culturally appropriate vehicle for health promotion and disease prevention through the associated improvements in diet, physical activity, autonomy, and social and spiritual connection to land. The limited published epidemiologic evidence and the preliminary analysis of data from the human health component of this project all appear to support this contention (Burgess et al., 2005; Anon, 2006). This is particularly relevant in northern and central Australia where the majority of Aboriginal people reside on or near their traditional lands (Madden, 1995). A reduction in the prevalence of chronic diseases and associated complications, even from a narrow economic perspective, would result in substantial direct savings of health care costs and avoided and reduced individual and social impacts (Baker et al., 2005).

Given the importance of being on or connected with country, widely articulated by Aboriginal people, raises questions as to (1) why more Aboriginal people are not doing so, and (2) why government programs have not enabled them to do so. The answer to the first question underscores the profound challenges for remote area Aborigines who are often caught in a poverty trap where they do not have vehicles or the money to maintain and fuel them to travel to their tribal lands. In this context it must be acknowledged that an important reason why people participated in our study was because the project provided a means of transport. Social stress and cultural obligation associated with dysfunctional lifestyles in urbanized settlements, largely supported by government welfare payments, has resulted in obligations that frequently inhibit moving away from the settlements, despite the expressed desire to do so. That the tension between land (and culture) and settlements (and government welfare) should have been the major theme in the information gathered during this project is no surprise. A current policy debate in Australia concerns the destructive impact of the welfare economy on Aboriginal well-being and the capacity to develop sustainable and healthy communities. Aboriginal leaders are increasingly critical of a welfare mentality that has developed since the recognition of citizenship

rights in 1967. Social security benefits are known in Aboriginal English as “sit down money”; they are widely recognized as sapping economic enterprise and a work ethic that had developed in the pastoral industries (Pearson, 2001). Livelihoods that marry economic independence with culturally appropriate jobs and lifestyles demand the development of enterprises that realize social goals such as integrating employment for community members, building a skill base, and providing essential services in remote regions while sustainably exploiting natural resources (Bowman and Davies, 2007).

What is more difficult to explain is why the fundamental importance of the nexus between Aboriginal well-being and their land that is espoused by Aborigines and anthropologists has not been effectively integrated into policy formulation to improve Aboriginal well-being. This is despite recognition of Aboriginal *legal* rights to land and natural resources throughout remote areas of Australia. We suspect there are several reasons for this apparently counterintuitive situation. First, the testimony of Aboriginal people is a difficult basis for the development of policy, particularly in land management and medical settings where quantitative evidence is often given much higher weight than hearsay. Thus, the rich and moving anthropological literature, such as that by Rose (1996), is largely discounted from specific policy debates. The presentation of Aboriginal testimony by non-Indigenous people (such as is the case here) is open to criticism of being bias or selective reporting. In any case, Aboriginal testimony is also open to conflicting interpretations. Culturally specific issues of “health,” “well-being,” “place,” and “identity” are complex topics and difficult subjects to discuss without the appropriate context and experience. This problem is compounded given that much testimony is in Aboriginal English and the acute difficulty in finding appropriate interpreters to assist interviews. Second, it is very difficult to convert the testimony into specific policy settings or interventions, particularly those that cut across separate administrative sectors such as health care and land management. Indeed, many programs that have been more successful in remote area communities, such as ranger programs, art centers, and resource centers that support small outstations or homelands, have arisen organically through creative use of government programs such as working for cash unemployment benefits rather than being the specific objective of a government program. Third, there remains a remarkable paucity of evaluation of the efficacy of various Aboriginal programs or policy initia-

tives. Policy debate often reflects broader political agendas about Aboriginal issues and without good evidence it is difficult to advance these debates. Indeed, the politicization of these debates can result in increasing polarization of views, such that Aboriginal ecological knowledge has no role in the conservation of natural landscapes (e.g., Lines, 2006). A concrete example of this was in late 2005 when Amanda Vanstone, a senior Australian government minister, called for the closure of remote Aboriginal settlements because she believed they were economically unviable. What the ensuing public debate about Senator Vanstone's remarks highlighted was the remarkable absence of hard data about the cost and benefits of these settlements, including potential health and ecological benefits.

While this article has focused on Aboriginal people of northern Australia, there are many international examples of Indigenous communities that share similar conceptual relationships to ecosystem and human health. Furthermore, there is increasing recognition of the nexus between Indigenous health and natural ecosystem conservation (Parlee et al., 2005; Montenegro and Stephens, 2006; Ohenjo et al., 2006). In his book *Health: An Ecosystem Approach*, Lebel (2003) explored and illustrated the wider implications of this concept in relation to sustainable development in many regions of the world. Indeed with the current worsening crisis of global environmental change, it has relevance for us all (McMichael, 2003).

CONCLUSION

This Indigenous testimony of the nexus between human and landscape health is entirely consistent with previous anthropological research in Australia. Moreover, the identified benefits to both people and country are consistent with the more limited available epidemiological and ecological research. But policies designed to improve Aboriginal health have barely begun to integrate Aboriginal perspectives, underscoring the inherent Western view that human health is largely decoupled from the natural environment. Indeed, until now, research has been segregated into disciplines with little reference to each others' perspectives. Albrecht et al. (1998) have clearly argued that transdisciplinary thinking is needed to understand the complexity of human health. Thus, such an "ecohealth" paradigm may more effectively span cultural divides and inform political debate about appropriate responses to improve the health and well-being of Aboriginal Australia.

More generally, such an approach may be an essential prerequisite for achieving global ecological sustainability.

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