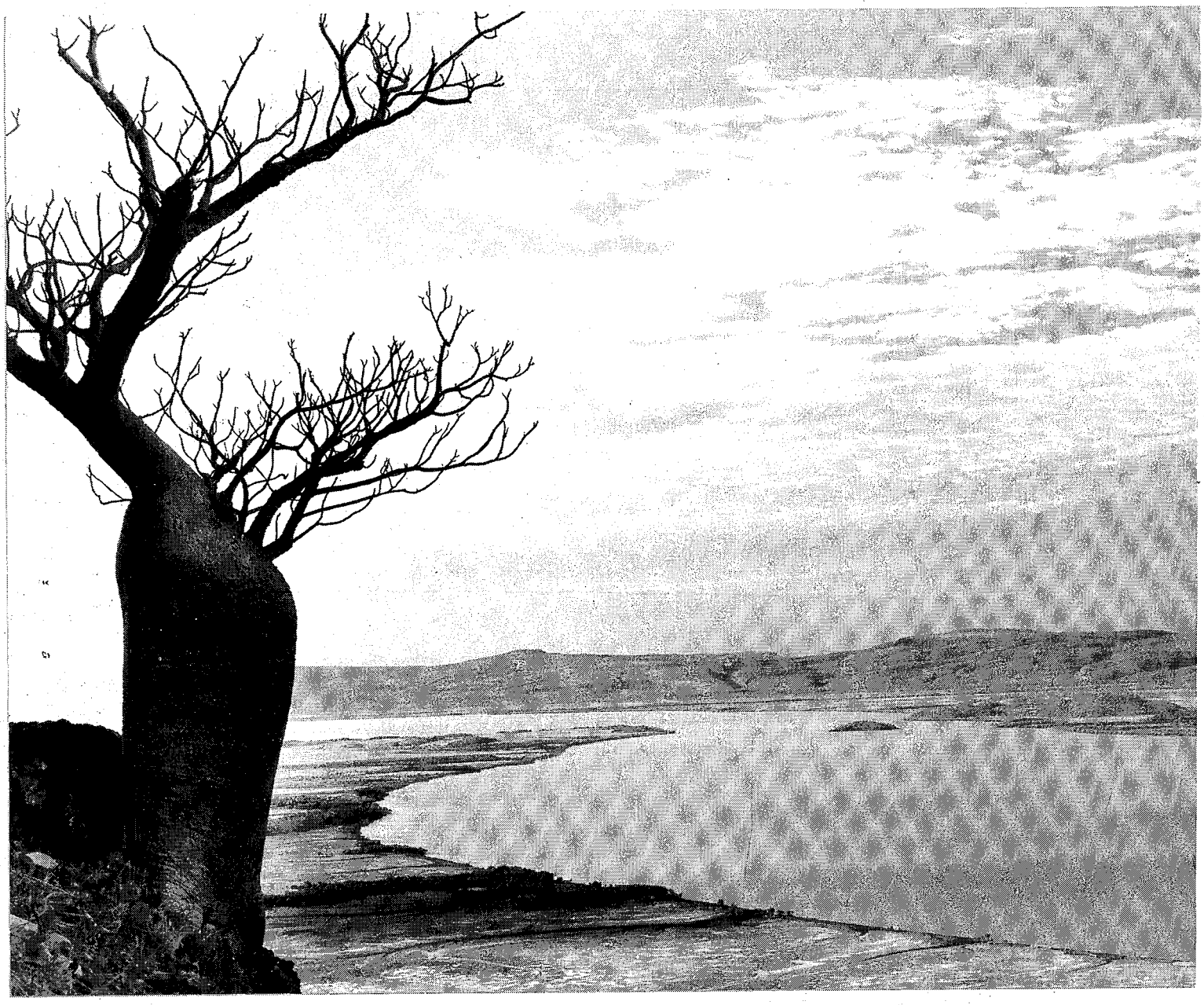
THE KIMBERLEY

The Slide Towards Extinction



THE WILDERNESS SOCIETY

THE KIMBERLEY

In the far north of Western Australia lies the Kimberley - an unforgettable landscape. Majestic boab trees punctuate the rugged hills, monsoon rainforests shelter beneath towering ochre cliffs, and deep pools of clear water liquify the ancient rock walls of the secret gorges. For thousands of years the Aboriginal people have sanctified and managed this delicate land.

In the Kimberley we find one of Australia's three remaining 'world class' wilderness coastlines. Its rugged islands extensive mangrove ecosystems and deserted rocky bays are unspoilt. No roads, powerlines, not a building in sight - a situation only comparable to Cape York and Southwest Tasmania.

Despite its natural and cultural wonders, the Kimberley remains largely unprotected and faces numerous environmental threats. For decades the environmental needs of the region, and the aspirations of the Aboriginal people have been side-stepped by a succession of Western Australian Governments.

In the Kimberley the Wilderness Society is working towards a comprehensive conservation strategy that protects the environment and promotes the aspirations of the Aboriginal people.

We hope that you will support and work with us to preserve and protect this truly unique Australian wilderness.

THE WILDERNESS SOCIETY

In the mid '70s a small group of people in Tasmania were brought together by their common interest in saving a beautiful wilderness area centred on Lake Pedder, in Southwest Tasmania. The Tasmanian Hydro-electric Commission proposed to flood the lake and the surrounding land destroying a significant part of Tasmania's wilderness heritage. This campaign was lost and Lake Pedder was flooded, but out of this group evolved the Tasmanian Wilderness Society which in 1980 under the leadership of Dr Bob Brown set in motion a national campaign against the HEC's proposed flooding of the Franklin River. This campaign succeeded in saving the Franklin River and and changed forever people's attitudes towards the environment.

In the 1990's the Wilderness Society is a national organisation with over 15,000 members. Our campaigns around Australia are aimed at protecting the remaining wild places in this vast continent and advising governments on the management of wilderness areas. Our campaigns include:
Kakadu, Northern Territory; Tall Forests, NSW; Arid Wilderness, South Australia; The Mallee, Victoria; Temperate Wilderness, Tasmania; Cape York, Queensland; and in Western Australia, the Kimberley.

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KIMBERLEY FLORA AND FAUNA

THE SLIDE TOWARDS EXTINCTION

Prepared by Jill Harris

for The Wilderness Society WA

November 1990

"Western Australia is facing an extinction crisis."

Barry Wilson, Director of Nature Conservation, Department of Conservation and Land Management

INTRODUCTION:

To say the Kimberley is unique is an oft-used understatement that conveys little of the heritage, scientific, cultural and ecological values that make it unique. Rugged mountain ranges, fern and palm filled gorges, spectacular waterfalls, diverse wetlands, dusty plains and dry river beds are sources of endless fascination and beauty. And the landscape changes dramatically from the Wet season to the Dry. The region has great importance to Aboriginal people, developed during their thousands of years of living there.

Ironically, the very factors that make the Kimberley so unique and worthy of preservation also create, or at least contribute to, the management difficulties that hamper that preservation. The diversity of ecosystems in the Kimberley and the complexity of potential and realised threats they face make their preservation one of the most challenging conservation problems we face today. The remoteness and ruggedness of the terrain, whilst undeniably enhancing its wilderness appeal and to a large extent being responsible for the maintenance of the region's wildness, create unique problems for research and management.

This report attempts to draw together some erstwhile disparate threads in the hope of contributing towards informed discussion on future directions of management of the Kimberley region. It does not attempt to be a definitive work on endangered species of the Kimberley. Much of the information contained here has been published in various sources; the rest has been gleaned by talking to people with an interest in the Kimberley.

KIMBERLEY BIODIVERSITY:

The preservation of biodiversity is widely recognised as an extremely important goal for modern society. Of an estimated 30 million species that share this planet with us, only about one million have so far been described by science. Yet we are rapidly losing this diversity by mismanagement of the Earth's resources. Many species are already extinct; many others are in a tenuous and threatened position. The reservation of land specifically for conservation purposes is one way of slowing down this slide towards extinction.

The vegetation of the Kimberley, whilst similar in composition to that of the Top End, is very distinct from the rest of Western Australia. It contains a high proportion of species at the northern and southern ends of their distributions, and it is a transition zone between the Torresian flora and the arid zone flora, with representatives of both.

There is a striking difference in the biogeography of the Kimberley in comparison to the relatively well-documented south-west of the state in terms of the taxa present and the groupings they have. The south-west is well known for its high speciation, i.e. the flora has a large number of species representing comparatively few families. In the Kimberley this situation is reversed; there are many families present,but numbers of species within families are relatively low.

The Kimberley vegetation is distinguished by pockets of vine thicket. These are remnants of rainforest that once covered the region, and they have great ecological significance. Not only are they interesting in an evolutionary sense and in the high species diversity they contain, but they also act as refugia for rare and restricted species.

There are an estimated 500 patches of remnant rainforest in the Kimberley. These vary considerably in size and contain about 300 different species of plants, 80% of which are endemic (Dale, 1988). In addition to this rich floral diversity, the rainforest remnants provide important faunal habitats. For example, at least 70 species of land snail are estimated to exist in the vine thickets; many of these snails are undescribed and restricted in occurrence.

Populations of different plants and animals expand and contract over time as climatic and other factors change. As the Kimberley has become more arid over recent times, the rainforest has contracted to these remnant patches (or refugia). They are effectively a storehouse of genetic diversity, enabling flexibility in the face of future change.

The mangrove communities of the Kimberley are also extremely rich in biodiversity. They have the richest mangrove avifauna (bird fauna) in the world, which includes the endemic Kimberley flycatcher (*Microeca flavigaster tormenti*) and the collared (mangrove) kingfisher (*Halycon cloris*), which has a restricted distribution in the north-west of Western Australia.

Many gorges and waterfalls have unique palm, pandanus and fern gullies. In some cases, the species found in these microniches are only known from a very few localities. Or, as is the case with the gazetted Endangered *Pandanus spiralis* var. *flammeus*, only one locality. There are at least two restricted, undescribed species of *Livistona*, one in the King Leopold Ranges and one in the Bungle Bungles. There are other species with similarly limited distributions, and undoubtedly more will be discovered in the future.

It is indicative of the wide diversity and restricted distributions of plant species in the Kimberley that most botanical surveys carried out in the region find previously undescribed species or shed new light on the ranges of particular species. This also well illustrates the lack of botanical knowledge of most of the region.

The wide diversity of habitats in the Kimberley gives rise to a diverse fauna. Sixty-two species of native mammal have been recorded in the area, including many endemics and species that have declined elsewhere. For instance, the warabi (*Petrogale burbidgei*) is restricted to rugged parts of the North Kimberley and illustrates problems facing Kimberley researchers and managers. Although locally common, it must be considered vulnerable due to its extremely limited range. The warabi was only discovered as recently as 1978.

The reptilian fauna of the Kimberley is likewise rich, particularly in the sub-humid coastal region. Noteworthy reptiles include the two species of crocodile (i.e. the saltwater, *Crocodylus porosus*, and the freshwater, *C. johnstonii*) and the endangered leathery turtle, *Dermochelys coriacea*.

The barramundi, *Lates calcarifer*, is probably one of the better known of the Kimberley's fish species. There are many others, such as the five potentially vulnerable species listed in Table 2, that are only poorly known. All five species listed in the table are known from one site only - all from various freshwater rivers in the Prince Regent River area. These species face grave risks from damage to their habitats from indiscriminate tourism and introduced animals.

ENDANGERED SPECIES:

Legislation that recognises that some species are in danger of becoming extinct is one means of affording special protection. However, the categorisation of species into priority groups can cause some problems. Terms such as "threatened", "endangered", "vulnerable", "potentially vulnerable", "rare" and "restricted" all have different implications for management and have been defined in slightly different ways by different authors. There is now a tendency towards using the term "threatened" to refer to a species that is facing a decline in numbers (Kennedy, 1990). "Extinct" refers to a species that has not been observed in the wild for fifty years. "Endangered" is one that is likely to become extinct if current trends continue and "vulnerable" is one that is likely to become endangered unless ameliorative measures are taken.

It is important to recognise that whilst a species may not be easily identifiable as rare and endangered, it may still be threatened, vulnerable or potentially vulnerable. If it has undergone a recent decline in numbers, there is a potential future cause for concern. Many endangered species in the Kimberley, including all four gazetted Endangered plant species, are not represented in current reserve systems. Given existing Government policies, this situation is unlikely to be alleviated in the foreseeable future and creates the need for the entire Kimberley to be studied with a wholistic view to management.

Species can only be identified as threatened or vulnerable if detailed knowledge of their distribution and biology is available. Too often we know too little. We act too hastily with disastrous results. Furthermore, species that may be geographically isolated or exist only in small populations create difficulties. Yet the importance of preserving them cannot be underestimated. Without the maintenance of genetic diversity within and between populations, the future survival options are limited, if not completely lost.

Burbidge and McKenzie (1989) identified three factors implicated in the modern decline of species:

1. the diversion of resources from the wildlife to humans and introduced animals,
2. the decrease in environmental productivity due to habitat alteration, and
3. direct reduction of population numbers by introduced predators and habitat fragmentation.

The first two of these factors operate in significant ways in the Kimberley, as does habitat fragmentation. Introduced herbivores and altered fire regimes have had the greatest influence here. The absence of the fox has probably reduced the significance of predation as a cause of faunal decline. However, cats are well established throughout the Kimberley and are cause for concern.

One of the most serious modifiers of habitat in Australia is fire. In the Kimberley, fire regimes have undergone vast changes since pastoralism was introduced. The resultant change away from a mosaic toward a uniformity of habitat types has had a severe impact on the fauna.

There have been relatively few modern declines in faunal species populations in the Northern Kimberley (Burbidge and McKenzie, 1989). This is consistent with the low numbers of feral animals and cattle in the region. However, the indigenous mammal fauna of the North Kimberley is beginning to decline (Burbidge and McKenzie, 1989). In the East and West Kimberley, where pastoralism has been more widely practiced, such decline, particularly in medium sized mammals (Critical Weight Range mammals - 35 - 5500 grams), has been high.

There are currently four taxa of plants from the Kimberley that are gazetted Endangered. These are *Eucalyptus ceracea*, *E. mooreana*, *Pandanus spiralis* var. *flammeus* and *Pittosporum mollucanum* (Hopper *et al.*, 1990). None of

the known populations of these plants are on land currently managed specifically for conservation.

Four Kimberley vertebrates are listed by Burbidge and Jenkins (1984) as being endangered. These are: bilby, red goshawk, purple-crowned fairy wren and leathery turtle. Kennedy (1990) considerably extends this list (Table 1). Neither publication mentions the gazetted rare olive python (see Department of Conservation and Land Management, 1989a) or the warabi.

Invertebrates are the least known group of species, a fact that gives rise to the huge differences in estimates of total biodiversity on Earth. It is estimated that there could be up to 30 million species of invertebrates yet to be named. In the Kimberley, there are known to be nine species of jewel beetle, four of which are undescribed. These are protected under the Wildlife Conservation Act. The *Murex rubiginosus* shell is popular amongst shell collectors and only occurs on reefs adjacent to Riddell Beach in Broome. Despite the beach being closed to shelling there is still cause for concern over survival of the shell.

The many problems with species' conservation in the Kimberley, as indicated by the preceding discussion, are well illustrated by a detailed look at the gazetted rare and endangered *Pandanus spiralis* var. *flammeus*.

Case Example: *Pandanus spiralis* var. *flammeus*

Pandanus spiralis var. *flammeus* is only known from one site in the Kimberley. It is found on Dampier Downs Station surrounding a permanent water hole which is the only one within a seventy kilometre radius . The waterhole is extremely important to both cattle and wildlife.

The threat that the cattle pose to the survival of this species is considered substantial and immediate. The Minister for Conservation and Land Management has requested that the owners of Dampier Downs, the Delong family, keep their cattle out of the gorge in which the Pandanus population is growing (Peter Delong, pers. comm.). The Delongs, who are notably concerned about the *Pandanus*, have tried to achieve this by several means. The area has been fenced off a number of times. Problems with heavy wet season rains and rogue cattle have undermined the success of this operation.

It would appear that the most widely accepted means of conserving the *Pandanus* would be to fence the area and put a bore down a short distance away to provide an alternative source of water for stock. Delong sees several problems with this, namely:

1. Cost - It is estimated that the project would cost at least $40 000. (The possibility of Government funding for this project should be investigated.)
2. An ordinary fence would be washed away in the wet. Temporary yarding that could be removed before the beginning of the wet and replaced at the beginning of the dry would provide an alternative.
3. In the event of cattle not grazing the gorge, the grasses would grow extensively in the area. Delong envisages a potential problem of fire and competition providing a new threat to the *Pandanus*.

It is evident that the Delongs are concerned both for the future of the *Pandanus* and their future on Dampier Downs.

This case example illustrates many of the problems facing species conservation in the Kimberley. Although the *Pandanus* is readily identifiable as threatened, the myriad of factors and players involved in its preservation serve to create a difficult and complicated situation. It is, however, a problem that funding would go a long way towards alleviating.

RESEARCH:

Lack of research presents a problem in the identification of endangered species in the Kimberley. This is particularly the case when new species, that were previously either unknown or else grouped with a different species, are identified. The emergence of new species in this way highlights the need for increased research effort in the Kimberley and also for the reserve system and management practices to be reviewed.

The distance of the Kimberley from Perth (the administrative centre of the state) makes field work extremely expensive. The volunteer effort of local people in the region has been particularly useful in reducing the severity this problem. The work done by the Broome Botanical Society on the Dampier Peninsula is particularly notable. Contributions such as this need to be recognised and encouraged.

Most field work in the Kimberley has concentrated on nature reserves and national parks. Whilst providing valuable data, it does not provide the definitive baseline knowledge necessary the overall management of the region. However, the sheer size and ruggedness of the Kimberley make the aquisition of this data extremely difficult. These factors need to be born in mind when making management decisions.

The Draft Management Plans for Dampier Archipelago and Purnululu (Bungle Bungles) (Department of Conservation and Land Management, 1989a, 1989b) both state that the floras and faunas of the areas are poorly known and recommend further study.

IMPLICATIONS FOR MANAGEMENT:

Burbidge and McKenzie (1989), in identifying the three causal factors of modern species decline, state that land management practices that are based on reversing these factors should help native species persist. This implies a need to look seriously at introduced herbivores and burning regimes in the Kimberley and the effects they are having on habitat diversity and species survival. Such a study may lead to the conclusion that the future

preservation of the biodiversity of the Kimberley will only be achieved by reducing the number of introduced herbivores and reinstating burning regimes that resemble those previously used by Aboriginal people.

There is a need to reassess the reserve system in the Kimberley in terms of its representation of the region's biodiversity. For instance, there is a considerable body of public opinion that the bilby population supposedly protected by the Point Coulomb Nature Reserve does not actually exist inside the reserve. The straying of cattle from adjoining stations into the reserve may present a serious threat to preservation of habitats (not only for bilbies) in the reserve.

The Red Book (Environmental Protection Authority, 1980) has been widely discredited as an adequate plan for future conservation of the area. The System 7 Update (Burbidge *et al.*, 1987) is rumoured to be an improvement but has never seen the light of day for discussion in the public arena. With the challenge of climate change and the greenhouse effect upon us, reserve management will become even more difficult than it traditionally has been. If current predictions are correct, we can expect the Kimberley to become warmer and wetter in the future. This may well exacerbate current erosion problems and is certainly a factor to be considered.

The wide diversity of the Kimberley flora and fauna illustrate the need to look further than the existing, or even proposed, reserve system for species conservation. It is essential that wholistic management practices be adopted over the entire region. An ad hoc approach will not achieve the preservation of the Kimberley's biodiversity.

SUMMARY AND CONCLUSIONS:

The most striking factor that emerges on studying endangered species in the Kimberley is the lack of data available for the region. This lack is a result of several factors all of which are generally related to the isolation and size of the region.

For instance, because fieldwork in the Kimberley is expensive, cutbacks in funding Kimberley research represent a large cost saving for an apparent minimal cutback in research effort.

The Kimberley has a small population over a large area. This adds to the "wilderness" image of the area and allows people to become complacent about threats facing the region. Furthermore, a smaller number of votes per research effort or dollar allows politicians to be complacent about funding the region, or about taking action on proposals. These factors render the Kimberley a low priority in political terms.

As elsewhere in the reserve system, conservation reserves in the Kimberley represent a selection of "left-overs". Boundaries reflect cadastral lines rather than ecological factors.

Categorisation of species status, which is often confusing, is hampered in the Kimberley by lack of data. It is impossible to know what is being lost when it is not known what is there. It is indicative of the lack of knowledge of the area that almost every botanical survey in the Kimberley reveals a previously unidentified plant species or sheds new light on a previous known distribution.

Cattle and feral animals, especially donkeys, pose an extremely damaging threat to Kimberley habitats. The destruction of flora that they cause not only directly impacts upon plant species but also has an impact on the fauna reliant on them. This, and inappropriate fire regimes, may be the greatest causes of species extinction in the Kimberley.

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TABLE 1
THREATENED KIMBERLEY PLANT SPECIES

A. KIMBERLEY PLANTS ON JUNE 1990 SCHEDULE OF ENDANGERED FLORA

Eucalyptus ceracea
Eucalyptus mooreana
Pandanus spiralus var. *flammeus*
Pittosporum mollucanum

B. KIMBERLEY PLANTS ON JUNE 1990 RESERVE FLORA LIST

i) PRIORITY ONE (1 species with few poorly known populations on threatened lands)

Acacia aff. *stipuligera* (A.C. Beauglehole 53862)

ii) PRIORITY TWO (24 taxa with few poorly known populations on conservation lands)

Acacia deltoidea ssp. *ampla*
Blumea prostrata
Blumea pungens
Cleome kenneallyi
Eucalyptus chlorophylla
Eucalyptus fitzgeraldii
Eucalyptus'ordensis'
Glycine albicans
Gossypium pulchellum
Grevillea adenotricha
Grevillea donaldiana
Grevillea latifolia
Grevillea psilantha
Livistona victoriae
Myriophyllum callitrichoides ssp. *striatum*
Myriophyllum costatum
Nymphoides beaglensis
Olax spartea
Olearia aspera
Ondinea purpurea
Pityrodia ovata
Ramphicarpa macrosiphonia
Ricinocarpus marginatus
Stylidium rubriscapum

iii) PRIORITY THREE (14 taxa with several poorly known populations, some on conservation lands)

Boronia pauciflora
Borya subulata
Brachychiton incanus
Brachychiton tridens
Brachychiton tuberculatus
Bulbostylis burbidgeae
Decaschistia byrnesii
Ficus leucotricha var. *sessilis*
Ficus obliqua var. *puberula*
Glycine lactovirens
Melaleuca sericea

iv) PRIORITY FOUR (7 species presumed extinct)

Acacia vincentii
Corchorus allenii
Phyllanthus aridus
Phyllanthus indigoferoides
Rhynchosia rostrata
Scaevola stenostachya
Triumfetta johnstonii

v) PRIORITY FIVE (2 species for high priority monitoring)

Brachychiton xanthophyllus
Grevillea miniata

vi) PRIORITY SIX (7 poorly collected taxa)

Acacia delibrata
Acacia sericata
Acacia sp. (K.F. Kenneally 9931)
Ailanthus triphysa
Psoralea archeri
Ptilotus stipitatus
Utricularia aurea

TABLE 2
THREATENED KIMBERLEY ANIMAL SPECIES

E - Endangered, V - Vulnerable, PV - Potentially vulnerable (from Kennedy, 1990)

MAMMALS:

Red-Tailed Phascogale (*Phascogale calura*) - E
Bilby (*Macrotis lagotis*) - E
Golden Bandicoot (*Isoodon auratus*) - E
Spectacled Hare-Wallaby (*Lagorchestes conspicillatus*) - PV
Golden-Backed Tree-Rat (*Mesembriomys macrurus*) -PV
Lesser Wart-nosed Horseshoe bat (*Hipposideros stenotis*)- PV
Orange Horseshoe bat (*Rhinonicteris aurantius*) - V
Ghost Bat (*Macroderma gigas*) - V
Bryde's Whale (*Balaenoptera edeni*) - V
Sei Whale (*Balaenoptera borealis*) - E
Minke Whale (*Balaenoptera acutorostrata*) -V
Blue Whale (*Balaenoptera musculus*) - E
Fin Whale (*Balaenoptera physalus*) - E
Sperm Whale (*Physter macrocephalus*) - E
Pygmy Sperm Whale (*Kogia breviceps*) - PV
Dwarf Sperm Whale (*Kogia simus*) - PV
Dugong (*Dugong dugon*) - V

FISH:

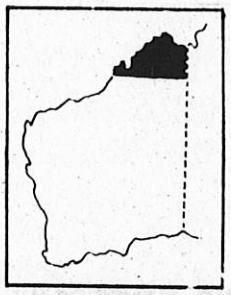
Drysdale Hardyhead (*Craterocephalus* n. sp.) - PV
Prince Regent Hardyhead (*Craterocephalus* n. sp.) - PV
Slender Gudgeon (*Hypseleotris ejuncida*) - PV
Barnett River Gudgeon (*Hypseleotris kimberleyensis*) - PV
Pygmy Rainbowfish (*Melanotaenia pygmaea*) - PV

BIRDS:

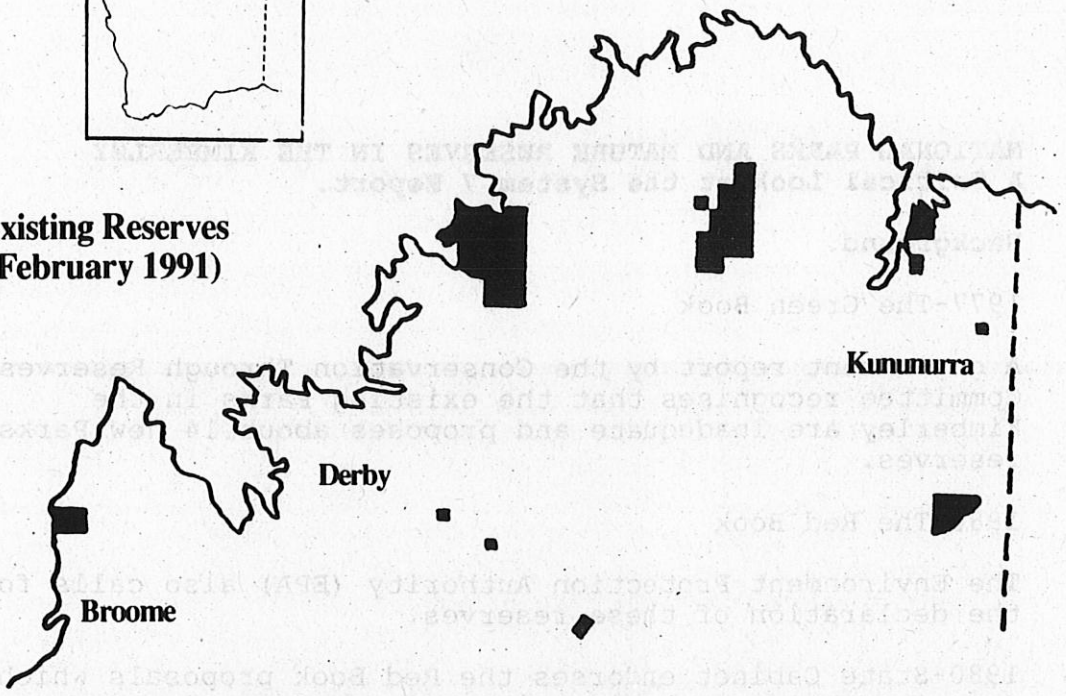
(Australasian) Little Tern (*Sterna albifrons sinensis*) - V
Grey Falcon (*Falco hypoleucos*) - PV
Peregrine Falcon (*Falco peregrinus*) - V
Red Goshawk (*Erythrotriorchis radiatus*) - V
Australian Bustard (*Ardeotis australis*) - PV
Bush Thick-Knee (*Burchinus magnirostris*) - PV
Eastern Grass Owl (*Tyto longimembris*) - PV
Gouldian Finch (*Erythrura gouldiae*) - E
Black Grasswren (*Amytornis housei*) - PV

REPTILES:

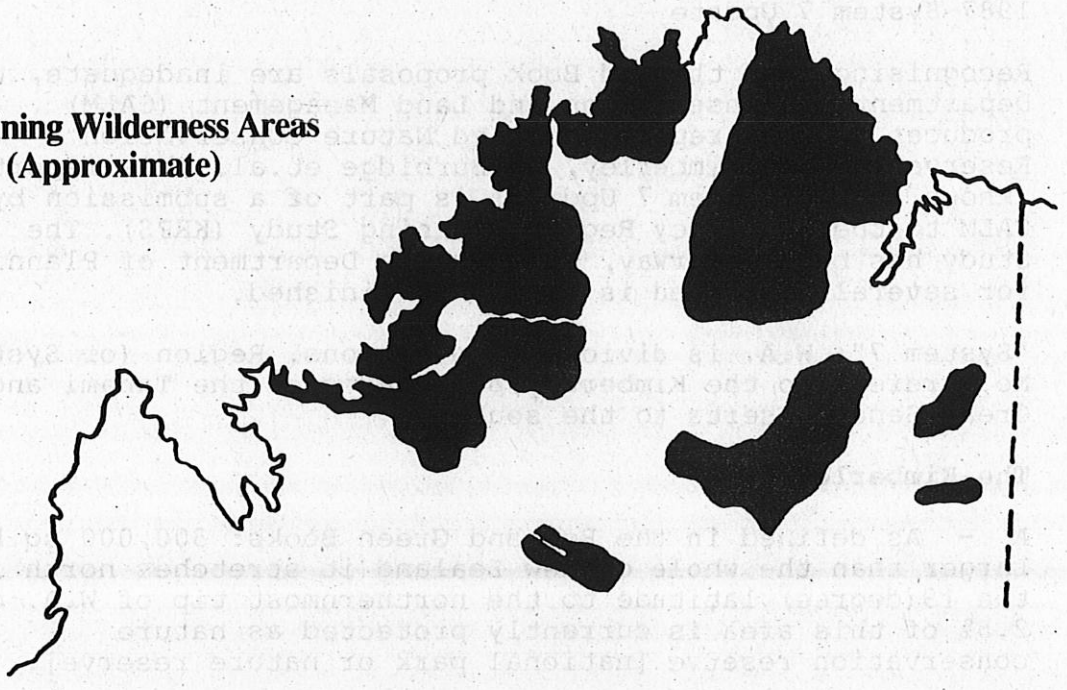
Freshwater Crocodile (*Crocodylus johnstoni*) - PV
Saltwater Crocodile (*Crocodylus porosus*) - V
Loggerhead Turtle (*Caretta caretta*) - PV
Hawksbill Turtle (*Eretmochelys imbricata*) - PV
Flatback Turtle (*Chelonia depressa*) - PV
Green Turtle (*Chelonia mydas*) - PV
Leathery Turtle (*Dermochelys coriacea*) - E



Existing Reserves
(February 1991)



Remaining Wilderness Areas
(Approximate)



NATIONAL PARKS AND NATURE RESERVES IN THE KIMBERLEY
A Critical Look at the System 7 Report.

Background.

1977-The Green Book

A government report by the Conservation Through Reserves Committee recognises that the existing Parks in the Kimberley are inadequate and proposes about 14 new Parks and reserves.

1980-The Red Book

The Environment Protection Authority (EPA) also calls for the declaration of these reserves.

1980-State Cabinet endorses the Red Book proposals which are described by conservationists as inadequate. Even so, virtually none of the Red Book proposals have been implemented. The situation in the light of the State government's mining in national parks policy remains unclear.

1987-System 7 Update

Recognising that the Red Book proposals are inadequate, the Department of Conservation and Land Management (CALM) produces another report entitled Nature Conservation Reserves in the Kimberley, by Burbidge et.al. This report (known as the System 7 Update) is part of a submission by CALM to the Kimberley Region Planning Study (KRPS). The Study has been underway, through the Department of Planning, for several years and is still not finished.

"System 7": W.A. is divided into regions. Region (or System) No.7 refers to the Kimberley plus parts of the Tanami and Great Sandy Deserts to the south.

The Kimberley

A - As defined in the Red and Green Books: 300,000 sq.km. Larger than the whole of New Zealand it stretches north from the 19(degree) latitude to the northernmost tip of W.A. Only 2.5% of this area is currently protected as nature conservation reserve [national park or nature reserve].

B - The KRPS however defines the area along shire boundaries and thus extends further south into the Great Sandy and Tanami Deserts.

C - is divided into six regions in the update:

1. Islands

2. South West Kimberley (Dampier, Edgar)

3. East Kimberley (Purnululu, Carr Boyd)

4. North Kimberley (Walcott, Mitchell, Drysdale, King Leopold, Rust Range, etc.)

5. Great Sandy Desert (Mandara, McLarty, Southesk, etc.)

6. Tanami Desert (Gardiner, Gregory, etc.)

It is in the North Kimberley in particular that the update fails to propose enough new reserve proposals.

An Excellent Report

In many respects the Update is an excellant document. It will add considerably to the available information on the biota of the Kimberley and has obviously been well researched.

The Park proposals that have been made are good. However, they represent not even the bare minimum if the wilderness of the Kimberley is to be conserved.

WILDERNESS LARGELY IGNORED

Whilst the Update uses biotic values to justify reserve boundaries it does not accept wilderness values as a reason for reserve status. To some extent this is not the author's fault as "wilderness" is not defined in W.A. legislation. Undoubtedly however, parts of the Kimberley, especially in the North Kimberley, are of world class wilderness value. The coastline for example is the longest wilderness coastline in Australia. Any attempt to define reserve boundaries in the Kimberley must admit wilderness as an exceptable reason for reservation. (In the KRPS summary of the Update the word "wilderness" does not even appear once in the section describing the value of proposed parks!)

LAND NO-ONE ELSE WANTS

The KRPS summary of the Update begins with the words: "Reserves and Parks (should) not simply be residual areas of land no-one else wants."

The update has failed dismally to implement this view. Most proposals cover only land with no existing defined use. This is especially true in the North Kimberley.

Abandoned cattle leases, left over lands, disused stock routes and abandonded mining leases have all been proposed for inclusion as park. On the other hand prime wilderness areas which are not vacant Crown Land have been excluded from the proposals.

ONLY VACANT CROWN LAND CONSIDERED

In most cases only Vacant Crown Land is considered. Only a few of the proposed Reserves and Parks are not. In three of the six regions (Islands, North Kimberley and East Kimberley) nearly all the new proposals cover Vacant Cown Land. All areas of potential commercial use appear to have been excluded.

CONSERVATION LOWEST PRIORITY

Of all land use options Conservation is considerd the lowest priority. In any conflict all other land options are given precedence. This demonstrates the Update's extreme bias against Conservation as a legitimate land use. A few examples are given:

* Mitchell Plateau: "Park boundaries were chosen to avoid areas with commercial bauxite deposits" despite the fact that these same areas are of high conservation value (p. 109 Burbidge, p. 57 KRPS).

* Walcott Inlet: Power stations and dams would take precedence over any reservation, according to the KRPS version of the update (p. 61, KRPS).

* Bungle Bungle (Purnululu): The mining zone (alias Conservation Zone) would only be revoked when "circumstances permit" (p. 54, Burbidge).

* Oscar Napier Ranges: Existing Parks are described in the report as "far too small" and "not representative", yet extentions to the proposed Devonian Reef National Park will only be "considered at some future date" - presumably because of conflicting interests (p. 44 Burbidge, p. 46 KRPS).

* Dampier: The proposed Dampierland National Park would only be declared "if negotiations permit" (p. 44, KRPS).

* Cygnet Bay: This Nature Reserve in the Dampier Peninsular would only be extended "if the existing lease was no longer required" (p. 45, KRPS).

* King Leopold: This National Park would only be declared if it was "not needed for pastoral pursuits" (p. 57 KRPS).

* Tanami Desert: Only areas "available for reservation" (i.e. not wanted by anyone else) were considered (p. 63, KRPS).

* Lecepede Islands: A major turtle rookery only to be preserved if it "becomes available" (p. 45 KRPS).

All boundaries are "open to negotiation" especially where pastoral interests are affected (refer 4.4.2) (p. 42 KRPS).

On no occasion does the report state that the conservation value of any area is of such importance that it should have precedence over all other land uses.

LACK OF KNOWLEDGE NO EXCUSE

The report fails to recommend many worthy areas using the excuse "insufficient data on biotic diversity". Unfortunately, by the time the necessary research has been undertaken, these areas may well have been severly degraded. No mention is made of interim protection.

The report fails to realise that whilst a detailed biotic survey of the area is important, it should not be a prerequisite for reservation. Wilderness assessment by contast is relatively quick and no attempt has been made by report to assess the wilderness quality of areas.

SOME GOOD POINTS

The update is not all bad. Obviously a lot of work had been put into the report and many of the proposed additions to the Red Book proposals are commendable.

Welcome additions include:

* 5 Marine Reserves: Roebuck Bay, Ord River mouth, Lawley River mouth, part of Walcott Inlet, Cape Londonderry. The Kimberley coastline is one of the only three major wilderness coastlines in Australia and deserves protection. Unfortunately, these proposals cover perhaps only 1% of the Kimberley coastline and are insufficient. The boundaries of the proposed Cape Londonderry Marine Reserve are poorly defined.

* 3 New NationalParks: Dampier, Devonian Reef, Oscar-Napier, South Esk. The latter is in the desert south of the Kimberley. The remaining two account for just one half of one percent of the Kimberley (north of 19 degree latitude).

* 5 New Nature Reserves: Jowlaenda, Packsaddle, McLarty, Mandora and Gardiner. The latter three are in the desert south of the Kimberley. The remaining two account for only one tenth of one percent of the Kimberley (north of 19 degree latitude).

* Extentions to: Ord River, Parry Lagoons, Drysdale, Prince Regent, and a small island in Walcott. Unwanted stock routes, abandoned cattle leases and other unused areas have been proposed as additions to existing proposals. These together amount to less than one half of one percent of the Kimberley (north of 19 degrees S).

The three new Reserves and one new Park in the areas south are welcome. They are much needed to represent the arid areas south of the 19 degree latitude.

However, very little of the Kimberley itself (north of 19 degrees S) is covered by new proposals. Only one percent of the Kimberley is recommended for addition to the existing proposals (see APENDIX 1). This represents a very small area and is patently inadequate. In particular, the North Kimberley requires far more consideration of its conservation values and status.

The "System 7 Update" can de criticised as not going far enough. It includes the pre-existing proposals but makes few new proposals, especially in the north or the east Kimberley.

Apart from proposals in the Tanami and Great Sandy Deserts and the new Dampier National Park, additions are small. Any extentions are extremely small and new Reserves are of token size. The smallest new reserve is only 6 sq.km.

Some of the changes are mere technicalities. The names of several Parks have been changed but the park size has not substantially increased.

STATUS CHANGE

Most of the existing proposals have, commendably, had their proposed status upgraded to "A" class but notably the Drysdale River National Park remains "B" class and the Carr Boyd "C" class. Both these areas are high value wilderness

areas. Why has their status not been elevated? Perhaps because the report has totally ignored the concept of wilderness.

PARK SIZES INADEQUATE

The report has failed to propose parks of an adequate size. It is a well accepted fact that parks in the Kimberley need to be at least 2,500 km sq in area to remain viable (Bungle Bungle Working Group Report, p. 29).

At present, 5 of the 7 National Parks are less than 40 km sq in area! The report proposes increasing the size of only one of these! The other 4 will remain unviably small.

At present only 3 of the existing parks and reserves are of a viable size (72,500 km sq). The update proposes no new parks or reserves of a viable size in the Kimberley. (This excludes the four extensive proposals south of the Kimberley).

NUMEROUS AREAS OMITTED

Some of the best wilderness areas have been ommited from the proposals. Some areas of high scenic and conservation value have been totally ignored. For example, (in a clockwise direction from Broome);

1. Part Walcott Inlett: The southern shores of this impressive inlet and the Funnel.

2. The Upper Isdell, Charnley and Calder Rivers; Impressive sandstone gorges.

3. Prince Regent River: The entire catchment area of this wild river must be protected.

4. Upper Moran River; Extensive gorge country and an essential part of the Price Regent wilderness.

5. Mitchell Plateau: The mining lease has been excluded along with its flora and fauna. Token Parks have been proposed either side in the valley below the Plateau so as to avoid lease areas.

6. Mt. Connor: A wilderness peak.

7. Drysdale River: Existing National Park inadequate. No significant extentions proposed.

8. King George River: Falls that plummet 60 metres into the ocean.

9. Berkeley River: Possibly the most remote wilderness river in Australia.

10. Lower Durack River: Some of the best gorges in the Kimberley.

11. Upper Durack River: Some of the best gorges in the Kimberly.

12. Mt. Parker Tableland: Unusual location of closed rainforest Part of the Bungle Bungle [Purnululu] Region.

13. Osmond Plateau: Waterfalls, underground creeks, and canyons. Part of the Bungle Bungle Region.

14 Nicks Bite/Mt. Ranford: Impressive mountainous region forming part of the Bungle Bungle Region.

The 14 areas listed above are not meant to be an exhaustive list. They are mentioned merely to point out the extreme inadequacies of the present proposals. 8,9 and 10 have been recommened by Burbidge for further consideration.

WATER CATCHMENTS IGNORED.

Virtually every proposal ignores the concept of watersheds as natural boundaries. Instead, artificial cadastral boundaries have been chosen.
A few glaring examples are noted:

*Purnululu(Bungle Bungle) - Osmond Creek and Frank River excluded.

*Drysdale River - Banjo Creek excluded.

*Lawley River - drainage from Mitchell Plateau excluded due to mining lease.

*Prince Regent - catchment not entirely protected. Also, Moran River excluded.

*Rust Range - no major catchment preserved in its entirety.

OLD PROPOSALS REVOKED.

Some areas proposed in the Green Book of 1977 have actually been excluded from the new proposals. No reasons have been given for these excisions in the KRPS Summary.

They include:
* 36 sq.km. of the proposed Mitchell River Park, upstream from the famous Mitchell Falls.

* A small part of the proposed Parry Laggons Reserve.

SUMMARY.

The System 7 Update is an excellent first step towards the declaration of improved reserves for the Kimberley. It does not go nearly far enough however. In particular, wilderness areas have been overlooked. The North Kimberley section is particularly deficient. The report itself acknowledges the extreme importance of this sub-region, and the urgency of proper protection measures (page 73).

As a first step it is to be welcomed but unless conservationists act even this first step will be ignored by the politicians just as the Red and Green Books have.

Certainly the conservation movement should call for the immediate declaration of the System 7 Update proposals but it should go further and put its own proposal for a world class North Kimberley Park and Marine park that would protect the biological and wilederness values of the region.

NATIONAL PARKS AND NATURE RESERVES IN THE KIMBERLEY

- North of 19° latitude
- Figures in Km^2, approximations only

	AREA	CUMULATIVE TOTAL	CUMULATIVE TOTAL expressed as % of total area in the Kimberley
Existing National Parks and Nature Reserves	**6,751**	**6,751**	**2.2%**
New Proposed National Parks and Nature Reserves (Green Book 1977)	**17,106**	**23,857**	**7.9%**
New System 7 Update (1987) Proposals (excluding Dampierland NP and Southern deserts below 19°S)	**1,549**	**25,406**	**8.4%**
(excluding area south of 19°s)	**3,123***	**26,980**	**8.9%**

*3,123 = 1,549 +1,574

In other words: The System 7 Update adds very little to the existing Green Book proposals except in the Southern deserts and Dampierland National Park.

The System 7 Update proposals cover only 1% more than the old proposals.

Note: The Kimberley area is estimated to be 300, 000 km^2, north of 19°S.

APPENDICES.

Appendix 1.

NATURE CONSERVATION RESERVES IN THE KIMBERLEY
An Unpublished Report by the Department of Conservation and Land Management (CALM). This report is also known as 'SYSTEM 7 UPDATE'.

In 1987 CALM prepared a report on the conservation reserve needs of the Kimberley. Although the report is inadequate in many respects, including the non-acknowledgement of wilderness conservation, it does contain useful information on the biological values of many areas of the Kimberley. It also makes the following statement about the north Kimberley region:

"The north Kimberley has a rich flora and fauna that includes many tropical species, with affinities to Northern Territory and Queensland, that do not occur elsewhere in W.A. It also includes a number of endemic species and *is the only district in Western Australia where there have been no documented extinctions of native species during the period of European settlement. The opportunity to protect these intact ecosystems is of international significance and should not be lost. Their proper management has some urgency - there is evidence that certain native mammal species have recently disappeared from south-eastern parts of the district*". [emphasis added].

Appendix 2.

NATIONAL PARKS AND NATURE RESERVES IN THE KIMBERLEY

* The Kimberley covers an area of 300,000 square kilometers - larger than both islands of New Zealand combined; and four times the size of Tasmania.
* Currently approximately 3% of the Kimberley region is protected within national parks and nature reserves.
* Only three national parks or nature reserves are of sufficient size to maintain the integrity of their component ecosystems - Prince Regent, Purnululu and Drysdale.
* Five tiny national parks - one, Tunnel Creek, is smaller than Centennial Park in Sydney - are about 1 sq km each.
* If all 13 undeclared 1980 'Red Book' proposals were implemented, the figure would rise to 7.9%.
* If both the Red Book areas and additional areas proposed in the CALM report referred to above - the "System 7 Update" - were declared, the figure would become 9%. Compare this with Tasmania where approximately 20% of the land area is protected.

Appendix 3.

CONSERVATION TIMELINE

1960's Australian Academy of Science proposes several parks.
1977 Conservation Through Reserves Committee releases 'Green Book' report proposing 14 new reserves in the Kimberley.
1980 Environmental Protection Authority releases 'Red Book' report - supports the 14 new reserve proposals in the Green Book.
1980 W.A. Cabinet (then Liberal) endorses the 14 proposals in principle. Since then only **one** (Hidden Valley National Park - a very small one) has been declared. The other 13 still await declaration.
1986 The Purnululu (Bungle Bungle) National Park, not previously identified in the Green and Red books, is declared.

1987 CALM writes its report - "Nature Conservation Reserves in the Kimberley ('System 7 Update') - which recommends a few additional proposals. As of January 1991 this report has still not been made public.

1988-90 Government negotiations with Aboriginal traditional owners gain momentum, with particular reference to Purnululu National Park and the proposed conservation reserves on the coast.

1991 As part of the State (ALP) government's mining in national parks policy, all outstanding Red Book reserves were to have been "considered implemented". Just what this means remains unclear.

1991 Three important government reports expected: National Wilderness Inventory assessment of the Kimberley; Kimberley Region Planning Study; and a regional conservation plan from CALM.

Appendix 4.

THE KIMBERLEY WILDERNESS COASTLINE

The Kimberley coastline is 4,340km long (longer than the coastlines of NSW - 1,736km, Vic., Tas., or S.A. - 3,270km). Some 60% - 2,500km - of this coastline remains in a high quality wilderness condition, making it one of Australia's three most significant remaining wilderness coastlines, along with South-west Tasmania and Cape York.

The Wilderness Society estimates that only 2-3% 0f the Kimberley wilderness coastline is protected in national parks and nature reserves. Some 55% is Aboriginal Reserve; 4% is military land; and the remainder is vacant crown land.

The Kimberley wilderness coastline and marine environment are of world significance. Some of its attributes are:

* The longest wilderness coastline left in Australia, and possibly anywhere in the world's tropical zone.
* Highest tidal amplitude in the tropics anywhere in the world.
* Only major savannah coastline in the world that is still wilderness.
* One of the worlds' most important remaining dugong population centres.
* One of the least disturbed turtle populations in the world.
* The only major drowned river valley (ria) system in the tropics.
* Unique rainforest and mangrove ecosystems containing a wealth of species about which next to nothing is known. The rainforest patches are being severely impacted upon by a combination of cattle, fire and weeds.
* An extraordinary array of coral reefs, cays and offshore islands, the latter being important undisturbed habitat for species increasingly under threat on the mainland.

In the north Kimberley, WA has a unique opportunity to enhance the protection of coastal wilderness and bio-diversity through the protection of the many major - and relatively undisturbed - river catchments of the north Kimberley. These include the Isdell, Charnley, Prince Regent, Carson, Drysdale and Berkeley rivers.

This magnificent coastal region is under increasing threat from uncontrolled 4WD-based tourism and ill-considered tourism development schemes, mining, cattle, and the potentially massive oil industry based off the Kimberley coast.in the Timor sea.

Appendix 5.

WILDERNESS

A WILDERNESS is a large tract of land remote at its core from both access and settlement, substantially unmodified by modern technological society or capable of being restored to that state, and of sufficient size to make practical the long- term protection of its natural systems.

Wilderness conservation is now widely recognised as being the key to the maintenance of bio-diversity on this planet. Research has shown that only in large tracts of undisturbed land can a diverse mix of species survive and evolve under natural conditions. Particularly in a world where there are so many processes at work degrading natural ecosystems and pushing species to extinction - to which we must now add the Greenhouse Effect - protecting our last remaining wilderness areas is crucial, whether this be tropical rainforests, Antarctica or the Kimberley.

Apart from its role in maintenance of bio-diversity, wilderness has many other values ranging from spiritual and recreational through to scientific, medical and genetic. Without wilderness areas we will have no benchmark against which to measure the impacts of our activities in non-wilderness areas.

Wilderness is an essential part of our natural heritage - a part of our environment which has aesthetic, cultural, historic and scientific values for future generations as well as for the present community.

In the Kimberley we have one of the three major non-desert wilderness regions left in Australia. The Federal government-sponsored National Wilderness Inventory, which has already produced authoritative surveys of remaining wilderness in three Australian states, is due to commence work in the Kimberley in mid-1991. Once completed, State and Federal government action will be necessary to ensure the protection and maintenance of Kimberley wilderness.

This necessary action would be greatly assisted by wilderness legislation for W.A. (such as exists in NSW and is being adopted in several other States), and by the Department of Conservation and Land Management adopting a more forthright and farsighted approach to wilderness conservation.

The natural environment of the Kimberley in general, and wilderness areas in particular, are under increasing threat from a variety of economic development activities including mining and tourism. In addition there are major problems with feral animals - donkeys, cats and cattle especially - and fire. There is also a major long term process of environmental degradation occuring through the ongoing activities of the pastoral industry. Careful consideration needs to be given to the costs and benefits of this last industry, especially in the north Kimberley.

Appendix 6.

THE RESOLUTION OF THE INTERNATIONAL UNION FOR THE CONSERVATION OF NATURE AND NATURAL RESOURSES (IUCN)

At its 18th General Assembly, held in Perth in 1990, the IUCN - the World Conservation Union - adopted by acclamation the following resolution:

"Recognising that the Kimberley region of Western Australia is the traditional land of an ancient, living Aboriginal culture, and that the Kimberley landscape is an Aboriginal landscape;

"Recognising also that the Kimberley region contains within it large wilderness areas, including a unique wilderness coastline, that rank amongst the most beautiful and biologically significant left in the world;

"Noting that conservation strategies, environment protection controls and the system of nature conservation reserves are far from adequate in the Kimberley, meaning that historical processes of environmental degradation and loss of species diversity continue;

"Further noting that although 3.6% of the Kimberley region is protected as national park or nature reserve, as much as 30% of the region may be of high wilderness quality. The existing reserves also fail to conserve adequately the biodiversity of this unique region and substantial measures are still required to reverse serious environmental degradation;

"Noting that, notwithstanding the announcement at this General Assembly by the Premier of Western Australia that an agreement has been reached between the traditional owners of Purnululu (Bungle Bungle) National Park and the Government of Western Australia over Aboriginal participation in the management of that park, no satisfactory means have yet been found for protecting and promoting the interests and aspirations of the Aboriginal peoples of the Kimberley, particularly with regard to their land aspirations;

"Recalling past recognition by numerous international and national bodies of the potential World Heritage qualities of the Kimberley because of its immense cultural and environmental value;

"The General Assembly of the IUCN at its 18th Session in Perth, Australia, November 28 - December 5, 1990:

"(a) Strongly recommends that relevant State and Federal governments give priority to the development of strategies, including nature conservation reserves owned by the traditional Aboriginal owners as with Kakadu National Park, that will ensure the long term maintenance of the wilderness qualities and biological diversity of the Kimberley region;

"(b) In particular calls upon relevant State and Federal governments to act and protect those wilderness areas identified in the Kimberley region as a result of the Federally sponsored "National Wilderness Inventory";

"(c) Requests the Director General of IUCN to make available on request to relevant State and Federal governments advice and expertise on strategies for the involvement of indigenous peoples in nature conservation reserves and nature conservation strategies."

Appendix 7.

ABORIGINAL LAND

Substantial areas of the Kimberley are now held by Aboriginal communities as Aboriginal Reserves, or as pastoral leases. The Aboriginal Reserves are generally areas of land that no European industry, particularly the pastoral industry, wanted at the time. Because of the disgraceful backdown of the ALP government in the mid-80's, the land rights legislation promised to the Aboriginal people was never enacted. As a consequence Aboriginal peoples have not received due recognition of their prior-ownership of the entire region; do not have sufficient control over the lands they do hold leases over; nor has there been sufficient progress in returning traditional lands to their rightful owners.

Conservation imperatives in the Kimberley must work hand-in-hand with the interests and aspirations of the Aboriginal people.

The Wilderness Society supports Aboriginal ownership of national parks and nature reserves.

Appendix 8.

TOURISM/VISITOR POLICY

The primary aim of the Wilderness Society is the protection of wilderness areas and other areas of high natural value.
In recognition of educative and inspirational values of natural areas, the Society believes that visitor access when managed in a manner that does not compromise wilderness or other natural values and which highlights the natural features of the area, can also present economic benefits.
Visitor experience in natural areas must be consistent with maximising nature conservation and highlighting visitor appreciation of their surroundings.
Provision of visitor access to wilderness and other natural areas must not compromise the the qualities of the area and will be determined largely by visitor carrying capacities.
Wilderness areas must be managed to maximise their qualities of remoteness and naturalness. Visitor access should there fore be managed in accordance with the principles of the 'code of management' for wilderness areas. This code requires that recreational access to wilderness be self reliant and in keeping with 'minimum impact' guidelines. It also requires that opportunities for solitude be available in wilderness areas.
Other areas of high nature conservation, regardless of their formal status, should be managed primarily for nature conservation. Only developments permitted should be for essential management purposes which could include camping areas, ablution blocks, tracks, interpretation centres etc. Visitor access in these areas should occur only in accordance with a plan of management.

Visitor access areas must:

1. be in accordance with determined visitor carrying capacities for a particular area
2. be undertaken on 'natures own terms' ie not require any substantial modification of the wilderness/natural area
3. highlight the natural and cultural features of the area
4. emphasise the quality of visitor experience
5. be in accordance with the wishes of Aboriginal custodians

Where visitor facilities (other than those required for essential management practices) are considered desirable, and it has been determined that the natural area has the capacity to carry extra visitors that might be generated, facilities should be sited well outside the natural area.
Such facilities should :

1. not infringe on the values of adjacent/ nearby natural areas eg facilities are not appropriate adjacent to wilderness areas as such siting would result in the loss of wilderness quality ie remoteness
2. avoid creating new environmental problems and exacerbating old ones
3. be visually and aurally subordinate to the surroundings
4. have 'need' determined through a public planning process
   (a) A tourism strategy developed on the basis of extensive public participation and consultation is required at state, regional and local levels.
   (b) This planning strategy should be undertaken in conjunction with, and subservient to, nature conservation planning.
   (c) Planning process should be open to all levels of public involvement, with participation actively sought, and should have an open ended time frame.
5. be subject to environmental impact assessment under environmental legislation which provides for further public participation
6. cater for ' ordinary people' especially families , as well as specialist facilities ie provision of relatively low cost, easily accessible facilities
7. be acceptable to local communities and spread benefits throughout the local community

Accordingly TWS will promote

1. determination of visitor carrying capacities for natural areas
2. open and extensive planning processes
3. development of tourism strategies in conjunction with nature conservation assessments at national, state, regional and local levels.
4. implementation and use of environmental assessment legislation
5. public scrutiny and government accountability of subsidies for tourist developments
6. development and implementation of plans of management for natural areas
7. public awareness of 'minimum impact' visiting and the 'wilderness code of management'
8. consultation with, and involvement of, Aboriginal custodians.