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Use of forests in the Blyth and Liverpool Rivers catchments, Arnhem Land NT.

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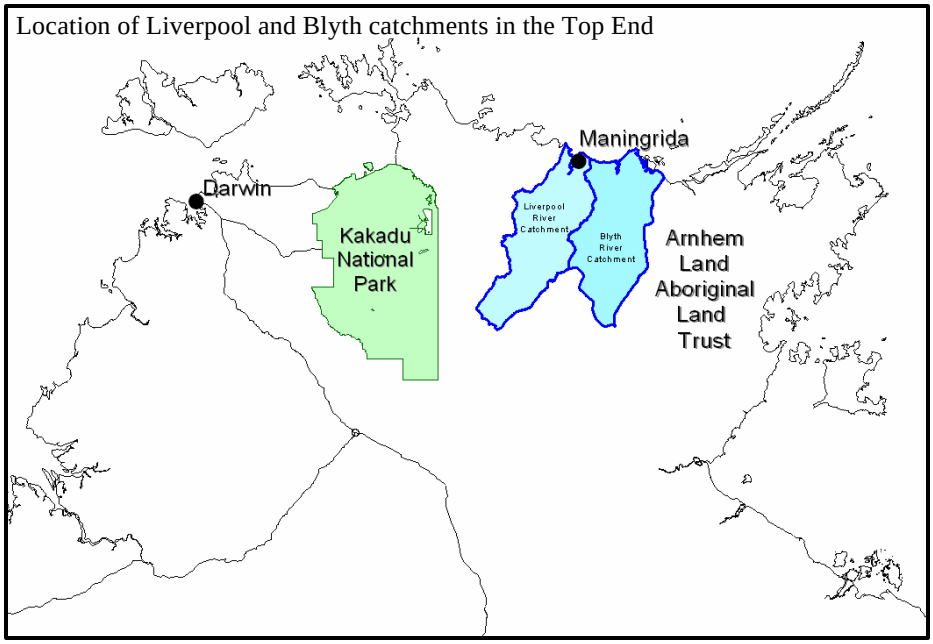
Abstract

The study region is a vast and productive natural estate that is managed and maintained by its traditional owners to provide social, cultural and economic (including subsistence) values. The forest is not seen as trees but as an ecosystem of which the people and their culture are part. The vast area that is traditionally managed is a globally important conservation estate. The cost of management of this land and its resources is high, but the local value of the outcomes important enough to justify this cost. The value of this natural or native state of the environment is now seen as an economic resource by the traditional owners who need to create employment opportunities in an area with very few, cover the cost of properly managing the land and maintaining social and cultural values.



Map 1.

Introduction

Utilisation of forest resources generally refers to the use of the timber produced in the trees of the forest. In the region described in this report the forest and its resources are treated as one, and are much more than just the value of the timber. In fact timber qualities in the region are generally poor due to climate, soil, fire and predation, but there is still significant use of timber for subsistence tools, basic shelter and the arts and crafts industry (which is often based on traditional tools). An attempt to harvest the timber resources of the region was undertaken in the 1960's and 70's when an NT Government imposed timber mill was established to harvest Callitris intratropica, a termite resistant timber. The resource was quickly exhausted and the management practices imposed by foresters totally unsuitable to the local population. The non-timber resources of forests are many. The most important non-timber products for the people of the region are the flora and fauna that reside within the area described as a forest. The subsistence value of these resources is considerable and has been studied to a degree in certain locations (e.g. Altman 1987, Meehan 1982, Vardon et al 1998). Several commercial enterprises based on forest resources have also developed.

This report will highlight the value of the productive natural environment, focussing on forest habitats and values to the indigenous landowners of the region. It will be seen that the value of the forest is not in the timber but in the forest ecosystem as a whole and the resources that it provides. This report has been produced after considerable discussion about the subject with a wide variety of Traditional Landowners from the region. It is from the indigenous inhabitants that the general trends discussed originate.

Location

The township of Maningrida is located on the mouth of the Liverpool River where it enters the Arafura Sea on the north coast of Australia. It is located in a region known as Arnhem Land which is held under the unique title of inalienable Aboriginal freehold land. Arnhem Land was declared in the 1930's and the township of Maningrida was established in the 1950's. Arnhem Land is approximately 90 000 square kilometres in size and is bounded by the Gulf of Carpentaria to the east, the Arafura Sea to the north and leasehold pastoral properties and national parks including Kakadu National Park to the west and south. The region that this paper concentrates on is the north central region comprising the lower catchments of the Blyth and Liverpool Rivers, an area of almost 10 000 square kilometres (see map 1). Maningrida is the only township within the catchments. It has a population of over 2000 people and there is a population of up to 800

people that can be found residing in the 32 outstations or homeland communities serviced from Maningrida.

The Arnhem Land trust was declared prior to significant colonisation of the region by non-indigenous people. A very positive result of this fact is that traditional land ownership and cultural values remain relatively intact. One of the many benefits of this is that the history of traditional resource utilisation and land management practices and their impact on the forest environments remain intact, as does the knowledge on which they are based.

Photo 1: *Allosyncarpia ternata*
An escarpment and monsoon forest tree endemic to the region. It is a wonderful shade tree and has good timber. Traditionally the hard timber was used to make fighting sticks.
Photo J Russell-Smith

Background

The Bawinanga Aboriginal Corporation, a benevolent society, was incorporated in 1979 (after several years of operation) to assist the Traditional Aboriginal landowners of the region with the services they require to return to and continue living on their traditional clan estates. The grouping of landowners who formed this corporation belonged to or are closely related to the three major language groups of the region which are; Bararra, Kunwinkju and Rembaranga. It is the underlined beginning, middle and end sections of these names that combine to determine the name of their corporation – Bawinanga.

There are 32 small communities called outstations that have been established throughout the region, of which more than half are permanently occupied. A population of up to 800 people lives on these outstations during the most accessible time of the year (the dry season). Communities are made up of simple houses with solar power, a water supply and sometimes a school. All communities have road access and some have airstrips for wet season access, or are located close by the coast or a river for boat access.

The indigenous culture of the region remains strong. English is not the first language spoken and activities such as ceremonies and funerals continue to be performed in a traditional manner. Hunting is an important part of life and culture and strong cultural responsibilities for land and resource management remain.

Ownership of land and resources and responsibility for management of land and resources are handed down from both parents. Land ownership is handed down from ones father but responsibilities for land and resource management can also come from ones mother in relation to her traditional estate. It is common therefore for people to talk about their country (which is their estate from their father's family) and their mother's country, to which they have resource and management rights and responsibilities. This description of land and resources ownership and responsibilities shows that in most cases in this region there are many people that have ownership of and access to each estate and its resources. This communal ownership along with conservative attitudes assists in the maintenance of the existing status of the land. As does the statutory obligations of the Land Councils, who ensure that all stakeholders are consulted prior to any agreement for use of the land for any commercial purposes, even if the proponent is one of the traditional owners.

In keeping with cultural values the members of the corporation decided that a modern land management program was needed to deal with modern issues. The introduction of weeds and

feral animals and the erosion problems caused by vehicles and roads were the main concerns. The Djelk Rangers undertake the control, research, monitoring and management of these modern threats. They also assist and resource Traditional Owners to undertake traditional land management practices on their estates. The major tool of traditional land management is fire. National Parks of the Top End of the Northern Territory have generally taken on a conservation management policy that reflects traditional management practices. This is not always successful and the reasons behind traditional management practices are not well understood. Recent studies by Bowman (e.g. Bowman et al 2001), working with senior traditional owners of the region are trying to address this problem.

Photo 2
Callitris intratropica
Cypress Pine

Photo J. Russell-Smith

The physical environment - Climate

The township of Maningrida is situated at Latitude (deg S): 12.0482 and Longitude (deg E): 134.2263. Therefore it is within the climatic zone known as the wet/dry tropics. The region has distinctive wet and dry seasons as the equatorial monsoon trough moves north and south according to seasons. The summer is the wet season with almost all of the rain falling from December to April. The dry season is characterised by no rain and is the months of June through to September. The months between the dry and the wet are the transition months, the end of the dry being described as the build-up when the temperatures and humidity begin to rise as the monsoon trough starts to move south. (see Table 1)

Some Climate averages for Station: 014400 MANINGRIDA Commenced: 1958;

Element	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean daily max temp - deg C	32.2	31.8	31.7	32.4	31.8	30.4	30.1	30.8	31.7	32.6	33.3	33	**31.8**
Mean daily min temp - deg C	24.7	24.6	24	22.8	21	18.4	17.3	17.9	19.9	22.8	24.7	25	**22**
Mean 9am relative humidity - %	81	84	83	78	75	73	73	72	70	70	71	77	**76**
Mean 3pm relative humidity - %	74	76	73	62	57	51	50	52	56	60	63	70	**62**
Mean monthly rainfall - mm	261.8	263.2	289.4	122.7	23.7	1.2	1.7	0.1	1.9	14.5	56.3	232.1	**1268.6**
Mean no. of raindays	17.4	18.2	18	10.5	3.9	0.8	0.5	0.2	0.2	1.8	5.5	13.7	**90.6**
Highest monthly rainfall - mm	707.4	551.7	1224.1	735	203.1	8.6	17.7	1.5	48	71.4	290.3	603.3	
Lowest monthly rainfall - mm	63.1	44.2	71.8	8	0	0	0	0	0	0	0.5	13.5	
Mean daily evaporation - mm	5.3	4.8	4.8	5	4.8	4.5	4.4	4.9	5.8	6.5	6.1	6.1	**5.3**

Table 1 Information from the Bureau of Meteorology.

The physical environment - Geography

The physical landscape of the region ranges from rugged sandstone plateau and escarpment to the south, down the catchment through a complex mosaic of gently undulating lowland plains to extensive floodplains and coastal environments (Griffiths et al 2000). The geology and resulting geomorphology as can be expected have a significant role in determining the different habitat types found in the region. If we are to concentrate on the forest resources of the region then we

shall mostly be discussing the extensive areas of gently undulating lowland plains which are characterised by eucalyptus open forest and woodlands and which dominate the vegetation of the region (Griffiths et al 2000).

The physical environment - Vegetation

The vegetation of the region has been most recently and thoroughly described in "Vegetation of the Maningrida region, north-central Arnhem Land" Griffiths T, Bowman DJMS, Cowie I and Fensham R, Technical report no.1, Key Centre for Tropical Wildlife Management Northern Territory University. 2000.

The aims of this report were - to provide a broad description of the diversity of vegetation in the region, to identify species of conservation significance and present a useful habitat map.

Photo 3 – Eucalyptus Open Forest – Stringybark (*E. tetradonta*) front right

1085 species of plants were identified of which 20 were labelled as having probable conservation significance. A mere 3.4% (38 in number) of identified species are alien of which only a few are regarded as serious weed threats and are being dealt with accordingly.

Eucalyptus open forest is the dominant vegetation habitat of the region. It comprises almost 40% of the area (Griffiths et al 2000). This habitat is characterised by sandy soils, which are the sandsheets originating from the sandstone plateau to the south. These soils dominate the region and are generally poor as they are heavily impacted on by the seasonality of climate resulting in much of the nutrient value being transported onto the floodplains downstream. Eucalyptus species such as *tetradonta*, *miniata* and *bleeseri* overwhelm most other tree species.

There are a number of melaleuca or paperbark forests found on each of the river and floodplain systems. The dominant species in its forest form is the *Melaleuca cajaputi*, whilst the riparian zones are dominated by *Melaleuca viridiflora*. These habitats make up over 5% of the region (Griffiths et al 2000)

The estuarine areas around Maningrida provide considerable habitat for Mangroves. There have been 34 Mangrove species identified in the region, mainly occurring as a fringe immediately adjacent to the river (Griffiths et al 2000). Harry Messel (e.g. Messel et al 1979 & 1981) also studied the mangroves during his crocodile surveys of the region. Detailed Mangrove studies of the Northern Territory have been limited to Darwin Harbour and the coastal parts of Kakadu National Park. (e.g. Eliot et al 2000)

Unusual and valuable habitats such as monsoon vine-forests and thickets have also received specific attention. They are limited by fire and largely confined to a coastal/ subcoastal belt (Russell-Smith and Dunlop 1984). A number of valuable timber species can be found in these habitats but their rarity prevents their large-scale use and exploitation. Another form of monsoon thicket or jungle can be found around springs and in areas not subject to fire in and around the escarpment and plateau country.

Photo 4 – Monsoon jungle sited on a spring on the plateau country.
Photo J. Russell-Smith

Management Practices

The maintenance of the existing environment is a high priority for the regions traditional owners. The most important traditional management practice that is applied to help maintain the existing environment is fire. The seasonality of the wet dry tropics results in enormous plant growth during the short summer wet season and then little or no growth during the dry season.

The most abundant grass growth during the wet season is that of annual sorghum species which produce massive fuel loads as they dry off and die at the onset of the dry season. Traditional land managers burn this fuel load for a variety of reasons. The fuel load reduction begins early in the dry season before the ground has lost all of its moisture and the evenings are damp with dew. Later in the year electrical storms produce many fires that can be devastating to the flora and fauna if not checked early by the intricate pattern of fire breaks. When the ground is moist the grass regrowth becomes an attractive feeding ground for the larger herbivores such as Wallabies and the openness of the area makes it an ideal hunting ground. Fires are also directly used for hunting. A fire drive is the term used to describe the use of fire to move animals into a particular area or towards a particular location for hunting. This is a valuable method of hunting and provides substantial protein to the local population. Wallabies and Goannas are two of the prized targets. There are a number of quality writings about this subject (Langton 1998, Yibarbuk et al 2001 & Bowman et al 2001).

The continuation of the fire management practices that have been developed and refined over many thousands of years in this strongly fire influenced environment is very important. The failure to manage land via the use of fire in surrounding regions that are unfortunately uninhabited has seen destructive fire regimes develop. These new regimes based on lightning strike or accidental ignition are generally at the wrong time of year and burn out large tracts of land, at an intensity that is too great for many species to survive or escape and have devastating impacts on biodiversity. As well as negatively impacting on biodiversity late and large fires have a very negative impact on the carbon cycle, with high volumes of carbon being given off and very little is retained compared with an early season managed fire.

The utilisation of favoured resources for subsistence purposes is also described as a management practice as there is evidence to support the idea that it promotes the species and ensures its numbers will be numerous each year. A study of freshwater turtles has shown that in billabongs where the turtles are heavily harvested the reproductive age of the turtle is lower so the number of turtles reaching reproductive age is higher than lesser-harvested waterbodies.
Certain vegetable species were managed for further production. For example, Yams were dug from the same location year after year. The women would dig up the yam and replace the top part of the tuber into the hole, and fill the hole so that it would grow back next year. The repeated digging and softening of the soil also assisted the yam and the harvesters.

Modern land management practices are also utilised to help maintain the vast and important natural environment. Modern land management deals with modern threats such as weed incursion, feral animal invasions and erosion problems created by roads and vehicle use. The local community has established the Djelk Rangers who represent the various language groups of the region and assist the traditional owners with their land management needs and concerns.

Subsistence and Cultural uses

The study region is expansive and remote. The dramatic variation in seasons results in many small communities being isolated for several months during the wet season. The only access to these communities when the extensive floodplains are underwater and the major rivers are in flood is, via air if the community has an airstrip or, via sea and river if the community is so placed. The cost of living in these isolated communities is considerable even before considering the added cost of supplies during months of flooded isolation.

Almost all outstation residents earn their income from either art and craft production or welfare, the majority on the latter. There are currently few other options. Air charters to bring basic supplies cost several hundred dollars, which is a very large amount considering the minimal incomes that people survive on.

The reason behind this description of costs of living is to emphasise the value of hunting and gathering as part of the local economy. The need to obtain food resources from the bush is far more of an economic need than most people realise. It has been shown in a variety of studies on subsistence use of natural resources in the region (Altman 1987, Meehan 1982, Griffiths pers comm) that daily hunting is required to sustain families that choose to remain living on and managing their traditional estates. Exceptionally productive hunts also provide valuable supplies of protein to residents of the township of Maningrida.

The existence of a wide variety of native species and considerable traditional knowledge about the valuable uses of each species remains as an important part of culture and ceremony. The majority of the uses for forest product tools have been superceded by modern manufactured goods but particular tools that are as or more efficient, effective and more economical than modern tools are still utilised. The use of traditional tools such as spears, digging sticks and dilly bags are commonplace, as is the use of string, twine, bark and native bee's wax just to name a few simple and useful items. Firewood is also the only fuel for cooking in the vast majority of cases. The understanding and use of firewood and the identification of types of wood for

different cooking or other applications is knowledge that is generations old and knowledge that is drawn upon almost daily.

Ceremonies see significant employment of native products for the ‘celebration’ of the event. Musical instruments such as didgeridoos and clap sticks are locally made and particular timbers and construction methods provide a variety of sounds. Decorations made from a diverse range of products are used to adorn people and implements. Bird feathers, coloured ochre’s, bones and woven items including strings are popular. The consumption or taboo of particular bush foods is also related to certain ceremonial practices.

Previous page
Photo 5 – *Callitris intratropica* (Cypress Pine)
An unsuccessful Government run timber mill was established in Maningrida in the late 1960's to mill this species. It is one of the few termite resistant endemic timbers. It has a variety of traditional uses including medicinal, glue and many timber uses.
Photo J Russell-Smith

Commercial uses

The members of the Bawinanga Aboriginal Corporation have decided that no destructive land uses take place in the region. Strong cultural attachments to land, place and resources result in the desire to maintain traditional land uses and management practices. The existing natural environment is vast, productive and has relatively few non-native incursions.

As the recognition of the need for employment and income generation increases, the value of the productive native environment has been increasingly looked at from a commercial perspective. Many employment and income generating proposals involving destructive land uses (e.g. forestry and grazing) have been rejected. These almost always involve large companies owning the entire project with local landowners receiving rental incomes and minor employment opportunities. Corporation members wish to utilise the productive native environment in a small scale, non-destructive fashion, with at least 50% ownership of each venture and considerable employment opportunities.

There are two examples of this that are worth highlighting. Firstly Bawinanga Safaris, a buffalo, wild boar and waterfowl hunting safari business was established in 2000. The business is a joint venture between the Bawinanga Aboriginal Corporation and Wildlife North Australia and is the only licensed operator to undertake hunting safaris in the region. The business provides trophy royalties, wages for guides, rental for campsites and a share in the profits of the business. The fact that Bawinanga Safaris provide truly wild hunts, of truly wild animals in a vast natural environment with quality hunting guides with excellent traditional bush skills is the marketing edge that is proving this business successful. From the local perspective the fact that the business is locally owned and much of the income stays within the community also helps the prospects of the company.

The second example is another joint venture that the Bawinanga Aboriginal Corporation is involved in, this time with Jurlique International, a quality natural skin care and medicinal product company based in Adelaide. This joint venture involves the research, supply, manufacture and marketing of native medicinal products. The first product that is being developed is the juice of the fruit of a native tree to the region – Morinda citrifolia. The juice is already marketed as Noni juice from some Polynesian countries where the tree is also native. It is a high priced product

with many claimed medicinal values. A wild collection of fruit has so far provided enough fruit to develop the product and now small-scale horticultural developments, including the enhancement of natural populations are taking place.
Once products are on the market and the business is established the aim is to experiment with a variety of native species that have been traditionally used for medicinal purposes and examine their potential as commercial products.

There are a number of other small-scale commercial enterprises that are being undertaken by members of the Bawinanga Aboriginal Corporation. These may not be directly related to a forest environment but the existence of the intact ecosystems dramatically enhances the productivity of each component. The wild harvest of Saltwater Crocodile eggs, their incubation and sale to Crocodile Farms provides considerable seasonal employment and income for those involved. Seasonal employment also sees the collection of gravid female freshwater turtles and the incubation of their eggs and sale of the hatchlings to the pet trade. The suitability of this species for the food trade, both locally and internationally is also being explored. Native plants are grown in a nursery and supplies are used locally and sold to the nursery and landscape gardening industry in Darwin, and some unusual plants are being explored for their landscaping or food value. Certain harmless reptiles, including spotted tree goannas and childrens pythons are legally collected and if all permit conditions are met they are sold to the pet trade. This is a very small trade but results in significant financial additions to welfare for the small number of people involved.

Arts and crafts

Tables 2 and 3 are from the Maningrida Arts and Culture annual report (2000/2001). Table 2 shows a comparison of products produced in the previous financial year also. The three most dominant products are always Bark paintings, wooden carvings and fibre crafts such as woven baskets and decorations. Bark paintings are made exclusively from the bark of the Stringybark

Tree (*Eucalyptus tetradonta*) and although not always the greatest in number of artworks produced are of the greatest value. The removal of the bark kills the tree. Often more than one painting is produced from each tree bark. The number of such trees in the region is immeasurable and therefore no concerns are held for the sustainability of the use of this resource.

Image 1 - Bark painting
Owen Yalandja
Year: 2002
Language: Kuninjku
Region: West Central Arnhem Land
Subject: Country at Mankorlod

Dimensions: 900 x 250mm

The creation of fibrecrafts does not generally destroy the plant from which the fibre is obtained, although some of the plants that produce the dyes for colouration are completely removed and utilised. Fibre crafts are exclusively produced by women. A variety of fibres are utilised but the fronds of the Pandanus Palm *(Pandanus spiralis)* is the most commonly used.

Table 2: Range and cost of artwork– Maningrida arts and Culture

Item	Number 2000-01	Cost 2000-01	% of Total 2000-01	Number 1999-00	Cost 1999-00	% of total 1999-00
Bark Painting	937	$ 157,025	43%	1,476	$207,350	48%
Sculpture	1111	$ 121,560	34%	1,183	$127,940	30%
Fibre	1070	$ 64,570	18%	1,227	$74,965	17%
Instruments & Tools	77	$ 5,160	1%	131	$8,085	2%
Regalia	54	$ 1,160	0%	26	$1,465	0%
Painting on paper	40	$ 12,575	4%	7	$1,750	0%
	3289	$ 362,050	100%	4050		

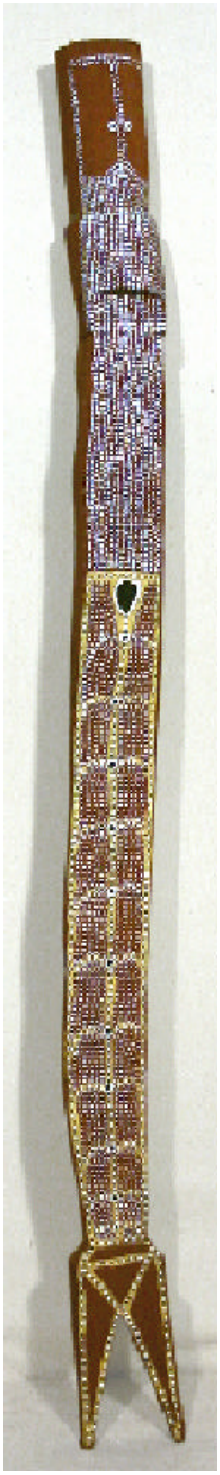


Image 2 - sculpture
Owen Yalandja
Year: 2001
Language: Kuninjku
Region: West Central Arnhem Land
Subject: Yawkyawk Spirit Figure
Dimensions: 1570mm tall 70mm wide

The third of the common products are sculpture. Sculptures, unlike the previously documented art works have provided some concern about the sustainability of the use of the raw materials. The main tree that is used for sculpting is *Bombax ceiba* and a study into its use was commissioned. The report,

"Aboriginal Artifact Production in the Maningrida Region: Harvest Sustainability and Pest Control in the Carving Wood Industry (Anne Phillips NTU 2001)" studied a total of 18 vine-thickets within floodplain and coastal habitats. The density, distribution, and stand structure of the *Bombax ceiba* was assessed. In short the following results can be reported: Regional *B. ceiba* populations were estimated as 45,390 stems within floodplain and 37,189 stems within coastal habitats. Harvest intensity varied from 11-60% of adult *B. ceiba* in patches surveyed. Adult stems with diameter less than 40 cm contributed to 83.3% of harvested *B. ceiba.* From a total of 54 harvested *B. ceib*a, 79.6% had coppiced, indicating a significant regenerative capacity. (Phillips 2001).

Table 3: Summary sales figures by item 2000-01 – Maningrida arts and Culture

	Number	Sales	Cost of Sales	Gross Profit	% profit
Traditional media					
Bark painting	768	$ 271,324.00	$ 152,413.00	$ 118,911.00	78%
Sculpture	642	$ 162,648.00	$ 98,133.00	$ 64,515.00	66%
Fibre	1134	$ 73,527.00	$ 54,123.00	$ 19,404.00	36%
Instruments	31	$ 4,485.00	$ 2,445.00	$ 2,040.00	83%
Tools	8	$ 218.00	$ 235.00	$ (17.00)	
Regalia	Not itemised	$ 4,086.00	$ 1,802.00	$ 2,284.00	126%

The Arts and Crafts industry is currently the highest income generating activity in the region other than government grants and welfare. 2000/2001 has seen a turnover of $650,798 and a profit of $247,797

Arnhem Land in its entirety has some European based land uses. For example some areas have relatively small scale locally owned cattle grazing operations, there are various low impact tourism businesses and there are several mining and exploration operations.

Mining

The mineral exploration industry is active in much of Arnhem Land. Exploration leases granted by the traditional landowners via the Northern Land Council see the search for Uranium and diamonds taking place. The impact on forest resources of mining and exploration may at first seem minor due to the normally localised and restricted nature of the mine site, which then must be rehabilitated when the relevant activity has ceased, but the change in the way that the indigenous population manage and utilise their land is an impact that is often overlooked. The social problems associated with massive land disturbance, the influx of many non-Aboriginal workers and the payment large sums of royalty money (with few employment outcomes) have been documented in the Kakadu Region Social Impact Study (1997) and show very negative

results. Unfortunately the large dollar signs that are offered to traditional owners to allow exploration and therefore mining are irresistible and blind people to the many negatives that other Aboriginal groups are suffering because of mining.

Conclusion

The environmental, conservation and biodiversity values that are being maintained and enhanced by the active land managing Traditional Owners of the Maningrida region are globally valuable. The recognition and rewards that these people gain are minimal. Fortunately at present, the cultural and subsistence values are sufficient reward to keep these landowners committed to the enormous task of managing their country.

Obtaining ideas from the indigenous landowners about the value of the forest was a process of listening and interpreting. The concept of timber use for tools was well discussed by older community members and there were very specific timbers used for the production of specific tools. These tools ranged from hunting and gathering implements, to toys and convenience items such as grooming objects. But as mentioned throughout, the greatest value of the forest is the entire habitat and ecosystem of which it is part. Aboriginal people, through their culture, have a connection to the land and its resources and belong to that ecosystem.

Relevant Montreal Process Indicators;

Criterion 2: Maintenance of productive capacity of forests,

The maintenance of the productive capacity of the forests is extremely important to the indigenous landowners of the region for a variety of reasons and is a constant theme throughout this paper. Firstly the native ecosystems hold strong cultural significance. This is closely related to the subsistence value of the hunting and gathering that takes place in this environment. The desire to maintain the productive capacity of forests is proven by the commitment that the individuals and their representative organisation has made towards encouraging and maintaining traditional land management and supporting and encouraging modern land management activities.

The cost of this land management to the individual is high and there is a considerable investment from the Bawinanga Aboriginal Corporation (around $AUS0.5M per year) to conduct the land management activities that ensure the maintenance of this productive environment.

Long term economic development policies that are strongly influenced by the need to maintain the productive capacity of the native environment are seen as a way of ensuring the people can afford to remain on and traditionally manage their land by providing suitable employment opportunities. Economic development is also aimed at providing funding for the essential modern land management activities.

Criterion 6: Maintenance and enhancement of long term multiple socio-economic benefits to meet the needs of societies,

The existing traditional and modern land management activities that are maintaining the productive native state of the environment are currently providing considerable social and cultural benefits to the local people as well as some economic values in the form of minor enterprises and subsistence.

Most of the commercial enterprises that local landowners are interested in involve the utilisation of native species. This utilisation of native species can be tied to traditional trade and a history of trade with outside traders such as Macassans. People are also familiar with local species and have traditional knowledge and skills that provide added incentive and removes many barriers that western education has placed in front of standard employment opportunities.

There are many restraints to the concept that the sustainable utilisation of natural resources will provide the socio-economic benefits that are desired in this region. The ownership of land is

determined but the resources living in and on the land and water are generally under the control of the State/Territory Government and subject to their policies. The Commonwealth Government also produces barriers by restricting the movement and export of wildlife products.

The conservation benefits of the program that is developing around Maningrida are enormous. The resources of the environment are seen as economically valuable and therefore are managed sensibly and not over exploited. This utilisation of wildlife and native products is often frowned upon by particular so-called conservation organisations that refuse to consider the social and economic needs of the people. Other options for economic development that involve the alteration or destruction of the natural environment have been regularly proposed and offered with considerable financial rewards, but have always been refused due to the desire to maintain the vast and productive natural environment.

Criterion 7: Legal, institutional and economic framework for forest conservation and sustainable management.

Arnhem Land is held under inalienable Aboriginal freehold, a unique tenure in Australia. Land is held by Aboriginal Land Trusts, which cannot act independently of advice from Land Councils. Land cannot be sold or mortgaged. It can be leased for particular periods under varying rules depending on the period. Leases and licenses can be issued which allow commercial activities to take place.

Within the land council areas (Northern Land Council in this case) local organisations represent particular regions. The local region is represented by the Bawinanga Aboriginal Corporation, which acts in on behalf of its members. The members of the Corporation have determined that assisting and encouraging traditional land management practices and resourcing modern land managers is a high priority. The local organisations receive much of their funding from ATSIC (the Aboriginal and Torres Strait Islander Commission) and the Community Rangers are part of the CDEP (Community Development and Employment Program).

Assistance is provided by Northern Territory Government agencies for specialist issues such as weed management and erosion control. The Northern Land Council's Caring for Country Unit provides assistance on a wide variety of issues including staff development and management planning. Assistance is provided in the form of funding by the Federal Government via the Natural Heritage Trust. This money has been successfully utilised to develop the modern land management agency and initiate the sustainable use of natural resources program to ensure that the land management program can be ongoing and not reliant on grant funding.

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