



**Submission to the Senate Inquiry into forestry and mining operations
on the Tiwi Islands**

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1 Introduction

The Australian Conservation Foundation (ACF) has a strong interest in ensuring Northern Australia's future is environmentally and socially sustainable. Northern Australia, from Cape York to the Kimberly is of global renown for its strong Indigenous cultures and biological significance. The Tiwi Islands are no exception.

The natural capital provided by the environment provides the basis from which to develop sustainable and resilient communities and economic opportunities. ACF has been prompted to provide this submission in response to the magnitude of the existing and proposed forestry operations, which have so far yielded little socio-economic benefits and have had a demonstrably significant negative impact on nationally threatened species.

This submission has focused on matters of national environmental significance that are directly impacted upon by forestry operations. These matters are covered under the *Environment Protection and Biodiversity Conservation (EPBC) Act 1999* which is the principle piece of national environmental legislation covering the forestry operations. ACF considers that the impacts are unacceptable as they cause the direct loss of enormous areas of prime habitat for nationally threatened species.

ACF recognises that Indigenous communities across Australia and particularly in the north maintain strong links to culture and country. Further, we also recognise that there are significant gaps in a raft of social indicators between Indigenous and Non-indigenous. As a result ACF has invested substantial resources to develop a way forward in environmental management that recognises the customary rights of Indigenous Australians in land management and the development of a cultural and conservation economy. This is briefly discussed in this submission.

1.1 Tiwi Islands

Bathurst and Melville Islands comprise the Tiwi Islands. They are the Traditional lands of eight clans (Yimpinari, Wulirangku, Mirrakawuyanga, Malawu, Munupi, Matiyupwi, Wurankuwu and Tikilaru) (Woinarski and Baker 2002).

ACF makes this submission with respect to the Traditional Owners of the Tiwi Islands and recognises their right to self determination and the need to access to the mainstream economy in the face of significant social disadvantage.

1.2 Limitations

This submission draws primarily on biological data illustrating the Tiwi Islands' national or international conservation significance. Further, the focus is limited to the tall open forests and its associated nationally significant values that are directly impacted upon by forestry operations. We have not addressed mining impacts.

We have not undertaken further research into the pricing of logs, the equity of outcomes for Tiwi Islanders or a number of other issues raised in detail by other organisations.

2 Biological Significance of the Tiwi Islands

The Tiwi Islands are of international conservation significance and support a range of environmental values unparalleled on mainland Australia (Harrison *et al.* 2009; Woinarski and Baker 2002). Values range from the terrestrial, freshwater and marine habitats and include:

- some of the best examples of tall open forest and monsoonal rainforest,
- endemic species found nowhere else,
- significant populations of nationally threatened species,
- habitat for threatened migratory species including marine species, and
- major assemblage of migratory shore birds (Harrison *et al.* 2009; Woinarski and Baker 2002).

The Tiwi Island's unique biological diversity is a reflection of its island status and climate. As part of the Tiwi Coburg bioregion, it receives the highest annual rainfall in the Northern Territory which has given rise to some of the tallest open forests across Australia's monsoon tropics. And, as an island, there are a number of introduced pest plant and animals that are not present which includes species of exotic grasses and notably feral pigs on Melville Island (Woinarski and Baker 2002).

2.1 Forests

While the Tiwi Islands support a variety of vegetation types, only the tall open forest and monsoon rainforest are discussed in this submission.

Tall Open Forests

The tall open forests of the Tiwi Islands occupy about 77% of the land surface or approximately 565,873 hectares. These forests are dominated by Darwin Stringybark *Eucalyptus tetradonta*, Darwin Woollybutt *E. miniata* and Melville Island Bloodwood *Corymbia nesophila* and reach their best development only on the Tiwi Islands (Woinarski and Baker 2002). On Melville Island both Darwin Stringybark and Woollybutt reach up to 30 metres in height (notably high for a tropical open forest within the cyclone belt) and the forest canopy is often greater than 20 meters. (Fensham and Bowman 1992). The tall open forest of Melville Island are also known to support a greater density of large trees (>40cm diameter at breast height) and a greater basal area than its mainland counterparts (Fensham and Kirkpatrick 1992; Woinarski and Baker 2002).

These characteristics of the Tiwi Islands tall open forest render them a significant conservation asset for a number of reasons. Firstly, these tall forests provide

habitat for many fauna species of which there are six nationally threatened species including the Tiwi Island's endemic Masked Owl subspecies and the Brush-tailed Rabbit-rat. Further, they represent a substantial carbon offset opportunity if retained.

Monsoon Rainforest

Closed forests, often referred to as monsoon vine-thicket or monsoon rainforest, reaches its best development in extent in the Northern Territory within the Tiwi Coburg bioregion (Woinarski and Baker 2002). Within this bioregion, the Tiwi Islands subregion also supports up to 15% of the entire rainforest estate within the Northern Territory (Woinarski and Baker 2002). Rainforest in the Northern Territory and typically within the Tiwi Islands subregion is represented by numerous small patches along watercourses and fire protected niches. There are 1261 patches of rainforest that have been mapped on the Tiwi Islands (Woinarski and Baker 2002).

Two rainforest communities found on the Tiwi Islands are endemic, found nowhere else in the Northern Territory (Russell-Smith 1991; Woinarski and Baker 2002). These rainforests are either associated with springs, extending onto seasonally dry adjacent slopes or along the drainage lines with year round moisture (Russell-Smith 1991). The Tiwi Islands support some of the most species rich rainforest in the Northern Territory with one patch on Melville Island identified by Russell-Smith (1991) as the most diverse and includes a number of highly restricted and endemic species (Woinarski and Baker 2002).

The monsoon rainforests of the Tiwi Islands, and those across the Northern Territory, are threatened by fire, feral animals and cattle, environmental weeds and natural disturbance (Russell-Smith and Bowman 1992; Woinarski and Baker 2002). And most recently industrial scale plantation establishment has resulted in loss and degradation of rainforest on Melville Island (Garrett and Snowdon 2008). In addition, Woinarski and Baker (2002) note that changes to natural hydrology arising from broad scale plantation establishment may adversely affect rainforests.

Late dry season fires in savannah or open forest burn hotter resulting in significant disturbance to rainforests (Russell-Smith 1992).

The Tiwi Island rainforest are an important conservation priority because of their uniqueness, importance to endemic species of both flora and fauna, and species richness.

2.2 Fauna

There are many state and bioregionally significant species found throughout the Tiwi Islands. This submission only addresses species of national environmental significance; namely those listed as threatened under the EPBC Act and that are likely to suffer decline as a result of forestry operations.

Table 1. Nationally threatened species dependent upon, or known to use tall open forest.

Common Name	Scientific Name	EPBC Conservation Status
Red Goshawk	<i>Erythrorhynchus radiatus</i>	Vulnerable
Partridge Pigeon (eastern)	<i>Geophaps smithii smithii</i>	Vulnerable
Hooded Robin (Tiwi Islands)	<i>Melanodryas cucullata melvillensis</i>	Endangered
Masked Owl (Tiwi Islands)	<i>Tyto novaehollandiae melvillensis</i>	Endangered
Brush-tailed Rabbit-rat	<i>Conilurus penicillatus</i>	Vulnerable
Butler's Dunnart	<i>Sminthopsis butleri</i>	Vulnerable

Source: Protected Matters Search Tool report generated for the Tiwi Islands cross-referenced with literature cited here.

Red Goshawk

The Red Goshawk is listed as vulnerable under both the *Territory Parks and Wildlife Act* and the Commonwealth's *EPBC Act 1999*.

This species has a distribution across northern Australia including Queensland and Western Australia. Preferring habitat with a mosaic of vegetation types, the Red Goshawk utilises woodlands, open forests, rainforest margins and closed riparian forests. Clearing for agriculture is thought to have caused its decline in much of its east coast range (Garnett and Crowley 2000; Woinarski and Baker 2002).

The Tiwi Islands provides ideal habitat for this species with its high density of monsoon rainforest patches and extensive areas of intact tall open forests and woodland. The Red Goshawk is thought to be relatively more common on the Tiwi Islands than elsewhere potentially supporting up to 160 adult birds (Woinarski and Baker 2002) out of a total population likely to be fewer than 1,000 individuals (Garnett and Crowley 2000); approximately 16% of the national population.

Maintaining a viable population of this species on the Tiwi Islands requires extensive areas of appropriately managed tall open forest that also contain other vegetation types including monsoon rainforest (Woinarski and Baker 2002).

Partridge Pigeon

The Partridge Pigeon is listed as vulnerable under the Commonwealth's *EPBC Act 1999*.

The eastern subspecies occurring on the Tiwi Islands is restricted to the northern part of the Northern Territory where it prefers open forest and woodland typically dominated by Darwin Stringybark and Woollybutt (Garnett and Crowley 2000).

The species has declined in the southern part of its range as a likely result of changed fire regimes (Garnett and Crowley 2000; Woinarski and Baker 2002). On the Tiwi Islands its preferred habitat is being targeted for clearing and conversion to forestry plantations which will have a direct impact on this species (Woinarski 2004; Woinarski and Baker 2002).

Conservation management for this species requires careful management of grassy understorey through appropriate burning regimes (Garnett and Crowley 2000) and the adequate protection of the species habitat.

Hooded Robin

The Tiwi Islands Subspecies of the Hooded Robin is listed as endangered under both the *Territory Parks and Wildlife Act* and the Commonwealth's *EPBC Act 1999*.

The two site specific records for this species on the Tiwi Islands were from tall open forest and 'tree less plain' (Woinarski and Baker 2002). It has not been recorded in over ten years despite repeated surveys specifically targeting this species (TSSC 2006).

Little is known about this species ecology and life history. Treeless plains and fine scale burning are thought to be important for this species (Woinarski and Barker 2002). Clearing for plantation establishment will also reduce habitat (Garnett and Crowley 2000).

Masked Owl (Tiwi subspecies)

The Masked Owl is listed as endangered under both the *Territory Parks and Wildlife Act* and the Commonwealth's *EPBC Act 1999*.

This species, restricted to the Tiwi Islands, prefers tall open forests of eucalypts and bloodwoods and requires tree hollows to roost and nest but occasionally uses monsoon rainforest (Garnett and Crowley 2000; Woinarski 2007). The conservation of this subspecies is dependent on the habitat quality of the tall open forests (Woinarski and Baker 2002).

The Tiwi Islands Masked Owl is directly threatened by the conversion of its optimal habitat, tall open forest, into plantations (Garnett and Crowley 2000; Woinarski 2007). There are estimated to be approximately 1000 breeding pairs occurring on both Melville and Bathurst Islands (Woinarski 2007). Increasing the plantation estate up to 100,000 hectares may lead to a population decline of up to 15% (Woinarski 2007).

Masked Owls (all subspecies) are generally in decline across their entire Australian range. The northern subspecies, with a disjunct population across the tropics, is thought to have been affected by declines in mammal prey abundance (Garnett and Crowley 2000). The Tiwi Islands population may be one of the few populations that are not in decline, if there is no further development of plantations.

Brush-tailed Rabbit-rat

The Brush-tailed Rabbit-rat is listed as vulnerable under the Northern Territory's *Territory Parks and Wildlife Conservation Act 2000* and under the Commonwealth's *EPBC Act 1999*.

This species was formerly widespread and common across northern Australia's monsoon environments in open forest and woodland habitats, at least in the Northern Territory. However, only one record exists for Queensland from 1963 and the species has a patchy distribution, also with few recent records in a number of its Northern Territory locations (TSSC 2008a, Woinarski *et al.* 2001). Frith *et al.* (2006) noted that mainland populations have substantially declined yet the species remains common on the Tiwi Islands. A point also raised by Woinarski and Baker (2002).

On the Tiwi Islands, environmental modelling indicates that the Brush-tailed Rabbit-rat increases in abundance with increasing forest height and increasing distance from water courses (Frith *et al.* 2006). The implications of this in relation to proposed plantation establishment are substantial and are discussed in section 3 (page 9) below.

Threats to this species include habitat alteration, habitat destruction and feral cats. Habitat alteration refers to landscape level changes in habitat characteristics resulting from changing fire regimes, which lead to changes in the structure of vegetation. Habitat alteration also includes the spread of introduced grasses and grazing by introduced herbivores (TSSC 2008a,b). Habitat destruction includes a number of mining proposals in Northern Australia but notably proposals to expand plantations in the Tiwi Islands to 100,000 hectares. Plantation establishment on the Tiwi Islands has the potential to result in the loss of up to 30% of the species habitat (TSSC 2008a).

The Tiwi Islands remains important habitat because fire regimes, although changed, are still relatively benign to the Brush-tailed Rabbit-rat and there are also fewer species of introduced grasses which can also influence fire behaviour (TSSC 2008a). The species decline across the Northern Territory (Woinarski *et al.* 2001) indicates that the Tiwi Islands is the most important refugia for the Brush-tailed Rabbit-rat (Woinarski and Baker 2002).

Butler's Dunnart

Butler's Dunnart is listed as vulnerable under both *Territory Parks and Wildlife Act* and the Commonwealth's *EPBC Act 1999*.

Apart from records from the 1960's in the Kimberly, this species is now only known from the Tiwi Islands. Further, records from the Tiwi Islands are relatively few (Woinarski 2004). Again, tall open forest of Darwin Stringybark and Darwin Woollybutt are thought to be important habitat for this species based on the limited information available (Woinarski 2004,2006).

The Tiwi Island populations are likely to provide some protection, albeit fragile, against threatening process operating on the mainland populations (Woinarski 2004). However, the population on the Tiwi Islands is likely to decline in response to loss of habitat associated with clearing forest for plantation establishment.

Plantation expansion up to 100,000 hectares would result in the loss of up to approximately 20% of habitat¹.

3 Implications of the EPBC Act 1999

The Commonwealth Government's *EPBC Act 1999* is concerned with matters of environmental significance. In this case, these are the six threatened species listed in Table 1 of this report.

In 2001, the then minister for Environment and Heritage approved the establishment of 26,000 hectares of hardwood plantations on Melville Island subject to conditions. These conditions varied, and are summarised below:

- caps on annual clearing,
- buffer zones around significant environmental attributes such as vegetation types or threatened species habitat,
- management plans for soil, weeds, and other considerations,
- detailed impact management plans for the threatened species,
- the undertaking of surveys for threatened species,
- management plan to monitor the impacts on threatened species,
- delegate an Environmental Officer to oversee implementation of conditions
- submit to an independent auditor documents outlining compliance to conditions, and
- a plan to ensure threatened species are accommodated for following cessation of the forestry operations.

A significant amount of criticism of the 26,000 hectare development has emerged from across the Australian conservation sector. Breaches of the above approval conditions were brought to the Commonwealth Government's attention who subsequently brought proceedings against the proponent. Remedial action and monitoring have now been written into a variation of approval. There is no indication that that other approval conditions have been met either.

Relevant objectives of the EPBC Act 1999 are:

- *provide for the protection of the environment, especially matters of national environmental significance*
- *conserve Australia's biodiversity*
- *enhance the protection and management of important natural and cultural places*

¹ See Table 2, page 10, this submission.

- *promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources.*

Clearly, in approving the clearing of thousands of hectares of optimal habitat for threatened species, matters of international significance, the objectives of the Act have not been met.

3.1 Future Proposals and Measuring Significant Impact

Provided here is a reassessment of ‘significant impact’ of existing and proposed plantation areas against three models; the existing 26,000 hectares, an arbitrary 60,000 hectares and at 100,000 hectares. This is to illustrate the amount of habitat lost for species listed as either endangered or vulnerable if further clearing is proposed.

The basis for the total area of potential habitat is explained in the footnote at the bottom on the page. This habitat loss data is applicable to the six species listed in table 1 of this submission. As there is a great deal of uncertainty surrounding the Hooded Robin, discussion here will focus on the remaining five.

Table 2. Area of habitat and habitat loss following plantation expansion.

Total Area of Potential Habitat	565,873ha ²
26,000ha reduction	539,879ha
% of tall open forest habitat lost	4.6%
60,000ha reduction	505,873ha
% of tall open forest habitat lost	10.6%
100,000ha reduction	465,873ha
% of tall open forest habitat lost	17.8%

The impact on each of the five threatened species is undoubtedly and demonstrably significant at each of the clearing levels outlined above. *Significant impact* is defined as an impact of notable consequence in regard to its context or intensity (DEH 2006). In 2001, the then Department of Environment and Heritage approved the proposal to commence clearing 26,000 hectares with a variety of conditions; a controlled action under the *EPBC Act 1999*. Providing approval for this action pursuant to section 133 of the *EPBC Act 1999* with regard to section 18 and 18A of the same *Act* is in itself an admission of significant impact.

The loss of 4.6% of habitat, under already approved operations, for any of the threatened species could quite probably be argued as having unacceptable impacts on listed species. How thoroughly were population viability, genetic diversity and

² This is the total estimated area of tall open forest based on the figure of 77% of the total area of the Tiwi Islands (7349km²) provided in Woinarski and Baker (2002). This is conservative estimate as it assumes that species are evenly spread throughout the tall open forest across both islands. The TSSC (2008a) noted up to 30% habitat loss for the Brush-tailed Rabbit-rat.

other scientific methods of assessing the resilience of threatened species populations investigated? Their endemic status, potential extinction from the mainland or general paucity of mainland records compared with Tiwi Islands records for the five threatened species makes the Tiwi Islands some, if not the, most significant habitat for these species.

In December 2008, the Brush-tailed Rabbit-rat was added to the threatened species list of the *EPBC Act 1999*. As discussed earlier in this submission, this species has dramatically declined across its mainland range. It now only occurs with any measure of abundance on the Tiwi Islands and plantation expansion and associated activities represent one of the most significant threats to this species (Frith *et al.* 2006). This species was not considered in the original referral process and there have been no provisions to protect this species under the EPBC Act approval conditions from 2001.

The tall open forest principally targeted for clearing and conversion to plantations, likely constitutes the most significant habitat for the Brush-tailed Rabbit-rat within its entire range. This is also the case with the Tiwi Island subspecies of Masked Owl.

Any increase in the plantation estate will have a demonstrable and an unacceptable impact on threatened species. Clearing of this magnitude represents actual losses of habitat that cannot be offset by other measures as they are either not found elsewhere or in sharp decline in other areas. It is a physical and actual loss of habitat that cannot or is highly unlikely to be utilised by any of the five or six threatened species once it is removed.

Minimising the potential impact through the protection of nest trees or other measures is dubious because, while the forest is being cleared, data is allegedly being collected on the effectiveness of these measures. The precautionary principle has not been applied.

4 National Reserve System

The Tiwi Islands represents one of two subregions within the Tiwi Coburg bioregion. This bioregion enjoys of 22% representation within the national Reserve System. However, this is entirely represented by the Garig Gunak Barlu National Park on the Coburg Peninsula. The Tiwi Island subregion lacks any formal reserves.

The Tiwi Islands possesses a number of vegetation types not represented on the Coburg Peninsula. Further, there are a number of significant species that are still relatively abundant on the Tiwi islands that are otherwise in marked decline on the mainland (Woinarski and Baker 2002).

For these reasons the Tiwi Islands remains a high priority for the establishment protected areas under Australia's National Strategy for the National Reserve

System (NRS). The need for greater comprehensiveness and adequacy of the NRS in the Tiwi Coburg bioregion represents an opportunity to establish large Indigenous Protected Areas. These options should be fully explored along with their associated economic, employment and social well being potential.

5 Healthy Country, Healthy People

As Northern Australia faces increasing development pressures and conservation challenges, many remote and regional indigenous communities are significantly disadvantaged. Improving social wellbeing and accessing the mainstream economy do not need to come at such a high price to the environment.

Cultural and Natural Resource Management, across Northern Australia has the potential to provide substantial positive socio-economic and environmental outcomes (Sithole *et al.* 2008). Recent research is emerging of the relationship between health, environmental management and subsequent economic, employment and education opportunities resulting from Indigenous NRM that also addressed cultural aspects of land management (Garnett *et al.* 2009).

Unfortunately, Northern Australia's ecological integrity is starting to unravel as pest plants and animals displace and out-compete native species, fires burn hotter over larger areas and the pressure from pastoralism is increasing (Woinarski *et al.* 2007). Sustainable land management needs to occur across all land tenures if Northern Australia is to retain its values and avoid the catastrophic consequences of poor environmental management that now has occurred in Southern Australia. Species extinction, salinity, drought, erosion and the continued fragmentation of the last remnants of native vegetation has substantially reduced social and ecological resilience across large areas. This needs to be avoided in Northern Australia.

6 Alternative Economic Opportunities

ACF has made substantial investment in the development of alternative economies for Northern Australia with a particular focus on Cape York (Hill and Turton 2004), the Kimberly (Hill *et al.* 2006) which has been synthesised into a proof-of-concept study: *A Cultural and Conservation Economy for Northern Australia* (Hill *et al.* 2008).

Culture and Conservation Economy

ACF, with a number of partner organisations, have invested considerable effort into developing and advocating strongly for support of a 'cultural and conservation' based economy modelled on Ecotrust Canada based in Vancouver. This model, when adapted to the Australian context, has the potential to deliver culturally appropriate and ecologically sustainable development across Northern Australia (Hill *et al.* 2008).

The culture and conservation economy is one that:

- Recognises Aboriginal culture, rights and title,
- Builds and supports strong, vibrant and sustainable communities,
- Provides meaningful work, good livelihoods and sustainable enterprises and,
- Conserves and restores the environment – supports caring for country.

This program is influenced by international standards on engagement with Traditional Owners in delivering environmentally sustainable and socially equitable projects. The objective of this initiative is to deliver social and ecological resilience.

A Cultural and Conservation Economy for Northern Australia (Hill *et al.* 2008) has been provided as an attachment to this submission (via a link to our website: http://www.acfonline.org.au/uploads/res/Land_WaterCCEReport.pdf).

Carbon Markets

On the Tiwi Islands, consideration needs to be given to maintaining and enhancing existing land management practices and identifying emerging economic opportunities that help to protect the environment. For example, the federal governments recent announcement of providing \$10 million to help Northern Australian Indigenous communities to explore the potential of future carbon markets. A key element of carbon savings across northern Australia is ensuring hot, late dry season fires are significantly reduced through early cool burns and other methods. This management is also required for the maintenance of habitat for threatened species and reduces threats to rainforests. Combining conservation, land management and capturing carbon markets represents a very real opportunity and should be fully investigated.

Obviously, the Tiwi Islands tall forests represent one of the most optimal opportunities for carbon offset within the tropics. Their high biomass, indentified in previous research on their height and basal area (Fensham and Bowman 1992; Fensham and Kirkpatrick 1992; Woinarski and Baker 2002) suggest that the Tiwi Islands tall open forests are potentially of a higher commensurate value than more common structures of savannah.

Indigenous Protected Areas

A review of Indigenous Protected Areas found that there is considerable potential for social, health, education and economic benefits arising out of the IPA program (Gilligan 2006). ACF considers these key elements as vital to securing strong conservation outcomes and sustainability in regional and remote Aboriginal communities. ACF believes there is increasing recognition that the socio-economic outcomes for remote communities resulting from conservation and land management initiatives requires equal, if not greater support, from state and federal government agencies other than those concerned with the environment i.e.

a whole of government approach. A number of institutions are now calling for greater coordination between environment, health and community agencies.

7 Conclusion & Recommendations

ACF respects and recognises the aspirations of Indigenous communities to establish economic enterprises and access the mainstream economy. The need to facilitate and support new initiatives that bridge the gap in a variety of social measures between mainstream society and remote Indigenous communities has never been greater.

However, we question the need to have such a drastic impact on biodiversity and the natural environment, especially when the returns to the community appear to have been negligible³. Indeed, over \$100 million was the estimated potential value of Tiwi Island timber associated with forestry operations⁴. Forest already approved for clear that has not yet been cleared is probably worth more retained as a carbon offset⁵.

To-date, the objectives of the EPBC Act 1999 have not been met on the Tiwi Islands. This failure has caused what is likely to be irreversible damage to what was once optimal habitat for a number of national threatened species. There is a demonstrable need to further advance conservation on the Tiwi Islands. The Islands on the whole are internationally significant and the tall open forest, some of the best of the kind, are of national significance in providing habitat for up six nationally threatened species. The rainforests are also some of the most significant in the Northern Territory and are unique in an Australian context.

The nexus between Indigenous NRM (well resourced) and associated positive socio-economic outcomes, the emerging carbon market and the need for early dry season burning to manage threatened species habitat provide a compelling case for halting further plantation expansion and re-thinking how best to provide legitimate economic opportunities for Tiwi Islanders.

7.1 Recommendations

1. ACF recommends that the Tiwi Islands forest and woodland are valued for the carbon offset potential and this includes forest already approved for clearing.
2. On the basis that there has been a failure to adequately implement and enforce the EPBC Act 1999, ACF recommends that a moratorium be placed on already approved clearing and that no additional clearing will be permitted. Further clearing will clearly and demonstrably have an unacceptable impact on nationally threatened species

³ ABC Online, Stateline Northern Territory, *Forestry on the Tiwi Islands* (Transcript) broadcast 29/09/2006.

⁴ ABC Online, Stateline Northern Territory, *Interview with the Secretary of the Tiwi Land Council, John Hicks*. (Transcript) broadcast 29/09/2006.

⁵ ABC News, *Logging Tiwi Forests a \$110 million mistake: professor*. (23/03/2009).

3. In response to the emerging nexus between environment, economy and health in remote and regional communities, ACF recommends that the options for a culturally and environmentally appropriate economy are fully explored to achieve an ecologically and socially resilient future.

8 References

- Fensham RJ and Bowman DMJS (1992) Stand structure and the influence of overwood on regeneration in tropical eucalypt forest on Melville Island. *Australian Journal of Botany* **40**, 335-352.
- Fensham RJ and Kirkpatrick JB (1992) Soil characteristics and tree species distribution in the savannah of Melville Island, Northern Territory. *Australian Journal of Botany*. **40**, 311-333.
- Frith RSC, Woinarski JZC, Brennen KG and Hempel C (2006) Environmental relationships of the brush-tailed rabbit-rat, *Conilurus penicillatus*, and other small mammals on the Tiwi Islands, northern Australia, *Journal of Biogeography*. **30**, 1820-1837.
- Garnett ST, Sithole B, Whitehead PJ, Burgess CP, Johnston FH and Lea T (2009) Healthy country, healthy people: policy implications of links between Indigenous human health and environmental condition in tropical Australia, *The Australian Journal of Public Administration*. **68** (1), 53-66.
- Garnett ST and Crowley GM (2000) *The Action Plan for Australian Birds 2000*. Environment Australia, Canberra.
- Garrett P and Snowdon W (2008) *Tough Measures Placed on Tiwi Plantations*. Media Release, Commonwealth Government, Canberra, online:
<http://www.environment.gov.au/minister/garrett/2008/pubs/mr20081016.pdf>
- Gilligan B (2006) *The Indigenous Protected Area Programme 2006 Evaluation*. Department of the Environment and Heritage, Canberra.
- Garrison L, McGuire L, Ward S, Fisher A, Pavey C, Fegan M and Lynch B (2009) *An inventory of sites of International and national significance for biodiversity values in the Northern Territory*. Department of Natural Resources, Environment, The Arts and Sport, Darwin, NT.
- Hill R, Golson K, Lowe P, Mann M, Hayes S and Blackwood J (eds) (2006) *Kimberly Appropriate Economies Roundtable Forum Proceedings*. Convened 11-13 October 2005, Fitzroy Crossing WA, by the Kimberly Land Council, Environs Kimberly and Australian Conservation Foundation. ACF, Cairns.
- Hill R, Harding EK, Edwards D, O'Dempsey J, Hill D, Martin A and McIntyre-Tamwoy S (2008) *A Cultural and Conservation Economy for Northern Australia*. Final Report to Land & Water Australia, Canberra, ACT from ACF on behalf of project partners.

- Hill R and Turton SM (eds) (2004) *Culturally and Appropriate Economies for Cape York Peninsula*. Rainforest CRC and the Australian Conservation Foundation, Cairns Queensland.
- Sithole *et al.* (2008) *Aboriginal Land and Sea Management in the Top End: a Community Driven Evaluation*. CSIRO, Darwin.
- TSSC (2006) Hooded Robin Listing Advice Threatened Species Scientific Committee Advice to the Minister, online:
- TSSC (2008a) *Conilurus penicillatus (Brush-tailed Rabbit-rat) Listing Advice*. Threatened Species Scientific Committee Advice to the Minister, online:
<http://www.environment.gov.au/biodiversity/threatened/species/pubs/melanodryas-cucullata-melvillensis-listing.pdf>
- TSSC (2008b) *Approved Conservation Advice for Conilurus penicillatus (Brush-tailed Rabbit-rat)*. Threatened Species Scientific Committee Advice to the Minister, online:
- Woinarski J (2006) *Threatened Species of the Northern Territory, Butler's Dunnart Sminthopsis butleri*. NRETA Fact Sheet, Northern Territory Government, Darwin.
- Woinarski J (2007) *Threatened Species of the Northern Territory, Masked Owl (Tiwi subspecies) Tyto novaehollandiae melvillensis*. NRETA Fact Sheet, Northern Territory Government, Darwin.
- Woinarski JCZ (2004) *National Multi-species Recovery Plan for the Carpentarian Anthechinus Pseudantechinus mimulis, Butler's Dunnart Sminthopsis butleri and Northern Hopping-mouse Notomys aquilo 2004-2008*. Northern Territory department of of Infrastructure, Planning and Environment, Darwin.
- Woinarski J and Baker B (2002) *Biodiversity Audit – Bioregional Case Study, Tiwi Coburg Bioregion, Northern Territory*. A report to the National Land and Water Audit, Parks and Wildlife Commission of the Northern Territory, Darwin.
- Woinarski JCZ, Milne DJ and Wanganeen G (2001) Changes in mammal populations in relatively intact landscapes of Kakadu National Park, Northern Territory, Australia. *Austral Ecology*, **26**, 360-370.

9 Attachment

- Hill R, Harding EK, Edwards D, O'Dempsey J, Hill D, Martin A and McIntyre-Tamwoy S (2008) *A Cultural and Conservation Economy for Northern Australia*. Final Report to Land & Water Australia, Canberra, ACT from ACF on behalf of project partners.