THE NEED FOR CONSERVATION RESERVES IN SEVERAL PARTS OF DAMPIER LAND.

The Department of Fisheries and Wildlife in conjunction with the Western Australian Herbarium, the W.A. Museum and C.S.I.R.O. Division of Entomology have undertaken biological surveys of the three areas discussed by C.T.R.C. in the context of conservation reserves representing the sandplain province of the Phanerozoic South-West Kimberley (Dampier Land). Even prior to preparation of the results for publication, the initial compilation of data permits certain generalized comparisons between the three areas.

RESULTS

Figure 1 shows rainfall trends (mean annual rainfall) across Dampier Land in relation to the three areas in question. The data is drawn from a climatic description of the Kimberley region compiled by the Bureau of Meteorology (1975) - *'A Brief Climatic Survey of the Kimberley Region'*. Mimeographed.

Figure 2 is a tabulation of the geomorphological mozaics present in each of the three areas.

Figure 3 is a tabulation of the major formations present in each area. Terminology follows Specht, Roe and Boughton (1974) - *Aust. J. Bot. Suppl.* No. 7.

Figure 4 is a set of photographs showing the three areas in the proposed reserve system.

FIGURE 1

WESTERN DAMPIERLAND — RAINFALL (AVE. ANNUAL - mm.) AND PROPOSED SYSTEM OF NATURE RESERVES

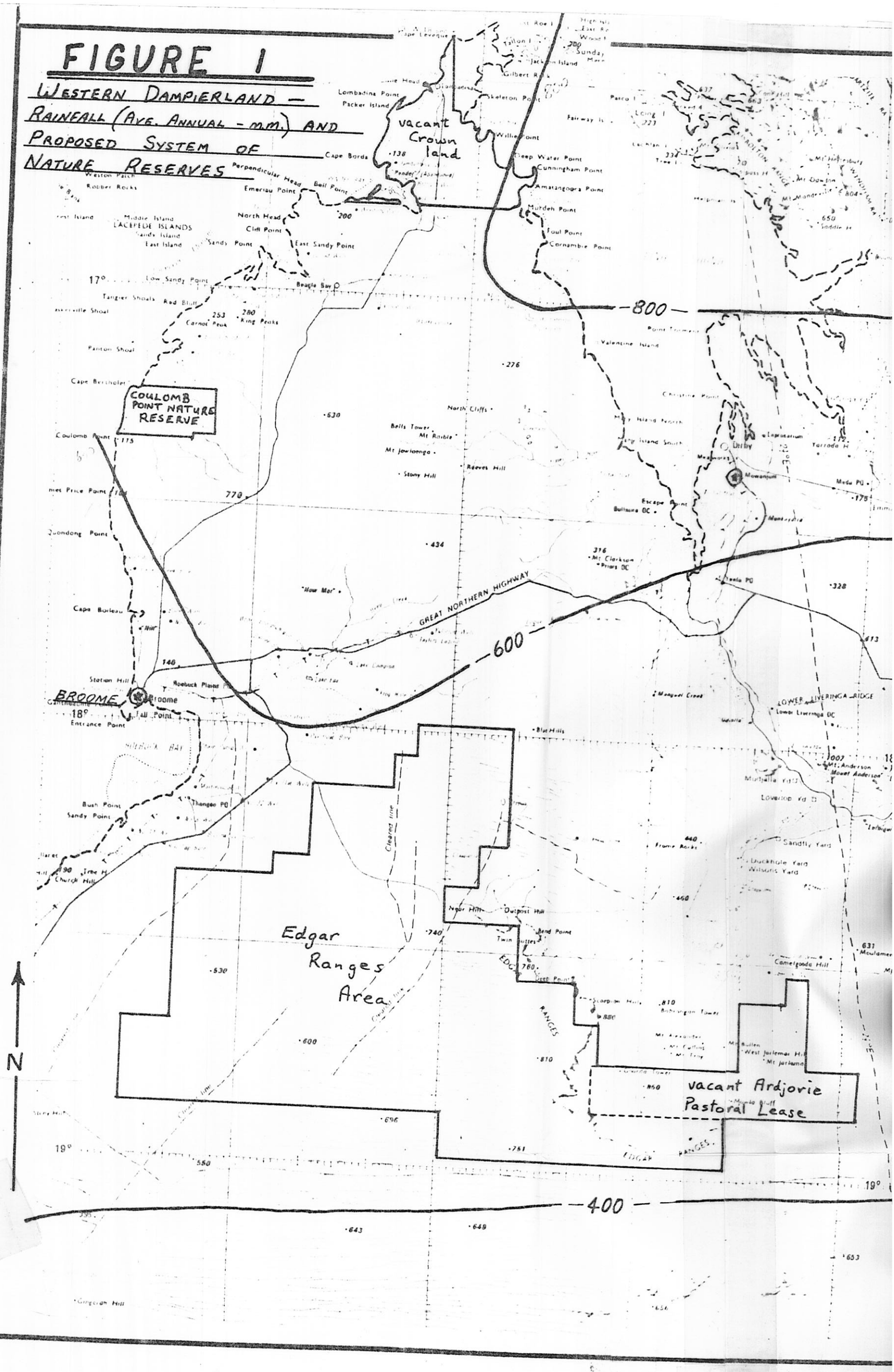


FIGURE 1.

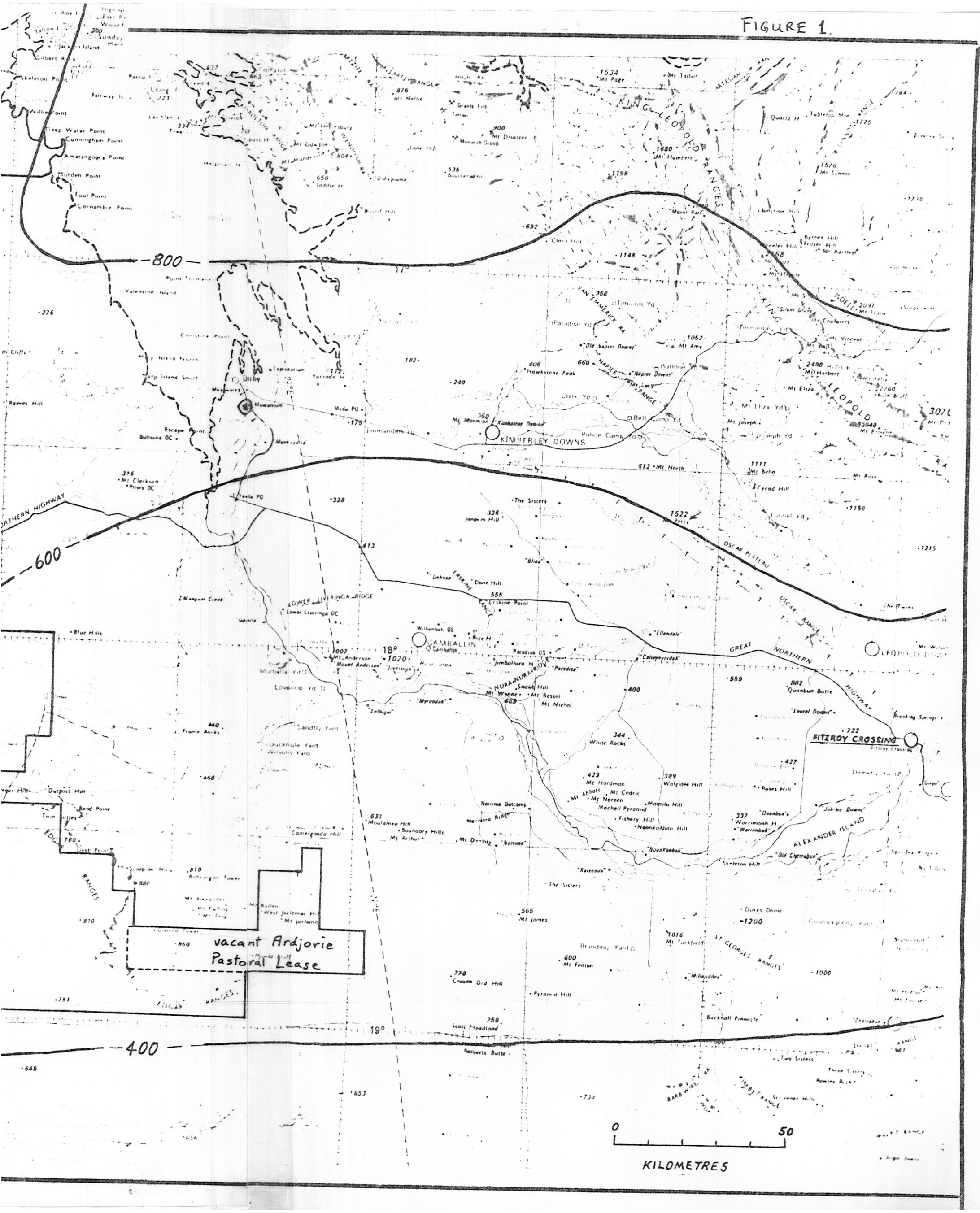

KIMBERLEY DOWNS
vacant Ardjorie Pastoral Lease
LAMBALLIN
LEOPOLD
FITZROY CROSSING
KING LEOPOLD RANGES
OSCAR PLATEAU
OSCAR RANGE
GREAT NORTHERN HIGHWAY
NORTHERN HIGHWAY
LOWER LIVERINGA RIDGE
NURA-NURA RIDGE
ALEXANDER ISLAND
ST GEORGES RANGES
EDGAR RANGES
MCLARTY RANGE
NAPIER RANGE
VAN EMMERICK RA
ERSKINE RANGE
-800-
-600-
-400-
18°
19°
0
50
KILOMETRES

FIGURE 2. - GEOMORPHOLOGICAL MOZAICS OF THE PROPOSED RESERVE SYSTEM

Area Name	Geomorphological Province/s	Geomorphological Mozaics
Coulomb Point Nature Reserve	(1) Sandplain Province of South-West Kimberley	(a) Low-lying sandplains; deep red sands and yellowish sandy soils; pindan vegetation and grassy woodlands with ribbon grass.
		(b) Permanent fresh-water creeks.
		(c) Permanent fresh-water swamps.
		(d) Coastal mudflats.
		(e) Coastal sand-dunes.
Vacant Crown Land around Lombadina Mission	(1) Sandplain Province of South-West Kimberley	(a) Deep yellow sands as sandplains with tall woodlands.
		(b) Reddish sandplain soils with scattered sandstone hills and plateaux.
		(c) Permanent fresh-water swamps.
		(d) Coastal sand-dunes.
		(e) Coastal mudflats
Edgar Range Area	(1) Sandplain Province of South-West Kimberley	(a) Deep red sands as sandplains with pindan vegetation.
		(b) Deep red sands as dune fields with pindan vegetation.
		(c) Hilly sandstone country, red sands and gravelly soils, spinifex grasslands with scattered trees and shrubs.
		(d) Rocky sandstone scarps with outcrops and skeletal soils and spinifex hummock grasslands.
	(ii) Fitzroy Plains Province	(a) Sandy tributary alluvial plains with broad drainage floors; variable soils; low grassy woodlands with short grasses.
	(iii) Sand Ridge Division	(a) Quaternary red sands as dunes and interdune corridors; spinifex hummock grassland and *Acacia* open-shrublands of desertic environments.

FIGURE 3. - MAJOR PLANT FORMATIONS OF PROPOSED RESERVE SYSTEM

	Area Name		
	Coulomb Point Nature Reserve	Vacant Land near Lombadina	Edgar Range Area
1. High Woodlands			
(a) *Melaleuca leucodendron*, *Eucalyptus terminalis*	X	X	-
2. Open-Forest			
(a) *Eucalyptus terminalis*, *E. papuana*, *E. miniata*, *E. polycarpa* (see 3(a))	-	X	-
3. Woodlands			
(a) *Eucalyptus miniata*, *E. polycarpa*	X	-	-
(b) *Eucalyptus ? papuana* - *Pandanus spiralis*	-	X	-
(c) *Eucalyptus camauldensis*	X	-	-
(d) *Eucalyptus* spp., *Bauhinea cunninghamii* *Acacia tumida* (see 5(a))	-	X	-
(e) *Eucalyptus zygophylla*	-	-	X
4. Low Forests			
(a) *Melaleuca acacioides*	X	X	-
(b) Mangrove communities	X	X	-
(c) Semi-deciduous Vine Thicket (see 6(b))	-	X	-
5. Low Woodlands			
(a) *Eucalyptus* spp., *Acacia* spp., *Bauhinea cumminghamii* (see 3(d))	X	-	X
(b) *Acacia* spp. (*A. holosericea*, *A. eriopoda* etc.)	X	-	X
(c) *Tristanea grandiflora*	X	X	-
6. High Open-Shrublands			
(a) *Acacia* spp. - *Grevillea* spp.	-	-	X
(b) Semi-deciduous elements (see 4(c))	X	-	-
7. Low Open-Shrublands			
(a) *Crotalaria* sp. over *Spinifex longifolius*	X	X	-
(b) Samphire meadows	X	X	-
8. Grasslands			
(a) *Triodia* and *Plectrachne* hummock grasslands	-	-	X
(b) Short tussock grasslands	-	-	X
(c) *Cymbopogan* sp. grasslands	X	-	-

DISCUSSION

Although all three areas lie within the Phanerozoic Canning Basin of Western Australia, the areas on the Dampier Peninsula have a climate vegetation and fauna including elements more comparable to the sub-humid north Kimberley than does the Edgar Range area with its strong arid zone affinities.

In terms of vegetation there are obvious major floristic and structural differences between the Edgar Range area and those on the Dampier Peninsula - the former has an arid inland climate with correspondingly sparse low vegetation. The Dampier Peninsula areas have a relatively well watered humid coastal climate giving rise to generally taller denser plant formations with different floristics (Figures 3 and 4) even though similar "sandplain" surfaces are important components of all three areas.

Figure 2 shows that the areas on the Dampier Peninsula support a different array of geomorphological elements to those found on the Edgar Range area, many of which support vegetation associations not present (structurally or floristically) on the Edgar Range area (e.g. Mangroves, Fresh-water Swamps, etc.). The converse is also true - many important geomorphological elements of the Edgar Range

area are not represented on the Dampier Peninsula (e.g. Rocky Ranges, Lateritic and Alluvial surfaces, sandridges, etc.).

Main faunistic differences are the importance of desert species (such as the Sandy Inland Mouse, Desert Warbler, Spinifex Bird and White-fronted Honeyeater) in the fauna of the Edgar Range area and the presence of many species with sub-humid affinities on the Dampier Peninsula (e.g. Black Flying Fox, Sugar Glider, North-Queensland Long-Eared Bat, Northern Blossom Bat, Delicate Mouse, Rose-crowned Fruit-Pigeon and Gouldian Finch).

The floristic and faunistic differences between the two areas on the Dampier Peninsula - the Coulomb Point Nature Reserve and the vacant Crown land around Lombadina - can be related to the rapid change in climatic parameters as one moves northward on the Peninsula. These changes are apparent in the greater luxuriance and height of the vegetation, the trend from low woodlands to woodlands and open forests, and from coastal thickets to well developed semi-deciduous vine thickets, in the more northern area (Figs. 2, 3 and 4). Mangrove communities, although represented on the western coastline of the Peninsula, are far better developed in the relatively sheltered bays along its eastern coastline. These eastern mangrove blocks provide a biological continuum between the mangrove communities of the Yampi Peninsula (to the north) and to the south (around Broome). The only vacant Crown land reaching the eastern coastline of the Peninsula

is in the more northern area. Sub-humid Kimberley species such as the Northern Blossom Bat and Rose-crowned Fruit-Pigeon were recorded on the more northern area but not on the Coulomb Point Nature Reserve.

In conclusion - in conserving the ecological variability of the south-west Kimberley (as a natural region), the Edgar Range area is essential but it does not represent the environments of the Dampier Peninsula. Furthermore, although the relatively small Coulomb Point Nature Reserve has close homologies with the vacant Crown land between Aboriginal Reserve Nos. 1834 and 20927 (around Lombadina), the rapidly changing north-south climatic trends on the Dampier Peninsula make it essential that areas from the vacant land on the northern portion of the Peninsula also be set aside for conservation.

RECOMMENDATIONS

1. (a) That the Edgar Range area outlined in the CTRC report on Sustem 7 be set aside as a Class "A" Nature Reserve, vested in the W.A. Wildlife Authority, to represent the interface between arid portion of the Sandplain Province and the Sand Ridge Division in Dampier Land.

(b) That the vacant Crown land, formerly Ardjorie Station, which to our knowledge is the only currently available area of alluvial surfaces representing the Fitzroy Plains Province in Dampier Land, be included in the Edgar Range Nature Reserve.

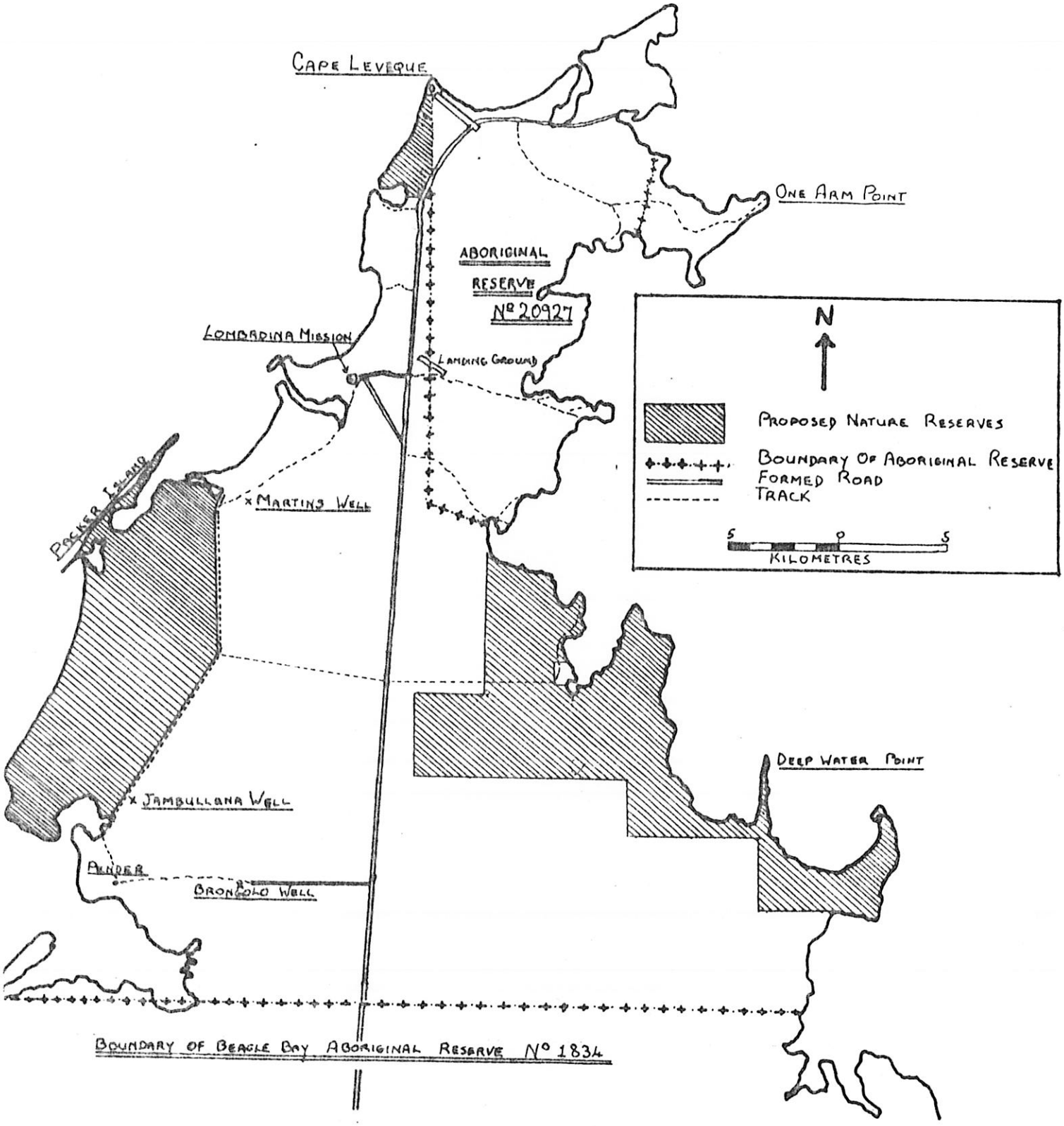
2. That the Coulomb Point Nature Reserve be retained as a Class "A" reserve for the conservation of flora and fauna, vested in the W.A. Wildlife Authority.

3. That three areas from the vacant Crown land between Aboriginal Reserve Nos. 1834 and 20927 be set aside as Nature Reserves, given Class "A" status and vested in the W.A. Wildlife Authority. Although modern criteria for reserve design favour large reserves, because of the needs of the Lombadina Community, their philosophies of land care and management as stated in the submission of the Kimberley Land Council, and their hoped for future involvement in the management of these reserves, if created, it is recommended in this instance that three smaller areas would suffice. These areas are defined (cross-hatched) in Figure 5. They were selected:

(a) To include environments not or insufficiently covered by the Edgar Range area and the Coulomb Point Nature Reserve.

FIGURE 5.

PROPOSED NATURE RESERVES REPRESENTING THE VACANT CROWN LAND NEAR LOMBADINA.



(b) As far as possible to not interfere with the pastoral activities of the Lombadina Community.

(c) To not intrude on the oyster lease.

All three are considered essential. The area including Packer Island is selected to include areas of good quality semi-deciduous vine thicket, coastal sand dunes, mangrove communities, open forests and a fresh-water swamp. The smaller area south of Cape Leveque is included to provide an additional area of the remnant, scientifically and scenically interesting semi-deciduous vine thicket. The area on the eastern side of the Peninsula (including Deep Water Point) is defined to provide coverage of the open-forests of *Eucalyptus* spp. including *E. miniata* found along the back-bone of the Peninsula (above the 40m contour line), the tall woodlands of *Melaleuca leucodendron* and *Eucalyptus polycarpa* found on slopes and in drainage valleys on the eastern side of the Peninsula, the sandstone outcrops and scree hills found along the eastern coastline, and the particularly well developed mangrove communities found in the adjacent sheltered bays.

In reference to the sacred sites which lie within the proposed nature reserves, the W.A. Wildlife Authority has previously made arrangement for access and their use by an aboriginal community (see Appendix 1). A similar arrangement would be negotiated.

APPENDIX 1.

Mr Henry Wallwork,
Aboriginal Legal Service of W.A.,
P.O. Box 608,
Dempster House,
Wedge Street,
PORT HEDLAND, 6721.

Dear Mr Wallwork,

The Western Australian Wild Life Authority at its meeting May 19, agreed that permission should be given to members of the Mowanjum Community:-

(a) to enter the Prince Regent River Reserve for traditional purposes and take kangaroos for food purposes during the period of these visits

(b) to muster cattle on the Prince Regent River Reserve between June 1, 1975 and December 1, 1975. This mustering must be undertaken on horseback. Kangaroos are not to be taken by Community members on the reserve to muster cattle.

The Authority wished it pointed out to the Community that the term "kangaroos" did not include the rock wallabies which exist on the reserve.

I am attaching an Authority to enter the Reserve which has been classified as a prohibited area by the Authority to protect the sites of historic aboriginal importance as much as the fauna which was a good representation of the Kimberley region fauna. I do not believe it was ever envisaged when the reserve was classified "Prohibited Area" that the Mowanjum Community should be denied right to enter the reserve for traditional purposes.

.../2

You are most likely aware that in 1974 a Biological Survey was made of the Prince Regent River Reserve. I am attaching some copies of the report for the Mowanjum Community and yourself.

Yours faithfully,

CHAIRMAN

May 30, 1975
DWA/JT

Encls.

APPENDIX 1.

Fauna Conservation Act 1950

Regulation 47

AUTHORITY TO ENTER A PROHIBITED AREA

RESERVE No. 27164 *PRINCE REGENT RIVER RESERVE*

Members of the Mowanjum Community are allowed for traditional purposes to enter onto the Prince Regent River Reserve which has been classified as a prohibited area in the approved scheme of management of the above reserve.

.....K B Shrigg.....
CHIEF WARDEN OF FAUNA

May 30, 1975.

APPENDIX 1.

Fauna Conservation Act 1950

Regulation 47

AUTHORITY TO ENTER A PROHIBITED AREA

RESERVE No. 27164 *PRINCE REGENT RIVER RESERVE*

Members of the Mowanjum Community are allowed for the purpose of mustering cattle on the Prince Regent River Reserve which has been classified as a prohibited area in the approved scheme of management of the above reserve. This authority shall endure for the period June 1, 1975 to December 1, 1975 inclusive. Mustering of cattle must be undertaken on horseback.

H B Shugg

.....

CHIEF WARDEN OF FAUNA

May 30, 1975.