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# **Inquiry into impacts of native vegetation and biodiversity regulations**

## **Biodiversity conservation, landscape integrity and Indigenous enterprise**

**A submission to the Productivity Commission from the Northern Land Council**

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## Summary

*Over the last 27 years, Aboriginal people in the Northern Territory have regained access to large areas of land. However, success in regaining access to and control over lands has not seen corresponding improvement in socio-economic status. On almost all social indicators, Aboriginal people remain among the most marginalised Australians. There are many reasons for this unsatisfactory situation. The most productive lands for pastoralism or other more intensive agriculture have been unavailable for claim and so have been retained by non-Indigenous owners or corporations. Inalienable communal title reduces options for raising capital to develop lands that are, in many cases, marginal for conventional agricultural production. Low educational and health standards and weakly developed systems of governance further compromise capacity to interact favourably with the mainstream economy.*

*Nonetheless, Aboriginal communities remain interested in developing enterprise based on sustainable use of living resources on their lands. This interest stems from a belief that long experience and well-established skills in the sustainable use of native species of plants and animals may provide more tractable and realisable economic opportunities than unfamiliar and highly formalised systems of more intensive resource and land use. Unfortunately, this goal is compromised by regulatory regimes that deny commercial access absolutely or impose such onerous requirements that they effectively block access by Indigenous individuals and communities. Often these regulations appear to be based on philosophical positions that have little or nothing to do with the ostensible purpose of promoting and enhancing sustainability of resource use. Slavish application of conservation principles and practice designed for highly modified and densely populated parts of the world, generate perverse outcomes when applied uncritically to sparsely populated, remote northern Australia.*

*The most critical and destructive of perversities, from the perspective of the Northern Land Council, is that impoverished Indigenous Australians are urged to escape welfare dependence by the same – mostly Government - interests that simultaneously deny access to a whole set of the few economic opportunities available in the remote regions in which most live. They are also expected to maintain the natural values of their country against influences unleashed by others, without the benefit of either explicit state support or access to markets for the products their country presently produces. Economic incentives to remain active on country are disabled, potentially driving Indigenous landowners towards intensive forms of land use that have been so damaging elsewhere. Regulatory regimes that discourage resource use drawing on native species and natural processes, but favour replacement of native species and systems with exotic species and artificial management regimes are clearly antithetical to good conservation outcomes. We identify a number of issues connected to policy and associated regulations that must be addressed to correct these drivers of disengagement from customary obligations to land.*

*The first of these is to better reflect the content and intent of international instruments and de-emphasise reliance on often flawed assignments of individual species to categories that rigidly determine allowable use, with no regard to variation in local or regional circumstances. The second and related issue is to improve application of resource management science and Indigenous knowledge to use of native species. This*

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*will require abandonment of the apparent “default” position: that direct uses of native species, despite comprehensive safeguards, are too hazardous to be seriously contemplated, while the unintended consequences for those same species from use of land for other purposes are treated, unjustifiably, as routinely manageable. The peculiar policy preference, explicit in some Federal legislation, for “management by accident” must be replaced by a more rational approach, less driven by the faddish demands of boutique conservation. A better approach will recognise and promote the potential conservation benefits of sustainable use of native species, especially in remote Indigenous Australia. Moreover, in recognition of the impossibility of supervision from distant administrative centres, it will provide for devolution of responsibility and authority for management of many renewable natural resources to local communities, as part of the process of building human and social capital in regional Australia.*

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## **Background**

The Parliamentary Secretary to the Treasurer has directed the Productivity Commission to conduct an Inquiry with the terms of reference given at Attachment 1. In brief, the Commission has been asked to report on the effectiveness of regulations for protection of remnant vegetation and related provisions for biodiversity conservation in achieving environmental goals, and how much those regulations compromise production. These issues are of interest and concern to the Northern Land Council (NLC), which represents Aboriginal landowners in the northern part of the Northern Territory.

The NLC was created pursuant to the *Aboriginal Land Rights (Northern Territory) Act 1976*. Details of the area of its responsibility available on the NLC website (eg. Maps at [http://www.nlc.org.au/html/abt\\_inside.htm#3](http://www.nlc.org.au/html/abt_inside.htm#3)). Whilst many land claims remain to be settled, the NLC has recognised the need for a progressive shift in priorities, from acquisition of land on behalf of traditional owners to management of lands to meet contemporary and future needs and aspirations. In 1995 the NLC developed a Caring for Country Strategy and established a small organisational Unit to support customary land management obligations, as well as derive customary (non-market) economic benefits fostering some market-based commercial activity.

This combination of social, conservation and commercial roles requires the NLC to understand and comply with a wide range of environmental policy and legislation, negotiate related administrative processes, and interact with many Government agencies. The NLC is thereby particularly well placed to comment on the impacts of such legislation on the needs and aspirations of Aboriginal people in northern Australia.

## **NLC interpretation of the Terms of Reference**

A literal interpretation of the terms of reference indicates emphasis on issues surrounding the protection of remnants of native vegetation, which is of limited relevance to Aboriginal lands in northern Australia. Following careful review of the Commission's issues paper and discussions with Commission representatives, we nonetheless consider that the experience of the Northern Land Council and its clients can provide an important perspective on the match of statutes to stated Government objectives for achieving sustainability of resource use and maintenance of biological diversity.

In our view, it is also important to go beyond the letter of the relevant legislation to consider the formal and informal policies and attitudes that influence its application. Much environmental legislation allows considerable discretion at the officer level within agencies. Statutory office holders or their delegates can determine the outcome of proposals for resource use through weight of administrative process, independent of the quality of proposals or their intrinsic compatibility with legislation. Much therefore depends on the culture prevailing in administering agencies.

In this submission we particularly focus on regulation and administration of options for Aboriginal landowners to derive incomes from the commercial use of native species of plants and animals. We relate this issue to the role that Aboriginal people might take in management of land in much of northern Australia for regional and national benefit through protection of biological diversity and provision of other ecosystem services. We also discuss the

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implications of contemporary regulatory regimes and the manner of their application for improvement of the socio-economic status of Aboriginal people. We illustrate our arguments with examples. We begin our discussion with an outline of the social and environmental context within which regulatory regimes must function to achieve social and environmental goals.

## **The north Australian biophysical and social context**

### *Indigenous Landscapes*

Vast areas of the Northern Territory can reasonably be described as Indigenous landscapes. Indigenous people influenced the structure, function and dynamics of most of the land surface through 50,000+ years of interaction with it, principally through the use of fire (Bowman 1998). Outside major urban centres, most landscapes in the Top End of the Northern Territory look much the same as they did at the time of European settlement 180 years ago, showing relatively little structural change (Whitehead et al. 2002).

A large proportion of the Northern Territory is Indigenous in a more contemporary sense in that Aboriginal people will make most of the important decisions about future use, because they have been recognised as landowners under Australian land law. Forty eight% of the land is owned under inalienable freehold title and that proportion is likely to increase to a little above 50%. Over much of the remainder, predominantly pastoral land, Aboriginal people also retain Native Title rights over some resources. The shape of Native Title rights remains ambiguous, but there will be some capacity for Indigenous people to influence the way natural resources are used and managed on large areas of non-Indigenous lands.

In a few places on Aboriginal land, Indigenous management has been virtually uninterrupted and strong dependence on customary use of resources has been maintained. The proportion of Aboriginal lands on which customary management has been restored has increased with the outstation movement of the 1970s (Altman 2003). Such places are clearly Indigenous landscapes in every meaningful sense of the term and represent some of the most biodiverse and ecologically intact parts of the Australian continent (Woinarski and Braithwaite 1990; Yibarbuk et al. 2001).

### *Social*

Aboriginal people make up approximately 30% of the Northern Territory population but receive about 10% of household income. Unemployment rates are effectively about 84% and higher in the areas in which most Aboriginal land is located. Most Indigenous people live in small settlements of less than 1000 people remote from mainstream markets (Taylor 2003).

Any expectation that regaining land would in itself quickly resolve Indigenous social and economic disadvantage is clearly unrealistic. In addition to locational disadvantage, Aboriginal people seeking engagement with the market economy must overcome a suite of additional constraints. Inalienable title, held communally, offers fewer options for raising capital than does land held under other forms of title. Educational opportunities and attainments are on average lower than in the wider community (NTDE 1999) and health status much poorer (d'Espaignet et al. 1998). Adult, juvenile and infant mortality rates are much worse than in other segments of Australian society. Systems for governance of local

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community activity, including commercial activity, are often poorly developed (Westbury and Sanders 2000). For many, perhaps most families in remote areas, support payments made through the welfare system represent the most significant source of cash income.

Some Indigenous and non-Indigenous leaders exhort Aboriginal people to escape welfare dependence, in part by institutional change in both Government and communities (Pearson 2000). In response, Government has tended to emphasise strengthening of the role of Aboriginal leaders in the local delivery of basic services, rather than interaction with the market through commercial use of natural resources (see Whitehead 2002).

### *Environmental management*

We alluded earlier to the apparent intactness of much of the NT landscape. However, that image hides a less attractive reality. Decline of granivorous birds (Franklin 1999), small mammals (Woinarski et al. 2001), collapse of populations of native pines (*Callitris*) (Bowman et al. 2001) and other obligate-seeder plants, especially in sandstone environments (Russell-Smith et al. 2002) are among the most obvious symptoms of pernicious, widespread change. It has been suggested that the north may be on the threshold of a collapse in mammal assemblages similar to that experienced in the arid centre of Australia, in landscapes that also appeared structurally intact (Morton 1990). Problems are exacerbated by invasions of weeds and feral animals.

These problems demand active management, which in turn demands the regular presence of people in their country. In the huge, sparsely populated, infrastructure-poor Northern Territory, environmental management services cannot be provided from distant administrative centres. Rather they require economic incentives and other support for people to be present on their lands, detecting emerging problems and dealing with them promptly, as well as tackling from day-to-day other long-standing, entrenched problems.

### *Resource management*

Primary industries dominate production of goods in the Northern Territory economy. Mining makes the greatest contribution to the Gross State Product (22.2% in 2001/2002) but employs relatively few people. Fisheries and agriculture (and especially pastoralism) employs a few more people but raises a much smaller proportion of GSP (3.3%).

As in most common law jurisdictions, mineral rights are vested in the State. Governments at various levels make decisions about their allocation. However, Aboriginal landowners must give approval before minerals exploration and mining can take place on their land. When mining occurs on Aboriginal land, an amount equivalent to royalties paid to the Northern Territory and Federal Governments is paid to an Aboriginals Benefits Account, and 30% of this amount is ultimately paid to Aboriginal people. Whilst such payments are obviously welcomed by recipients and could ameliorate disadvantage for at least some members of some communities, they appear to have done little to improve the active engagement of Aboriginal people in the mainstream economy. Aboriginal employment has not increased in areas like the Alligator Rivers Region, where mines have been operating for some decades (Taylor 1999). Thus mining royalties have not provided a point of entry to the mainstream economy, but often appear to create new forms of dependency. Moreover, recipients and their Associations have sometimes felt obliged to use these funds to provide or supplement basic services that

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are taken for granted by other Australians in other situations. Costs of basic public services are thereby being shifted from Government to the royalty payers and recipients.

Wild animals, including heavily exploited taxa like fish, are also claimed by the State and allocated (and often over-allocated: Ludwig et al. 1993) to interests who may also have no particular connection to, or obligation for, management of the land that supports harvested populations. Management regimes and allocation mechanisms for common-access resources mean that Aboriginal landowners receive no compensation for commercial harvests of animals derived from their lands.

Vegetation is in general considered the property of the landowner, including Aboriginal landowners. However, direct commercial use of native plants in mainstream activities like forestry makes little contribution to the Territory economy. Other less orthodox uses of plants confront steep and complex regulatory barriers (Box 1) and, aside from the arts and crafts industries (Altman 2003), have yet to make significant impact on livelihoods of Indigenous people.

## **The Regulatory Context**

It is convenient for this discussion to consider three broad classes of regulatory practice and associated statutory instruments for conservation of biodiversity, environmental management and regulation of harvest. First, we consider laws that govern treatment of living resources that, although not necessarily the targets of harvest, may be modified or removed to promote or enhance other commercial activity. The clearing of native vegetation, a focus of this Inquiry, is the most important example. Second, we consider law covering direct use of living resources for commerce. Ostensibly, the critical purpose of related statutes is to ensure that resources are used sustainably and that the places that support them are not excessively compromised by direct or indirect impacts of harvest methods. Perhaps the best known examples involve fisheries management, accomplished by regulating access, the quantum of harvest and/or gear used in harvest. Third, we consider laws that erect variable standards of treatment of individuals from wildlife populations, based on the idea that some species warrant special standards of treatment, extending to immunity from harvest for some taxa.

We suggest that divergent objectives and related criteria for determining modes and targets of resource use have been muddled at both Federal and State/Territory levels. As a consequence, regulatory provisions and practices are often poorly matched to putative objectives. This has led to approaches to conservation that are demonstrably ineffective, expensive, and often counterproductive, contributing to decisions by resource managers and land owners to adopt unsustainable practice.

### *Modification of landscapes*

Profound landscape change, the attendant loss of other values and damage to ecological function are most commonly due to conversion of lands for agriculture (Graetz et al. 1995). The recent emphasis on regulation of land clearing in a number of Australian jurisdictions reflects a somewhat belated recognition of the severity of the damage already in evidence, the additional effects yet to emerge from processes already in train, and the apparent failure of

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education and extension efforts to discourage unsustainable practice (Yencken and Wilkinson 2000).

We do not deny the need for such regulation as an element of frameworks for contemporary land and renewable resource management policy. All removal of native vegetation by definition damages biodiversity values as well as some ecological processes at one scale or another. The more critical issue - the effect of local clearing on biodiversity and ecological function off-site and at large spatial scales - is strongly dependent on context. Thus a one-size-fits-all approach to regulation of clearing can create inequities in access to economic benefits that depends on landscape modification.

Clumsy application of land clearing regulations may particularly disadvantage Indigenous people who have only recently re-acquired land. There is a risk that they may be denied the economic and social benefits enjoyed by other Australians, in part to redress damage done by those other land users. It is difficult to imagine a more perverse outcome than requiring economically-disadvantaged Indigenous landowners to bear the costs of environmental detriment caused by those who reaped the benefits.

Land clearing regulation is new to the Northern Territory, being introduced with effect from late 2002, so it is too early to say whether implementation in this jurisdiction will be sensitive to such equity issues.

However, we do argue that simply superimposing land clearing guidelines over the existing policy and regulatory mix produces a far from optimal result. The core purpose of legislation covering clearing of native vegetation is to determine when it is in order to destroy or discard individuals and populations of native species of plants and animals, often in very large numbers. It makes no sense to provide for such quantitatively large scale incidental “use” while obsessively regulating or banning altogether small scale direct commercial use of a few individuals of the same species taken from the same place. There is a pressing need for critical review of regulatory practice to link responses to the significance and severity of change rather than entrench arbitrary preference for orthodox agricultural modification over novel strategies for resource use.

A legislated preference for widespread casual destruction over localised considered use disenfranchises those interested in alternatives to broad scale development, who are denied the opportunity to develop more sustainable systems of resource use (e.g. Box 1). We argue that, unfortunately, a preference for “management by accident” is effectively the position taken by the Federal Government and, to variable extents, the Territory and State governments in regard to commercial use of wildlife.

### *Commercial harvest of native species*

#### Commonwealth law

Much commercial use of Australian native species of plants and animals is stringently regulated. At the Commonwealth level, the relevant legislation is the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBCA). Provisions are in the aggregate complex, but built around a small number of matters of “national environmental significance”, most deriving from obligations under international treaties. Foremost amongst



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these in regard to commercial use of plants and animals are the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and the Convention on Biological Diversity (CBD). Provisions in regard to migratory animals are underpinned by Australia's ratification of the Convention on Conservation of Migratory Species of Wild Animals (CMS) and bilateral agreements with China and Japan covering migratory birds. In addition to these key operational foci, much of the language of the EPBCA appears to be influenced by the CBD and the resultant National Strategy for Conservation of Australia's Biological Diversity, drafted in the early 1990s (Anon. 1996).

Given the prominence of these instruments in national legislation, it seems to us pertinent to consider how well the EPBCA and the way it has been applied are matched to interpretations of the Conventions by Conferences of Parties and the expert groups who advise them. We argue that the Australian implementation of these treaties through the EPBCA has been highly selective and has consequently created extraordinarily confused policy settings for environmental management and commercial use of native species.

### *CITES*

CITES was created to deal with threats posed to species entering international trade. Parties agree to regulate both imports and exports and to control illicit trade in species of concern, which are listed in Appendices to the Convention. Appendix I deals with species "threatened with extinction which are or may be affected by trade". Appendix II lists species that are not yet threatened by extinction but which may become so if unsustainable use continues. Appendix III covers species that, whilst not endangered, nonetheless are subject to national provisions to "prevent or restrict exploitation".

Australia has consistently maintained restrictions on trade that go well beyond the requirements of CITES. For example, there has been a long-standing ban on the export of live Australian animals, regardless of their origin or the sustainability of use. As a consequence, most Australian animals traded as pets or entering private collections are bred overseas or are taken illegally. Australia has banned all trade in cetaceans without serious consideration of whether use is sustainable. These foci have been reiterated and strengthened in the EPBCA and its amendments. Australia unsuccessfully proposed the listing in Appendix I of the Great White Shark, for which there is no evidence that it is on the threshold of extinction or indeed that trade has influenced the species' status (see Brook and Webb 2000; Webb et al 2000 for a discussion of issues connected with the listing of sharks).

The confused policy reflected in this sort of misuse of the Convention is deeply embedded in the structure and detail of the EPBCA. The legislation deepens a long-standing dichotomisation of renewable resource management. On one side are species and systems that are routinely subject to often highly destructive intensive use or widespread destruction in pursuit of other objectives. On the other are species and systems that are protected assiduously from any form of direct use, although not necessarily from the downstream impacts of uses targeted elsewhere. The EPBCA is silent or ineffective in dealing with the former, instead focusing on preventing use of a number of idiosyncratically-chosen species.

A consequence of this dichotomous view is that once land is allocated to an accepted form of orthodox use – examples are forestry for timber or woodchip extraction and grazing of rangelands - the law is mostly indifferent to the fate of the individual wildlife species on that land, unless they fall into either of two extreme categories. On the one hand, some native

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plant species (especially commercially valuable trees and palatable grasses in rangelands) are so common and integral to the landscape that they are essential to maintain its physical structure and the dominant form of production (e.g. Ludwig et al. 1997). Significant declines in the abundance of these species are treated as at least undesirable and are therefore proscribed under legislation regulating industry, even though the species may be at no risk of total loss from entire landscapes, let alone global extinction. These provisions are designed mostly to protect and foster the prevailing land use.

At the other extreme sit provisions to protect species of flora or fauna that are rare in the landscape. The vulnerable, threatened, endangered or critically endangered are given special attention and protection.

The irony is that indifference to the wider role of the boringly common species ultimately creates the list of rarities. The striking problems of conservation now being revealed in apparently structurally intact landscapes indicate that the ecological function of these common species, in providing food or shelter for many elements of the native biota, can unravel well before their losses begin to cause the breakdown in the physical structure of the landscape and its geochemical function that would threaten conventional production.

The EPBCA is ineffectual on these issues because its treatment of ecological process is to focus on threats that can be shown to place one or more of the rarities at acute risk. Extreme “triggers” mean that by the time threatening processes are recognised and abatement plans specified and implemented, it is usually too late to do more than prop up dysfunctional populations and systems. Failure to value the critical commonplace, but then to agonise belatedly over the plight of the rare, is clearly a poor strategy for achieving good conservation outcomes.

Profound misunderstanding of this issue and hence of the factors giving rise to Australia’s appalling record of extinctions was reflected in Parliamentary debates of the Bill adding trade in wildlife to the EPBCA (e.g. Hansard HoR 27 June 2001; Senate 19 June 2001). Most speakers alluded in one way or another to extinction of mammals as justifying tight controls. By raising those losses in this context, they implied a link with trade. But none of the extinct mammals from the arid zone, the scene of most losses, were traded. Very few of Australia’s many conservation and environmental management problems can be attributed to direct use of native animals, whether for commerce, recreation or subsistence. Moreover, many losses occurred from landscapes that appeared structurally intact, where active land clearing was not a significant influence. This pattern of loss unrelated to clearing appears to be continuing in tropical northern Australia (Franklin 1999; Woinarski et al. 2001) and the EPBCA focus on traded species and the presently recognised threatening processes will do nothing to arrest it.

The poor understanding of the pressing biodiversity conservation issues facing Australia generally, and north Australia in particular, displayed in these Parliamentary debates probably reflects failure to consult with conservation interests outside a narrow clique of NGOs dependant on support from urban donors.

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## CBD

The CBD is about the protection of biological diversity in all its forms, including assemblages of organisms and their interactions in ecosystems. It has proven difficult to frame operational objectives around such an ill-understood abstraction (see Gaston 1996). Any change, whether natural or anthropogenic, affects biological diversity defined in this broad way. Even where land management purposes are ostensibly clear and directed primarily at conservation of natural systems, the biodiversity concept remains slippery enough for managers of national parks to experience great difficulty in specifying their management goals and measuring performance (Kaiser 2000; ANAO 2002). Therefore, the value of the convention does not lie in a shared vision of the particular assemblages of plants and animals that should exist in well-managed landscapes, or those classes of organisms that require special protection.

Rather the Convention's significance emerges in exploration of ways to manage interactions of humans with natural systems to promote equitability and sustainability of use. The following features of the Convention are particularly important:

- sustainable use of the components of biological diversity is a core objective
- parties undertake (Article 10) to:
  - o integrate consideration of the conservation and sustainable use of biological resources into national decision-making
  - o encourage cooperation between ... governmental authorities and (the) private sector in developing methods for sustainable use of biological resources
  - o protect and encourage customary use of biological resources in accordance with traditional cultural practices that are compatible with conservation or sustainable use requirements
  - o adopt measures relating to the use of biological resources to avoid or minimize adverse impacts on biological diversity
  - o support local populations to develop and implement remedial action in degraded areas where biological diversity has been reduced and
- adopt economically and socially sound measures that act as incentives for the conservation and sustainable use of components of biological diversity (Article 11) .

Experts brought together by the CBD Secretariat through a series of workshops to consider the role of sustainable use in achieving the CBD's conservation objectives and to derive principles and guidelines, wrote that:

*In many cases sustainable use of biodiversity components provides incentives for its conservation because of the social, cultural and economic benefits that people derive from that use. In effect, conservation and sustainable use, the first two objectives of the Convention, should be seen as two sides of the same coin. Moreover, sustainable use in itself is an important aspect of the incentive measures called for in Article 11 of the Convention. It should be recalled that only a small percentage of the Earth's surface is designated as strictly protected against exploitation, from which it follows that sustainable use is the major conservation strategy elsewhere (CBD Secretariat 2003).*

Obviously, it is difficult to reconcile this sort of statement, from experts in the intent of the CBD, with the EPBCA as we have characterised it. The mismatch becomes even more apparent when loose regulation of land use decisions and conventional practice is contrasted with the straightjackets used to regulate any purposeful human interaction with native wildlife (Box 1 and below).

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## CMS

The EPBCA puts great emphasis on protection of migratory species. This is in principle welcome because conservation of such species clearly requires protection of important stopover sites and a high level of international cooperation. However, when combined with the anti-use posture, it can create some peculiar outcomes. For example, the CMS requires that for its Appendix II species (which include *Crocodylus porosus*) parties adopt “measures based on sound ecological principles to control and manage the taking of the migratory species”. This could by no means be taken to imply that use is considered unacceptable by the parties to the Convention.

However, implementation in the EPBCA fails to distinguish between CMS Appendix I and II species, even though the intent of the Convention is clearly that there be different constraints for species that are endangered (Appendix I) from those where agreements between range States about conservation actions might be useful (Appendix II). The EPBCA provides that the relevant Minister may issue permits for actions that would impact a listed species in a Commonwealth area, if:

- “(a) the specified action will contribute significantly to the conservation of the listed migratory species concerned or other listed migratory species; or
- (b) the impact of the specified action on a member of the listed migratory species concerned is incidental to, and not the purpose of, the taking of the action; and
  - (i) the taking of the action will not adversely affect the conservation status of that species or a population of that species; and
  - (ii) the taking of the action is not inconsistent with a wildlife conservation plan for that species that is in force; and
  - (iii) the holder of the permit will take all reasonable steps to minimise the impact of the action on that species”.

Although it is often possible to identify circumstances under which harvest for trade will benefit species by providing incentives for habitat protection, this is a severe test when contrasted with the much lesser requirements when effects are incidental to the intent of the action. The lumping of migratory wildlife of very different conservation status, in combination with the apparent preference for “management by accident” over well-considered use, provides a particularly explicit example of the anti-use philosophy that appears to have informed drafting of the EPBCA. Extending such provisions to *Crocodylus porosus*, a species which has been successfully managed so that many populations are probably approaching carrying capacity, touches on the absurd.

Given that other Federal Government priorities for special protection and bids for listing under international treaties appear to be based on criteria unrelated to sustainability, there can be no confidence that equally idiosyncratic constraints based on conservation fashions will not grossly distort options for commercial use in the future. Erratic, poorly-informed, fad-driven approaches to regulation cannot produce optimal conservation outcomes.

This very brief discussion of the mismatch between the intent of some of the Conventions to which the EPBCA ostensibly gives priority and the actual form and effect of the legislation has revealed some of the difficulties created for those seeking to make sustainable use of native species. We turn now to Northern Territory legislation.

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## Territory law

The EPBCA's emphasis on matters of national significance, drawn from commitments under international treaties, reflects the Commonwealth's limited constitutional powers in land and resource management. Primary responsibility for management of renewable resources rests with the States and self-governing Territories.

The Northern Territory's laws are similar in structure and intent to the other States. The Territory, subject to Native Title rights covering customary use, claims wild animals. Access for commerce is controlled by licence or permit. In the case of fish, most commercially valuable species have been allocated to non-Indigenous fishers through tradable licences issued under the *Fisheries Act 1998*. Indigenous people have no special rights of access or capacity to control access by others, despite the potential for commercial fishers to affect availability of fish for customary use and adversely impact local enterprise such as sport fishing (Box 2).

At present there is no legal obligation to consider the interests of Indigenous communities for either subsistence or commercial opportunities. Given the socio-economic condition of most Indigenous communities, entering the market for licences is problematic and, even if achieved, would not prevent other licence-holders from continuing to exploit local stocks, because licence rights are not geographically confined. There appears to be no mechanism, irrespective of the scale of investment, for Indigenous fishers to control the level of commercial exploitation to protect availability for customary use or to manage the potential ecological effects of local over-exploitation. Monitoring of impacts is not done at a scale sufficiently fine to detect or correct localised over-fishing.

Licensing processes may also control methods of harvest to protect biodiversity by limiting non-target take or minimising habitat damage. However, many fishing techniques are inherently indiscriminate and there is concern in a number of Aboriginal communities at the impact of fishing on marine wildlife. Present regulation is effective in denying commercial opportunities for Indigenous access to marine resources, but probably less so in preventing damage to biodiversity values. Change in processes of allocation, to link property rights in fish to local interest and obligations in land and sea management is desirable.

Permits for commercial use of terrestrial plants and animals are issued under the *Territory Parks and Wildlife Conservation Act 2002*. In theory, every Indigenous person taking wildlife incorporated in an object offered for sale, including barks and dyes for artworks, requires a permit from the Director of Parks and Wildlife or his delegate. In practice, these requirements are mostly observed in the breach. But at least in theory, averting the regulatory gaze renders every Indigenous artist or craftsman offering works on wood or bark for sale potentially liable to prosecution.

The Northern Territory is unique among the State/Territory jurisdictions in formally embracing the notion of sustainable use of wildlife as an important conservation tool, and adopting a related strategy (PWCNT 1997). A primary focus has been to return benefits from use of wildlife to landowners. However, the introduction of the strategy was not accompanied by resourcing to promote its benefits nor a coherent program to match administrative practice and process to its goals.

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As a consequence, permit requirements have sometimes failed to reflect the desire to foster economically sustainable enterprise and damaged commercial prospects without contributing to achievement of ecological sustainability (Box 1).

In the cycad case study presented here, the Northern Territory's options have been in part determined by the requirements of the Commonwealth, because Federal endorsement of the management program is required to permit export from Australia. Thus the origin and rationale for all of the requirements specified for the trial harvest are difficult for us to determine. However, the result is that Aboriginal people managing their estates to support a cycad population exceeding 5 million plants were required to implement a monitoring program that required the measurement of the growth rate of unharvested stems. This requirement doubled the cost of harvest, despite the quota being so low that a rotational system would have a return time of 5000+ years.

Effectively the cost of conducting research on the long term dynamics of cycads was shifted to a tiny isolated community of economically disadvantaged people with limited formal education.

It is notable that the Northern Territory Government is considering steps to modify its approach to regulation of this harvest (Parks and Wildlife Service 2003), but the Commonwealth reaction has yet to be determined.

## **Indigenous people and wildlife use**

The Senate Rural and Regional Affairs and Transport Reference Committee (1998) recognised that commercial use of wildlife represented one of the few enterprise options available to Aboriginal people in remote Australia. The Federal Government endorsed the committee's recommendations, including an apparent acceptance of the argument (Senate Hansard, 9 December 1999) that loss or degradation of habitat was the principal cause of wildlife decline and that commercial use could provide an incentive to better manage habitat to protect its suitability for wildlife. There is no evidence in the EPBCA, as enacted or subsequently amended, that this recognition significantly influenced its emphasis or the detail of its contents.

Nonetheless, the EPBCA does incorporate potentially important statements about the role of Indigenous people in sustainable use and conservation. Three of the seven principal objects of the Act refer to this role:

- "to promote a co-operative approach to the protection and management of the environment involving governments, the community, **land-holders and indigenous peoples**; and
- **to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity**; and
- **to promote the use of indigenous peoples' knowledge of biodiversity** with the involvement of, and in co-operation with, the owners of the knowledge."

These formal statements are welcome, because it is clear that without the engagement of Aboriginal people and their active support in choice of management regimes for their lands, Australia will be unable to achieve the conservation goals set out in its Biodiversity Strategy, because Aboriginal people own and manage some of the most bio-diverse lands in the nation

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(Yibarbuk et al 2001). However, we are aware of no coherent steps to achieve that engagement in northern Australia. There is certainly no evidence of a comprehensive Federal plan. Representation of a few Indigenous people on advisory boards on biodiversity conservation/resource use or management boards for national parks cannot be reasonably construed as satisfying these objectives.

Failure to seriously implement these more positive provisions of the EPBCA adds to other failures to advance the potential contribution of wildlife use to conservation performance as, for example, recommended by the Senate Rural and Regional Affairs and Transport Reference Committee. Despite apparent acceptance of a related recommendation by the Committee, there has been no direct Federal Government support for a large-scale trial of the potential to substitute use of native species for other more orthodox and frequently damaging land use options.

An especially important objective for Aboriginal landholders is to develop novel forms of resource use in areas that are clearly marginal for orthodox production. In the absence of opportunities to use native species commercially, Indigenous landowners will be left with few options but to leave their lands or to turn them over to more intensive forms of land use. History shows that both responses will create conservation problems.

In regard to moves away from traditional lands, management of tropical savannas demands active intervention to impose fire regimes that favour wildlife habitat quality (Yibarbuk et al. 2001). Regular movement through country by residents provides supplementary benefits in early detection and control of weed and feral animal problems. Uninhabited country is unhealthy country (Whitehead 1999; Whitehead et al. 2000).

Many environmental problems originate in attempts to force forms of production from systems that are incapable of sustaining them at the intensity required for profitability (Holmes 1990). Many attempts to transplant orthodox agriculture and forestry to north Australia have failed due to harsh conditions (Lacey 1979; Woinarski and Dawson 2002). Moreover, the adverse change in wildlife values already seen in relatively intact landscapes suggests that the additional impacts on wildlife from forms of development involving significant fragmentation may be particularly severe (Rankmore and Price 2003).

We have shown that arbitrary constraints on options for resource use are built deeply into Federal legislation. It is not reasonable to treat these constraints as temporary “teething” problems. A positive program of change will be required to correct them.

## **Supporting customary and non-customary resource management**

The Northern Land Council (Caring for Country Unit) proposes that enterprise based on local use of native plants and animals might provide some of the financial capacity needed to support wider conservation activity on country. The arts and crafts industry, which draws on natural plant and animal materials for media, is an example of a potentially larger suite of possibilities. That industry, which now raises about \$30 million pa in the Northern Territory (Altman 2003b) has taken 30 years to build and still depends on a measure of external public support (Altman 2000). Participants in that industry often use the income from art to support activity on country by their immediate family and other community members (Altman et al. 2003).

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Other industries based on wildlife face as many or more market and regulatory barriers as arts and crafts, and are therefore likely to take some time to produce major returns. Nonetheless, many Aboriginal groups wish to pursue such options and are devoting considerable efforts to their development (e.g. Whitehead et al. 2003).

Unfortunately, many other Australians take a very narrow view of conservation and good resource management practice and the ways in which it is legitimately achieved. For conservation, they focus on uninhabited parks and reserves as the apex of conservation practice and the set asides they represent as the best way of protecting exploited resources. In contradiction to this idea, we have indicated that many of the most severe problems in northern Australia result from the absence of humans from large parts of the landscape. Trust in a few sparsely-staffed reserves is unwise.

Morton and others (1995) have developed a concept of land stewardship. Stewardship (caring for lands owned by others) is probably an inappropriate term to use in connection with Aboriginal land owners. However, an important core idea is that people deriving an income from the land by using some components of the natural resource base can also act as managers and protectors of many other values, given appropriate incentives.

Incentives for Aboriginal land managers to see themselves as acting on behalf of other Australians are presently few. Customary practice is yet to be widely recognised by the public or Government as conservation management work, perhaps because it includes consumptive use, and because there has been limited access to the resources needed to go beyond the customary to meet new challenges or resource management opportunities.

In our view it will be necessary for Government to offer some leadership in new approaches to conservation and land management and to review regulatory regimes that may constrain options to move beyond the orthodox (Whitehead 2000). Without active support to improve the range of options for enterprise available to them and to find their way through regulatory thickets, Indigenous owners of much of northern Australia will be denied the opportunity to bring their skills and effort to bear on conservation management of some of Australia's most biodiverse lands.

We acknowledge that changing poorly targeted regulations that reflect entrenched, albeit poorly informed, generalisations about acceptable conservation practice, poses a politically difficult task. Changes in legislation to facilitate sustainable use of wildlife (including native plants) will attract opposition from well-organised and vocal groups who are philosophically opposed to such use and determined to impose their views on others, irrespective of conservation benefits.

However, because there is considerable discretion in much relevant law, in the short to medium term much can be done to develop and test ideas for wildlife-based enterprise with shifts in policy emphasis and administrative process rather than a revolution in legal frameworks. A collaborative approach supported by Government could provide the information needed to shift public perceptions of the risks of wildlife harvest compared to the alternative orthodox uses of land and foster an evolution in resource use policy and regulation. Whitehead (2000, 2002, 2003) proposed large scale "experiments" that would explore the conservation, socio-economic and legal issues associated with a local economy based on a



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range of consumptive and non-consumptive uses of wildlife. Engagement of regulators at both Commonwealth and Territory levels will be an essential component of such experiments.

## **Building capacity in resource management for remote Australia**

It is important to recognise that the regulatory barriers we have identified do much more than damage opportunities for modest incomes from wildlife use and contributions to conservation management of lands. They also have much wider social implications. They arbitrarily deny opportunities for Aboriginal people to pursue the sorts of engagements with the market that they have repeatedly identified as most practical and likely to succeed. The most plausible paths towards improved capacity to interact productively with the mainstream economy are blocked (Whitehead et al. 2003). To urge people to seek ways to escape dependence and then to erect arbitrary barriers on the routes they seek to follow is worse than perverse.

The proposals outlined above are not about ghettoising Aboriginal options and seeking to confine aspirations to "appropriate" channels, but rather broadening community options by facilitating the most readily available and feasible starting points for accessing a wider range of options as capacity and interest develop. Commonwealth Government support for and active engagement in Northern Territory initiatives to identify and promote Indigenous economic development based on sustainable use of native plants and animals could provide an important vehicle for reducing welfare dependence and building a range of new skills and capabilities. Regulatory regimes must be reshaped to exploit opportunities for enhancing both social and conservation outcomes in northern Australia.

## **Conclusion**

The EPBCA follows an old-fashioned, expensive and ultimately ineffectual dichotomisation of resource and conservation management activity into sets of the intensively used and the untouchable, with provisions for bouts of heroic rescue when the effects of heavy use spill over to affect the untouchables. This may make good politics, but historical failures and contemporary trends show that it makes for awful conservation performance.

The present approach also places great demands on public funds, because it disables application of local capacity and interest in managing lands for sustainability over the longer term. In contrast to many other resource users, Indigenous people holding traditional land under inalienable communal title are directly answerable to their local communities and do not have the option of cashing in and moving on. Regulatory regimes that depend on centralised "command and control" squander incentives for better performance that would otherwise be driven by local aspirations and obligations.

There is a critical need to seek additional creative ways of meeting the incontestable obligation to improve the socio-economic position of Aboriginal people, in ways that are compatible with social and cultural norms and contemporary educational and institutional capacity. There is an associated obligation to use these engagements to build capacity to expand the range of options over the longer term.

As recognised under the CBD, regulatory regimes that are relevant to biodiversity conservation extend beyond the *Environmental Protection and Biodiversity Conservation Act*

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1999 and equivalent State or Territory statutes to include laws for resource management that relate to harvest of components of biodiversity, including fisheries.

Present regulatory frames, and the attitudes they foster in resource and conservation management agencies, compromise prospects for new and effective approaches to conservation and sustainable use that remain available in northern Australia. Ways must be found to foster innovation in conservation practice rather than forcing a tired retracing of steps that have demonstrably failed in southern Australia. Although substantial change in legislation is required over the longer term, much can be done within existing statutes, provided regulatory authorities focus on sustainability and avoid misuse to protect existing commercial interests or pursuit of agendas derived from anti-use philosophies unrelated to conservation. Establishing genuine, large scale trials of new modes of resource use in Indigenous northern Australia, in which regulatory authorities are full participants, can provide a mechanism for "proof of concept" and, over the longer term, the capacity to illustrate alternatives capable of delivering both improved social and conservation outcomes.

Conservationists have long recognised that *in situ* conservation of viable wild populations in their natural places is greatly to be preferred over artificial maintenance in specially protected places. It is past time to recognise the potential contribution of systems of "*in situ* production" of native species to conservation, and attitudes to wild harvests to be reconsidered.

Aboriginal people are willing to collaborate in novel ways to contribute to the nation's conservation goals. But that willingness should not be abused by either completely denying opportunities for economic advancement based on native species or, more cynically and destructively, saddling Aboriginal enterprise with ongoing compliance costs of a sort not met by promoters of "*ex situ* production", often using exotic species that require the immediate or longer term destruction of entire natural systems.

## Box 1: Harvests of cycads in Arnhem Land: a trial.

### Background

In some nations the single most serious threat to the status of cycad populations is the popularity of wild cycads for ornamental use, and the illegal collection of wild plants to satisfy that demand (Osborne 1995). It is argued that low rates of growth, restricted distributions, often small population sizes, and susceptibility to a number of anthropogenic threats additional to harvest, render members of this group of plants particularly vulnerable to decline. This general argument has been used to justify the Appendix 2 listing of all north Australian species of the genus *Cycas*, even though there is no evidence for the majority of species that they are under threat, or that international trade has in any way influenced their present status.

In contrast, in many parts of northern Australia, cycads are extraordinarily abundant. Accordingly, the regulatory authority in the Northern Territory, the Parks and Wildlife Service, has drafted a management plan for cycads that permitted trial harvests. Because it was considered that export from Australia might ultimately be required, Federal approval of the management plan was sought and obtained. Trial harvests for all of the more abundant species were approved by the Federal Minister for Environment and Heritage in year 2000. Stems more than 1 m tall may not be harvested.

### The Gamardi Trial Harvest

A small outstation community at Gamardi in central Arnhem Land, supported by the regional resource centre (the Bawinanga Aboriginal Corporation) initiated a trial in 2001. The trial involved the harvest for commercial sale of up to 300 specimens of *Cycas arnhemica*, a species endemic to the region and hence occurring only on Aboriginal land. The proposed harvest is trivial in population terms. Densities exceed 2000 plants ha<sup>-1</sup> over large areas, and the local cycad population within a 10 km of the outstation involved in the harvest (Gamardi) is estimated at more than 5 million plants. Despite the small scale of the harvest, the regulatory authorities sought a rigorous monitoring scheme to assess its impacts.

To assess the ecological sustainability of a substantial harvest, a number of issues warrant consideration:

- effects of removal of plants on dynamics of the unharvested population;
- effects on fauna dependent on the cycad for food or shelter and any flow on effects (e.g. through impacts on pollinators or seed dispersers);
- physical damage such as soil erosion resulting from the extraction of plants; and
- indirect effects of physical disturbance on associated flora and fauna.

In this case, significant impacts on the dynamics of the cycad population as a whole can be discounted, given the tiny fraction of the population and its habitat subject to harvest. At the population level it is not possible to meaningfully measure the effects of harvests constrained to 300 stems pa from a total area slightly in excess of 1 ha, dispersed over a local population in the millions occupying more than 8600 ha. To illustrate the modest scale of the harvest, in a system of harvest rotation it would not be necessary to return to the same site (in this case a 20 × 20 m quadrat) for 5,000+ years. Any reasonable assessment would acknowledge that 5 millenia should allow ample time for recovery of even the slowest growing plants.

Significant effects on fauna can be dismissed, even at the local scale. Harvest intensity is so low that it will not measurably reduce the resources available to fauna over relevant areas. The average density of cycads sampled in the harvest area was 1356 ha<sup>-1</sup> and it ranged from 550 to 2250 ha<sup>-1</sup>. Harvest intensity averaged 121 stems ha<sup>-1</sup>, so that changes in density due to harvest were well within the range of natural variation. Neither seed dispersal nor pollination biology has been studied in *Cycas arnhemica*. However, given the slight reductions in density involved under this harvest regime, significant indirect effects on reproduction and recruitment and the long-term status of their pollen and seed vectors appear very unlikely.

Physical disturbance associated with the harvest involves digging up to 16 holes about 30 cm deep and up to 50 cm in diameter within a 20 × 20 m quadrat. Soil is replaced and in most cases the volume of subterranean plant tissue extracted with the stem is a few litres or less, so that no appreciable depression is created, and care is taken to ensure that holes are not linked by areas of disturbance. In the flat sites preferentially used, significant erosion is highly improbable. Similarly, the small area of disturbance means that significant impacts on other flora are improbable.

There is a risk of introduction of weeds or fungi on implements, clothes and vehicles. The region is relatively free of sources of weed seed or other propagules (Griffiths et al. 2000; Yibarbuk et al. 2001), reducing the probability of significant dispersal. There is no record of *Phytophthora* related dieback in the region, although it has been found several hundred km to the east near Nhulunbuy. However, it will be desirable that outstations and nursery which may provide foci for weed establishment and dispersal be maintained in a weed-free condition. A commercially viable harvest could provide an important source of funds and incentives to achieve high standards of weed control and other monitoring of threats to ecological integrity at outstations, which would be of wider conservation benefit in this bio-diverse area of Australia.

The particular monitoring system required by the management authority involves measurement of density and dimensions of individual stems of cycads within the harvested plots. It will not permit inferences about the size or state of the regional cycad population which will depend much more on influences like the quality of regional fire management, and hence of weed management. It will, however, allow very local change to be determined over the long term and provide insights to cycad demography that could ultimately be used to derive harvest simulation models for robust design of larger harvests.

### **Commercial sustainability**

Despite the enormous populations at this site and others, commercial access by local people has been tightly restricted. Moreover, the monitoring system sought by the management authority, being based on intensive sampling of a small number of small plots (and hence achieving a sampling intensity of less than 0.01% of cycad habitat close to the Gamardi outstation), is clearly not well designed to return useful information on the status of the regional population, which should arguably be the focus and concern of the management authorities (the Parks and Wildlife Commission locally and Environment Australia nationally).

As noted earlier, the monitoring plots will, if maintained over the long term, provide insights to the local dynamics of populations and information on the time required for recovery from localised harvests. However, a requirement to accurately measure and individually tag all stems (as distinct from recording numbers in broad size classes) is particularly time consuming and clearly unnecessary to determine outcomes at the population level. Imposition of demonstrably unnecessary costs is not likely to be the most effective way to seriously engage local people in useful monitoring of either the impacts of their activities or the condition of their country.

In this trial, the basic cost in equipment and consumables for potting was about \$3.90 per plant. Additional costs of transport from nursery to market are estimated at about \$7 per plant. Thus, after unavoidable costs of materials and transport totalling \$10.90 are met, sales to wholesalers at the prices mooted to date (\$30.00) are likely to return a net of about \$19.10 per (small) plant to cover the cost of labour and compliance.

Our estimate of the total effort required to harvest, transport, treat, pot and maintain in the nursery averaged 3.9 person hours per plant. This is probably substantially higher than would be required in a fully commercial operation. However, even if the effort is reduced to half this figure, returns to Aboriginal participants in such harvests, in the absence of a compliance cost, is no more than \$10 h<sup>-1</sup>, or about the CDEP wage. Such returns are still probably adequate (while noting that cost estimates include no administrative overheads) to provide an incentive to make the effort involved in harvests and their management.

However, the fixed costs imposed by the monitoring scheme are about \$16.50 per plant (based on annual harvests of 300 plants p.a. over 5 years). After meeting costs of compliance, the amount remaining to reward harvesters for their effort will be about \$1.00 h<sup>-1</sup>. It is clear that the cost of compliance presents a major obstacle to the reasonable development of this and other, related opportunities. There are several potential responses to this unsatisfactory situation. They include:

1. To cease harvest of smaller plants and concentrate on larger, more valuable stems. Access to larger stems than are presently available from other sources is the principal rationale for a wild harvest and the feature that will distinguish an Aboriginal enterprise from other operations.
2. Reduce costs of the monitoring regime. It is not clear why costs of basic, public-good research should be shifted from Government to some of the nation's most disadvantaged people, particularly when they are constrained to an unrealistically small harvest.
3. Retain the present monitoring scheme but increase the harvest conducted under its umbrella. The summary above demonstrates that losses of plants to harvest as presently structured are likely to be negligible compared to natural or other anthropogenic sources of mortality. Aboriginal owners of the harvested lands are confident that if more cycads are required, this can be achieved through a shift in burning regimes to more comprehensively protect the site from hotter fires (Terry Gunadilla, pers comm.) However, there is presently no incentive for the land managers to incur this cost. A substantial increase in the approved harvest will not threaten sustainability, but improve returns and incentives by reducing the significance of fixed (mainly compliance) costs. It may be necessary to consider methods of directly accessing overseas markets to sell this amount of product.
4. Develop a more relevant monitoring scheme that increases sampling intensity (in the sense of sampling a larger proportion of the population of interest) at the expense of the detailed measures of individual stems.

### **Implications of the trial**

Cycads have been regarded as one of the products of higher unit value that might conceivably offer favourable enterprise opportunities to Aboriginal people in northern Australia. There is a demonstrable demand that, given

large cycad populations in favourable well-managed habitat, could be filled without significant ecological risk. Estimates of potential returns are crude, but suggest that under reasonable regulatory and other conditions, harvest could provide adequate returns to communities and hence some incentive to actively manage sites to protect their natural values, including the cycad populations.

However, the essentially arbitrary international and national assignment of these plants to categories of special concern militates against successful enterprise. Monitoring requirements designed to reflect this formal status are so onerous that meeting them is likely to consume much of the potential return. Those requirements appear at least in part to be designed to require harvesters to fund work that is of no immediate relevance to the impacts of their activity. Rather it provides basic information on cycad demography that is of wider application and interest and therefore might more reasonably be regarded as the province of Government.

Imposition of such an over-prescribed monitoring scheme, despite the in-principle support of the management authorities, is an example of all-too-common regulatory disincentives for good conservation practice. Attempts to earn a modest return from demonstrably sustainable use of a native plant are saddled with severe financial constraints. Such costs would not be levied if, for example, landowners chose to destroy large parts of the cycad population to foster a cattle grazing enterprise (Whitehead 2000). Thousands of cycads could be bulldozed and burned without penalty under prevailing land clearance guidelines on pastoral leasehold or freehold land.

Proponents of constraints on harvests sometimes invoke the precautionary principle. There is certainly a place for caution if a species is genuinely rare or the scale of harvest is substantial. But there is no justification for imposing an onerous monitoring program on top of a highly constrained harvest. A comprehensive program to monitor a harvested population is useful only if the harvest is large enough to measurably change population processes. A trivial harvest can provide no information about the capacity of the harvested population to recover from or compensate for harvest and so squanders the opportunity to make use of the harvest as an adaptive management experiment. The monitoring effort is mostly wasted and in this case would, if maintained, probably have destroyed the initiative.

The perversity of prevailing negative attitudes to well-managed harvests from the wild becomes even more apparent when alternative approaches are considered. For example, basing cycad production on artificial culture from seed would be treated entirely differently under the existing Management Plan (PWCNT 1997a). Up to 50% of all seeds could be taken, apparently on the grounds that few seeds will establish in the wild and the corollary that population dynamics (including seedling establishment and persistence) are likely to be density-dependent (i.e. average success rates of one or more size/age classes will increase at lower densities means that prior removal of much seed becomes irrelevant). No information has been produced to justify this assumption, which must apply if such a level of seed harvest is to be sustainable.

More significantly, no account is taken of the long-term environmental costs of growing seedlings to plants of saleable size under artificial conditions. Environmental costs over at least several years will include substantial use of plastics for regular re-potting, water use from surface impoundments or groundwaters, application of fertilisers and pesticides, use of electrical power, and establishment of infrastructure on land totally cleared of its native vegetation. To clear one hectare of land for a nursery and associated access tracks on the Gamardi site would require destruction of about the same number of cycads as are presently proposed for harvest over 5 years.

In sum, the arbitrary classification of *Cycas arnhemica* under an international treaty has created a situation in which management arrangements are illogical and likely to reduce prospects for effective long term conservation.

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## Box 2: Regulation of commercial and subsistence use of fish in the Top End: an Indigenous perspective.

### Background

About 29% of the Northern Territory's population is Indigenous. Most (70%) reside on remote, infrastructure poor Aboriginal land and are economically marginalised. Creating conditions for Aboriginal people to improve their socio-economic status is a critical issue for the Territory, but presents many challenges. In addition to well-documented disadvantage in education, training, health, and access to infrastructure, Aboriginal people in remote areas must overcome difficulties in reaching markets, as well as the biophysical constraints that inhibit conventional agriculture on the relatively unproductive lands that were not previously alienated by other interests.

Many of these constraints are less daunting in respect of marine resources. Here isolation offers some advantages. Competition with recreational users of fish is less significant, and catchments are well-managed, so water and marine habitat quality are both good. Wet season access is less an issue. However, government policy concerning Aboriginal involvement in fisheries has emphasised development of aquaculture on Aboriginal land in preference to improving access to wild stocks. Although aquaculture ventures have their place, they are dependent on large investments, are technically demanding and designed to minimise labour requirements, so benefit is mostly a share of venture income rather than long term employment or training of significant numbers of Aboriginal people. Over the mid to long term, such developments may also cause a number of intractable environmental problems.

In contrast, many forms of wild harvest for commerce require relatively minor investments and provide opportunities for active involvement of Aboriginal people in ways that are consistent with existing interests, skills and education. Experience gained in often modest enterprise that maximizes engagement of Aboriginal people will provide an important means of building capacity to undertake more ambitious enterprise in the future.

### Issues

Opportunities to develop more innovative uses of marine resources, even at very small scales, are constrained by present legislation and policy. The ostensible reason for these constraints is to protect existing users and to maintain effective regulatory regimes to promote sustainability. However, provisions are sometimes applied over-zealously, preventing developments in areas where disadvantage to others is absent or minimal and sustainability is not a central issue. Moreover, existing users often adopt highly offensive practice on Aboriginal lands, including waste of resources in bycatch valued by local people, and disturbance of sacred sites. Irrespective of need, returns from use of local and regional resources are mostly repatriated to larger centres, frequently located in other States, rather than benefiting local people.

Present policy settings in regard to Indigenous access to commercial fisheries seek to introduce technically-demanding aquaculture facilities, almost entirely dependent on external funding and expertise, into isolated, high cost locations, while simultaneously allocating rights in local wild resources occurring in and around those communities to more distant, city-based licence-holders. Historical legacies dictate a peculiar inversion of rational processes of resource allocation and Government support for related enterprise.

### Consideration of Issues

Marine biota are presently treated as common access resources. In order to resist over-exploitation, the state effectively claims ownership and regulates access in various ways. In fisheries this is mostly done by issuing a limited number of licences to take a specified resource. Those licences become valuable tradable instruments. Most often, harvest is not restricted by licencing provisions to particular areas or regions. Coasts and seas adjacent to Aboriginal lands, and other waters regarded by Aboriginal people as owned by particular individuals or groups are included among the areas allocated to external licence holders.

There is nothing to prevent users over-exploiting a particular area if they considered it advantageous to do so. Consequently, Aboriginal landholders have no means available to them to protect managed species for customary use. Existing modes of management do not include information on potentially adverse change in availability for customary use. Recent surveys show that more than 90% of Aboriginal people in north Australia regularly harvest fish (Henry and Lyle 2003), mostly to meet basic needs.

At present, many managed fisheries are fully or perhaps over-allocated. There is little scope for new licences within the existing management arrangements. Even were this possible and Aboriginal people were assisted to gain access, the present arrangements would not permit them to exercise control over other users on the seas adjacent to their communities. Consequently, if they focused their efforts in their community areas but others also continued to use these sites, they would actually increase the risk of local over-exploitation and put customary use at even greater risk.

Moreover, present arrangements provide no effective mechanisms to protect other forms of commercial use. For example, operators of a sports fishing joint venture at Maningrida on the Liverpool River consider that their venture is compromised by intense commercial net fishing for barramundi. Prevailing arrangements also prohibit local communities from developing innovative local use of managed fish in any “gaps” left in patterns of use by licenced operators. For example, small scale use of barramundi for local sale may be plausible in sites too difficult for conventional operators to access profitably.

In the view of many Aboriginal people and other interests there is an urgent need to develop better arrangements for allocation of resources already subject to management to take account of changed circumstances, new forms of use and a greater emphasis on satisfying the needs of local communities. In addition, licences to develop new fisheries have tended to be dominated by established interests focusing on larger ventures, rather than used as a means of promoting small scale enterprise for users presently excluded from the managed fisheries. Shifts in policy and practice are needed to encourage a wider view of the benefits of small scale, often local or community-level venture. Many Aboriginal communities wish to gain experience with commerce at a pace and scale that suits their assessment of their present capacity and to increase capacity with experience. Thus, it can be argued that special emphasis should be given to facilitating Aboriginal access to those fisheries that do not demand large initial investments in infrastructure, equipment or market development.

New products from novel fisheries also confront regulatory requirements directed at protection of non-commercial aspects of the public interest (e.g. health related concerns) that severely constrain options. For example, it appears that in the Northern Territory, applications for licences to develop enterprise based on shellfish for human consumption have been routinely rejected on the grounds of risks associated with heavy metal accumulation. The investments in research needed to ascertain the true level of risk are difficult for individual communities to justify. However, we are aware of no efforts to support relevant investigations using public funds, despite the substantial levels of public subsidy in research to support already highly profitable industries such as pearl culture.

The manner in which these and other obstacles to Aboriginal enterprise might be overcome is a complex issue. Treatment of fish and other marine wildlife as common resources is strongly entrenched in common and statute law. Rhetoric regarding “freedom of the seas” is pervasive and apparently persuasive, despite dependence on regulation and enforcement to protect the interests of existing licence holders by excluding new entrants. Directly confronting entrenched attitudes in the search for immediate comprehensive solutions may in fact delay progress. An incremental approach may be preferable, based initially on seeking opportunities in areas that minimize conflict between existing and new uses and users, and confronting larger issues when frameworks for consultation and negotiation have been well-established.

An appropriate vehicle for carrying forward such an incremental development of opportunity, policy and legislation will be to establish model arrangements for economic development in one or more regions that have demonstrated interest and capacity. Important features of model arrangements will be:

- (1) Governments at all levels agree to adopt a facilitating and problem-solving role in regard to regulatory structures and interactions among users, rather than permit existing regulation to constrain regional and remote development.
- (2) Aboriginal organisations negotiate with Government to establish explicit enterprise development and resource management goals.
- (3) Initially, priority is given to identifying options that minimise conflict with other users, but which may or may not depend on Government support.
- (4) When broad agreement is reached on short to medium term goals, an enterprise development support group is formed, including representatives of relevant Aboriginal organisations, traditional owners, Government, non-Government organisations, University and industry. The group’s role is not to determine or direct the manner in which Aboriginal organisations achieve goals, but to organise and deliver support consistent with the agreed program.
- (5) Goals are operationalised by Aboriginal organisations and traditional owners, in consultation with Government and industry. Government and non-Government organisations assist as required in development of concept plans and subsequently, business plans.
- (6) Business plans include details of financial, training and administrative support needed for communities to reach agreed goals, and sources of funding. Training and educational programs are integrated with resource management activity and capacity-building of the type envisaged under the COAG reconciliation agenda.
- (7) Monitoring systems capable of measuring performance in terms of agreed outcomes are developed jointly and implemented to engage Aboriginal people.
- (8) Monitoring includes measures of operational performance, state of the exploited resources, and indicators of actual or potential impact on other users, including customary users.

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- (9) Social benefits, such as improvements in local and regional economic status, employment and health, are measured simultaneously and included in analysis of effectiveness of enterprise in alleviating disadvantage.
  - (10) Monitoring information provides a base for biennial review of progress, and as a platform for developing more ambitious enterprise and improved regulatory regimes that are relevant to remote Australia.

By engaging a range of interests in supporting operations and encouraging open evaluation, such models will provide opportunities to reduce the effectiveness of divisive scare tactics about exclusion and consequent misuse of regulatory regimes to achieve ends unrelated to resource sustainability and protection of biodiversity values. They will provide a knowledge base for the informed development of policy and legislation for resource allocation that meets the needs of a wider cross-section of the Territory population, benefiting both Indigenous and non-Indigenous interests in remote and regional centres.

The engagement of a wider range of stakeholders in resource use dependent on the maintenance of high quality terrestrial and wetland habitat, especially among Aboriginal landholders who own about 85% of the coastline, is important to provide incentives for good standards of habitat management. Good standards of habitat management for fish will in turn maintain other biodiversity values. Regulation of access to resources dependent on habitat protection cannot rationally be treated as independent from other regulatory measures for maintenance of biological diversity.



### Box 3: The great Australian didjeridu robbery: theft of material and intellectual property and opportunity.

#### **Background**

The didjeridu is a distinctive wind instrument used by Aboriginal people for a variety of spiritual and secular purposes. The instrument's geographic origins are described by Moyle (1981) as north of the "Broome-Ingham Line", which delineates roughly the northern third of Australia, including the Kimberley region in Western Australia, the Arnhem Land region in the Northern Territory and the Cape York region of Queensland. It is only in recent history (the last century) that didjeridu use has been adopted by Aboriginal groups in Central and southern Australia (Horton 1994, Nuenfeldt 1997).

Today the didjeridu is played, often accompanied by singers and clap-sticks, in ceremonies such as funerals and corroborees, or in other secular or recreational situations. There are many Aboriginal names for the instrument in different language groups. However the term most often used today, "didjeridu" or "didgeridoo", is non-Aboriginal.

Traditionally the didjeridu is made from termite-hollowed branches or stems of eucalypts, or sometimes from bamboo. There are also differences in production methods among different Aboriginal groups, including variation in plant species used and the characteristics of stems chosen. This account examines the Jawoyn form of the didjeridu and focuses on instruments made from *Eucalyptus phoenicea*. In the inland Top End, the species is abundant on rocky hills and other well-drained sites (Dunlop et al. 1995).

In common with many other Eucalypt species in northern Australia, a large proportion of *E. phoenicea* stems are piped by termites (Braithwaite et al. 1985). Forner (1999) found that more than 90% of stems were hollow in the Yinberrie Hills area. Abundant hollow stems, frequently of the dimensions required for didjeridu, provide particularly favourable conditions for harvest for didjeridu fabrication. Both customary harvests and legal and illegal commercial harvest occur in the region (Forner 1999).

#### **Regulatory issues**

The *Territory Parks and Wildlife Conservation Act 2000* specifies that harvesters taking native plant products for commerce must do so under permit (Sections 55-57). If property in that wildlife is vested in the Territory (e.g. plants on public and leasehold land), they must also pay royalties (Section 116). No royalty is presently specified for *E. phoenicea* under the *Territory Wildlife Regulations*. However, the regulations do specify a generic royalty of \$1 per "stick" (of any species) taken for "didgeridoo".

On Aboriginal land, traditional owners wishing to use plants commercially also require a permit, but are not subject to royalties. Owners of Aboriginal or other freehold land may hold permits and allow others to harvest from their lands under those permits.

Once taken under a valid permit, ownership of harvested item passes to the permit holder. The Parks and Wildlife Service requires no permit for movement of wild harvested native plants into other jurisdictions, but those jurisdictions may seek evidence that the material was obtained lawfully. Ongoing commercial use should ultimately be regulated through a management plan made under the *Territory Parks and Wildlife Conservation Act 2000*. The principal test to be satisfied in such a plan would be that use dependent on wild populations is clearly sustainable (Section 32). Legal provisions are similar in other States.

*Eucalyptus phoenicea* is not listed as threatened under relevant Territory, State or Federal legislation. The species is not listed under the Convention on International Trade in Endangered Species (CITES). Regulations under the *Environmental Protection and Biodiversity Conservation Act 1999* specify that any object made from bark, wood or timber is exempt from permit requirements for export from Australia. Thus international purchasers of didjeridus may take their instruments home without impediment and manufacturers may export without needing to demonstrate to Federal authorities that their operations are sustainable. Reliance is placed on State controls.

#### **Ecological sustainability**

Customary harvest, whether for personal use or sale, is a highly selective process, requiring harvesters to search large areas and resulting in low average intensity of harvest. In an experimental harvest done with Jawoyn landowners, Jawoyn craftsmen regarded as suitable and took only 43 stems from 8 ha that contained a total of about 657 Scarlet Gum trees. The proportion of stems sampled and taken was higher than usual given that harvesters were cutting many stems to establish experimental plots. Selective customary harvest at the lower intensity observed in less artificial situations appears likely to be sustainable, especially given that harvest does not usually result in the death of the tree.

Characteristics that make the species attractive to Indigenous harvesters – high density in accessible sites, high proportion of favourable stems, durability of product – are obviously also attractive to non-Indigenous commercial harvesters. Non-Indigenous commercial harvest is probably unsustainable at many sites, despite regulation. At randomly selected sites in the Yinberrie Hills (i.e. selected without regard to the presence of

cutting or otherwise), an average of 21% of stems had been taken (Forner 1999). That this level of cutting was observed on average over a large area is indicative of the intensity of cutting at the local scale. At some sites, local harvest has involved cutting all stems over quite substantial areas, clearly causing ecological change. In the experimental harvest mentioned above, applying methods to mimic commercial harvest resulted in an additional 373 stems being taken, nine times as many as an unusually concentrated customary harvest would have involved.

Significant depletion of stems of *Eucalyptus phoenicea* is unwelcome from a number of perspectives. In addition to compromising the status of the resource, loss of hollows is likely to deprive small fauna of shelter (e.g. Tidemann et al. 1993), and an important source of food for nectarivorous fauna during the long period of profuse flowering for which this species is noted (e.g. Woinarski et al. 2000).

A response to issues raised by high intensity commercial harvesting is presently undetermined: both the Jawoyn Association and the Northern Territory Government are seeking to improve management of the resource through improved permit systems. Proposals involve issuing permits (tags) to Aboriginal land owners so that they authorise harvest and control the number of stems cut on their lands. However, the Northern Land Council, which has a statutory role (see *Aboriginal Land Rights (Northern Territory) Act 1976*, Section 23) to advise Aboriginal landowners on resource management and other issues affecting their land, does not concede that Northern Territory legislation of this sort has application on Aboriginal land.

Whatever the status of the present legislation, it is clear that it is ineffective. In combination, a relaxed Commonwealth attitude regarding export of such products and the difficulty of monitoring harvest in remote localities under permits that require no accounting for individual stems, means that commercial harvesters operating illegally face few constraints on access to markets and little risk of detection or successful prosecution. As a consequence, individuals or groups (including Aboriginal communities) who observe formal regulatory requirements and customary law suffer commercial disadvantage.

### **Commercial sustainability**

The didjeridu presently has a diverse following and demand is high. A number of Aboriginal craftsmen presently gain access to this market by providing high value products that are culturally authentic and genuine musical instruments. Many Cultural Centres associated with Aboriginal communities also treat didjeridus as works of art, providing details of the craftsmen and the significance of the instrument and associated decoration, which serve to authenticate the object. The market for such products has been sustained over long periods and, given trends in other segments of the arts and crafts industries (Altman 2003), appear likely to remain strong. However, there is a larger market of cheaper ersatz didjeridus, many of which are made of inferior materials and function poorly as musical instruments. It is unclear whether these inferior products damage markets for genuine items or perhaps enhance the status of authenticated instruments by providing clear differentiation in the marketplace.

However, it does appear that the large volumes of these items may compromise access of Jawoyn craftsmen to the materials they need to create authentic objects. Aboriginal craftsmen are angry at "greedy" harvesters who "steal" sticks from the land without consideration of the environmental consequences or of the cultural origins of the didjeridu. After less than a decade of commercial-scale harvesting, both customary and commercial didjeridu manufacturers have noticed that finding stands of suitable trees is becoming more difficult. It is feared that the presently strong market, especially by those with no particular connection or obligation for the integrity of the product or land on which it originates, may be leading to an over-exploitation of the resource.

Describing some commercial harvest practice as theft does overstate the case. Staff of the Jawoyn Association and the Parks and Wildlife Service confirm that approvals have never been sought nor granted in some heavily cut areas of Aboriginal land. Not only has cultural property been misappropriated, but physical property is also being stolen. Costs to customary harvesters seeking to operate sustainably are being increased by depletion of the resource in reasonable proximity to their communities.

### **Implications**

It is difficult to imagine an object more closely and uniquely linked to Aboriginal culture than the didjeridu. Yet that link has not meant that Aboriginal people have exclusive access to markets developed around the instrument. A predominantly commercial non-Indigenous didjeridu production system has also emerged.

The didjeridu example is important because it illustrates the challenges faced by Aboriginal people, operating from remote, high cost locations, to maintain access to markets and to protect their economic interests and resource base once demand becomes sufficiently robust to sustain the entry of a diversity of suppliers.

The didjeridu case also provides striking evidence of the ineffectiveness of biodiversity regulation that is weakly connected to prevailing social and biophysical circumstances. Present practice fails tests of environmental protection while also failing to protect the physical and intellectual property of some of the region's most disadvantaged people. Improved performance may require greater commitment by regional

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regulators. However, best results are likely to be achieved by also engaging local people in control over access to resources on their lands, while promoting incentives for them to exercise the necessary level of control. Enduring incentives are likely to include market-based advantage flowing from improved enforcement of consumer protection laws relating to inferior product involving little or no Aboriginal input, but nonetheless offered for sale in circumstances that imply a strong Indigenous connection.

It is also instructive to compare the loose regulation of this major market and its demonstrated impact on environmental values, with the obsessive attention given to management of minor and environmentally innocuous Indigenous harvests of other plants like cycads (Box 1). Inflexible and unimaginative application of regulation too often results in a misdirection of public resources to activity that produces little or no environmental or social benefit.

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*TERMS OF REFERENCE*

**INQUIRY INTO THE IMPACTS OF NATIVE VEGETATION AND BIODIVERSITY REGULATIONS**

*PRODUCTIVITY COMMISSION ACT 1998*

I, IAN CAMPBELL, Parliamentary Secretary to the Treasurer, pursuant to Parts 2 and 3 of the *Productivity Commission Act 1998*, hereby refer the following to the Commission for inquiry and report within twelve months of receipt of this reference.

**Background**

2. Regulatory regimes in a number of States and Territories, along with the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999*, form part of an important transition to more sustainable management of Australia's native vegetation and biodiversity. The introduction of these regimes, particularly within the past five years, has raised concerns over possible negative impacts on farming practices, productivity, property values and returns and the investment behaviour of affected landholders. These concerns appear to have been exacerbated, in part, by a lack of information and awareness about the implications of the new regimes.

**Scope of Inquiry**

3. The Commission is to report on:
- (a) the impacts on farming practices, productivity, sustainability, property values and returns, landholders' investment patterns and the attitude of finance providers, and on other economic activities such as infrastructure development and mineral exploration, and flow on effects to regional communities, arising from the regulation of native vegetation clearance and/or biodiversity conservation, including:
    - (i) both positive and negative impacts;
    - (ii) the level of understanding of the relevant legislative and regulatory regimes among stakeholders;
    - (iii) the likely duration of such impacts and the factors influencing their duration; and
    - (iv) the extent to which existing government measures are mitigating any negative impacts;
  - (b) the efficiency and effectiveness of the above regimes in reducing the costs of resource degradation and the appropriateness of the current distribution of costs for preventing environmental degradation across industry, all levels of government, and the community;
  - (c) whether there is any overlap or inconsistency between Commonwealth and State/Territory regimes, including their administration;
  - (d) the evidence for possible perverse environmental outcomes, including those that may result from perceptions of a financial impact, arising from the implementation of the above regimes;
  - (e) the adequacy of assessments of economic and social impacts of decisions made under the above regulatory regimes;

(Continued next page)

- (f) the degree of transparency and extent of community consultation when developing and implementing the above regimes; and
  - (g) recommendations (of a regulatory or non-regulatory nature) that governments could consider to minimise the adverse impacts of the above regimes, while achieving the desired environmental outcomes, including measures to clarify the responsibilities and rights of resource users.
4. In assessing the matters in (3), the Commission is to have regard to the legislative and regulatory regimes, and associated implementation measures, in all States, Territories and the Commonwealth whose primary purpose includes the regulation of native vegetation clearance and/or the conservation of biodiversity.
  5. In undertaking the inquiry, the Commission is to advertise nationally inviting submissions, hold public hearings, consult with relevant Commonwealth, State and Territory agencies, local government, and other key interest groups and affected parties, and produce a report.
  6. The Commonwealth Government will consider the Commission's recommendations, and the Government's response will be announced as soon as possible after the receipt of the Commission's report.

IAN CAMPBELL

14 April 2003