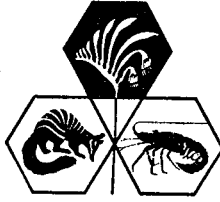


Cover drawings by S.J. Patrick from "Banksia Atlas Instruction Booklet."



DEPARTMENT OF FISHERIES AND WILDLIFE
108 Adelaide Terrace, Perth
Western Australia.

**Western Australian
Wildlife Authority**

**ANNUAL REPORT
1984**

Published by the Director of Fisheries and Wildlife, Perth, under the authority of
the Hon. Minister for Fisheries and Wildlife

DEPARTMENT OF FISHERIES AND WILDLIFE

108 ADELAIDE TERRACE

PERTH

The Honourable H.D. Evans M.L.A.
Minister for Fisheries and Wildlife

Sir,

In accordance with the requirements of Sub-section (5) of Section 7 of the Wildlife Conservation Act 1950, I have pleasure in submitting to you my report on the proceedings and work of the Western Australian Wildlife Authority for the period ending June 30, 1984, together with comments relating to the administration of this Act.



B.K. Bowen
CHAIRMAN

Western Australian Wildlife Authority

TABLE OF CONTENTS

	Page	
I	WESTERN AUSTRALIAN WILDLIFE AUTHORITY AND COMMITTEES	
	1. MEMBERSHIP	1
	2. MEETINGS	3
II	THE FAUNA	
	1. NUMBER OF INDIGENOUS SPECIES	4
	2. LIST OF UNPROTECTED INDIGENOUS SPECIES	4
	3. LIST OF RARE AND ENDANGERED SPECIES	4
	4. OPEN SEASONS	8
	5. IMPORTATION AND KEEPING OF MONKEYS AND OTHER PRIMATES	9
	6. SPECIES DECLARED TO BE FAUNA	9
III	THE FLORA	10
IV	NATURE RESERVES	
	1. INTRODUCTION	14
	2. TABLE OF RESERVES	14
	3. SUMMARY OF NATURE RESERVES	15
	4. NATURE RESERVES VESTED IN THE WESTERN AUSTRALIAN WILDLIFE AUTHORITY	15
	5. NEW RESERVES	16
	6. OTHER CHANGES	18
V	RESERVE MANAGEMENT	
	1. INTRODUCTION	24
	2. MANAGEMENT PLANNING	24
	3. PINGELLY MANAGEMENT DISTRICT	25
	4. WANNEROO AND OTHER DISTRICTS	28
	5. KATANNING MANAGEMENT DISTRICTS	30
	6. TWO PEOPLES BAY	32
	7. KARRATHA	36
	8. OFFSHORE ISLANDS	38
	9. INFORMATION SYSTEMS	38

		Page
VI	WILDLIFE RESEARCH	
	1. BIOLOGICAL SURVEY	41
	2. ANIMAL ECOLOGY	41
	3. PLANT ECOLOGY	48
	4. FLORA CONSERVATION	48
	5. PUBLICATIONS	52
VII	ENFORCEMENT	
	1. ACTIVITIES	55
	2. RESERVES	56
	3. MANAGEMENT PROGRAMME	57
	4. PROSECUTIONS	58
VIII	LICENSING	
	1. SCIENTIFIC PURPOSES	63
	2. EDUCATIONAL AND PUBLIC PURPOSES	63
	3. AVICULTURE	63
	4. GAME	64
	5. KANGAROOS	64
	6. IMPORTS AND EXPORTS OF FAUNA	64
	7. LICENSES TO KEEP FAUNA	69
	8. EMUS	69
	9. FLORA	69
IX	LEGISLATION	
	1. WILDLIFE CONSERVATION ACT	70
	2. WILDLIFE CONSERVATION REGULATIONS	70
X	STAFF	
	1. ADMINISTRATION	71
	2. ENFORCEMENT	71
	3. RESEARCH AND RESERVE MANAGEMENT	72
XI	EXTENSION AND PUBLICITY	73
XII	FINANCE	
	1. WILDLIFE CONSERVATION ACT	74
	2. WILDLIFE CONSERVATION TRUST FUND	75
	STATEMENT OF RECEIPTS AND PAYMENTS	76

1 WESTERN AUSTRALIAN WILDLIFE AUTHORITY AND COMMITTEES

1. MEMBERSHIP

Names and Organisation

Ex officio Members -

Chairman - B.K. Bowen, Director, Department of Fisheries and Wildlife

Mr P.J. McNamara - acting as Conservator of Forests
Deputy - Mr F.J. Campbell, Deputy Conservator

Mr A.W. Hogstrom - Chief Agriculture Protection Officer, Agriculture Protection Board

Dr I. Crook - Conservator of Wildlife, Department of Fisheries and Wildlife

Appointed Members -

Mr R.A. Aitken - Nurseryman

Mr N.A. Beeck - Farmer

Dr P.F. Berry - Head of Division of Natural Sciences - Western Australian Museum

Dr S.J.J. Davies - Zoologist

Dr A.J. McComb - Botanist - Head of the Department of Botany - University of Western Australia

Mr H.G. Hall - Farmer

Mr W.H.B. Lacy - Pastoralist

Professor A.R. Main - Zoologist

Executive Officer -

Mr D.W. Arnold - Administrative Officer, Department of Fisheries and Wildlife

Names of Committees

Bird Committee

Flora Committee

Membership

BIRD COMMITTEE -

Chairman - Mr D.W. Arnold - Administrative Officer, Department of Fisheries and Wildlife

Mr N.A. Beeck - Authority Member

The late B.A. Carmichael - Chief Wildlife Officer, Department of Fisheries and Wildlife (until 1 January, 1984)

Mr D.J. Mell - (vice Mr B. Carmichael)

BIRD COMMITTEE (Contd.) -

Dr S.J.J. Davies - Zoologist
Mr H.G. Hall - Authority Member
Mr A.W. Hogstrom - Chief Agriculture Protection
Officer, Agriculture Protection Board
Deputies - Mr A.J. Oliver
 Mr J. Long
Mr J.A.K. Lane - Research Officer, Western Australian
Wildlife Research Centre
Mr J.R. Masters - Farmer (Ornithologist).
Dr D.L. Serventy - Zoologist
Mr T. Spence - Director, South Perth Zoological Gardens
Dr G.M. Storr - Curator of Birds and Reptiles,
Western Australian Museum
Executive Secretary - Mr N.S. Press - Department of
Fisheries and Wildlife
(Vice - Mr M.C. Grasby)

FLORA COMMITTEE -

Chairman - Mr B.K. Bowen - Director, Department of
Fisheries and Wildlife

Mr R.A. Aitken - Nurseryman
Mr D.W. Arnold - Administrative Officer, Department
of Fisheries and Wildlife
Mr P.J. McNamara - Conservator of Forests
Mrs M. Blackwell - Botanist
Mr P.N. Hewett - Forests Department
Deputy - Mr F. Batini
Mr A.J. Hopkins - Research Officer, Western Australian
Wildlife Research Centre
Dr N. Marchant - Botanist - Western Australian
Herbarium
Dr I. Crook - Conservator of Wildlife,
Department of Fisheries and Wildlife
Dr S.D. Hopper - Research Officer, Western
Australian Wildlife Research Centre
Professor J.S. Pate - Officer in Charge, Department
of Botany, University of Western Australia
Mr R. Shaw - Main Roads Department
Dr P.R. Wycherley - Director, Kings Park Board
Executive Secretary - Mr M.W. O'Donoghue -
Department of Fisheries and Wildlife
(Vice - Mr N.S. Press)

Secretariat

Messrs M.C. Grasby, N.S. Press, B. Stevenson and J.
Nolan carried out the secretarial functions for the
Authority and its various committees.

2. MEETINGS

The Western Australian Wildlife Authority

The Authority met on 4 occasions during 1983/84

Committees

Bird Committee - met on 3 occasions during 1983/84

Flora Committee - did not meet on any occasion during 1983/84

II THE FAUNA

1. NUMBER OF INDIGENOUS SPECIES OF:

Birds	475
Marsupials	68
Other Mammals	66
Reptiles	387
Amphibia	68
	1 064

2. LIST OF UNPROTECTED INDIGENOUS SPECIES AS AT 30.6.84

Mammals

Wild Dog (Dingo) *Canis familiaris dingo*

All invertebrate fauna other than Jewel Beetles of the family Buprestidae and Ants of the genus *Nothomyrmecia*.

3. LIST OF SPECIES RARE OR OTHERWISE IN NEED OF SPECIAL PROTECTION AS AT 30.6.84

Mammals

<u>Scientific Name</u>	<u>Common Name</u>	<u>Government Gazette</u>
<i>Macropus robustus isabellinus</i>	Barrow Island Euro	8.4.83
<i>Macropus eugenii</i>	Tammar	"
<i>Onychogalea lunata</i>	Crescent Nail-tailed Wallaby	"
<i>Lagorchestes conspicillatus</i>	Spectacled Hare-Wallaby	"
<i>Lagorchestes hirsutus</i>	Western Hare-Wallaby	"
<i>Lagostrophus fasciatus</i>	Banded Hare-Wallaby	"
<i>Petrogale penicillata</i>	Brush-tailed Rock-Wallaby	"
<i>Petrogale burbidgei</i>	Warabi	"
<i>Bettongia penicillata</i>	Woolie	"
<i>Bettongia lesueur</i>	Boodie	"
<i>Potorous platyops</i>	Broad-faced Potoroo	"
<i>Potorous tridactylus gilberti</i>	Gilbert's Potoroo	"
<i>Pseudocheirus dahli</i>	Rock-hunting Ringtail	"
<i>Pseudocheirus peregrinus occidentalis</i>	Western Ringtail	"
<i>Wyulda squamicaudata</i>	Scaly-tailed Possum	"
<i>Perameles bougainville</i>	Barred Bandicoot	"
<i>Perameles eremiana</i>	Orange or Desert Bandicoot	"
<i>Chaeropus ecaudatus</i>	Pig-footed Bandicoot	"
<i>Isoodon auratus</i>	Golden Bandicoot	"

Mammals (contd.)

<u>Scientific Name</u>	<u>Common Name</u>	<u>Government Gazette</u>
<i>Macrotis lagotis</i>	Dalgyte	8.4.83
<i>Myrmecobius fasciatus</i>	Numbat	"
<i>Dasyurus geoffroii</i>	Western Native-Cat	"
<i>Phascogale calura</i>	Red-tailed Wambenger	"
<i>Dasycercus cristicauda</i>	Mulgara	"
<i>Antechinus apicalis</i>	Dibbler	"
<i>Sminthopsis longicaudata</i>	Long-tailed Dunnart	"
<i>Sminthopsis butleri</i>	Carpentarian Dunnart	"
<i>Notomys macrotis</i>	Big-eared Hopping-Mouse	"
<i>Notomys longicaudatus</i>	Long-tailed Hopping-Mouse	"
<i>Notomys fuscus</i>	Dusky Hopping-mouse	"
<i>Leporillus conditor</i>	Stick-nest Rat	"
<i>Leporillus apicalis</i>	White-tipped Stick-nest Rat	"
<i>Mesembriomys gouldii</i>	Black-footed Tree Rat	"
<i>Pseudomys chapmani</i>	Pebble-mound Mouse	"
<i>Pseudomys occidentalis</i>	Western Mouse	"
<i>Pseudomys praeconis</i>	Shark Bay Mouse	"
<i>Pseudomys gouldii</i>	Gould's Native Mouse	"
<i>Pseudomys shortridgei</i>	Shortridge's Native Mouse	"
<i>Dugong dugon</i>	Dugong	"
<i>Arctocephalus forsteri</i>	New Zealand Fur Seal	"
<i>Balaenoptera musculus</i>	Blue Whale	"
<i>Megaptera novaeangliae</i>	Humpback Whale	"
<i>Eubalaena gracilis</i>	Southern Right Whale	"

Birds

<u>Scientific Name</u>	<u>Common Name</u>	<u>Government Gazette</u>
<i>Phaethon rubicauda</i>	Red-tailed Tropic-bird	8.4.83
<i>Stictonetta naevosa</i>	Freckled Duck	"
<i>Cereopsis novaehollandiae grisea</i>	Cape Barren Goose	"
<i>Tadorna radjah</i>	Burdekin Duck	"
<i>Aviceda subcristata</i>	Crested Hawk	"
<i>Accipiter radiatus</i>	Red Goshawk	"
<i>Falco peregrinus</i>	Peregrine Falcon	"
<i>Falco hypoleucos</i>	Grey Falcon	"
<i>Megapodius reinwardt</i>	Scrub Fowl	"
<i>Rallus pectoralis clelandi</i>	Lewin's Water Rail	"
<i>Jacana gallinacea</i>	Comb-crested Jacana	"
<i>Anous tenuirostris</i>	Lesser Noddy	"
<i>Ptilinopus regina</i>	Red-crowned Pigeon	"
<i>Chalcophaps indica</i>	Green-winged Pigeon	"
<i>Geophaps smithii</i>	Partridge Pigeon	"
<i>Polytelis alexandrae</i>	Alexandra (Princess) Parrot	"
<i>Platycercus haematogaster narethae</i>	Naretha Bluebonnet	"
<i>Pezoporus wallicus</i>	Ground Parrot	"

Birds (contd.)

<u>Scientific Name</u>	<u>Common Name</u>	<u>Government Gazette</u>
<i>Geopsittacus occidentalis</i>	Night Parrot	8.4.83
<i>Cacatua leadbeateri</i>	Major Mitchell's Cockatoo	"
<i>Tyto capensis</i>	Grass Owl	"
<i>Ninox rufa</i>	Rufous Owl	"
<i>Halcyon chloris</i>	Mangrove Kingfisher	"
<i>Pitta iris</i>	Rainbow Pitta	"
<i>Atrichornis clamosus</i>	Noisy Scrub-bird	"
<i>Coracina tenuirostris</i>	Cicadabird	"
<i>Microeca flavigaster</i>	Lemon-breasted Flycatcher	"
<i>Microeca tormenti</i>	Brown-tailed Flycatcher	"
<i>Poecilodryas superciliosa</i>	White-browed Robin	"
<i>Falcunculus frontatus</i>	Crested Shrike-tit	"
<i>Psophodes nigrogularis</i>	Western Whip-bird	"
<i>Rhipidura rufifrons</i>	Rufous Fantail	"
<i>Dasyornis brachypterus</i>	Brown Bristle-bird	"
<i>Dasyornis broadbenti</i>	Rufous Bristle-bird	"
<i>Amytornis textilis</i>	Thick-billed Grass-wren	"
<i>Malurus coronatus</i>	Purple-crowned Fairy-wren	"
<i>Malurus leucopterus leucopterus</i>	Black and White Fairy-wren (Dirk Hartog I)	"
<i>Malurus leucopterus edouardi</i>	Black and White Fairy-wren (Barrow I)	"
<i>Emblema oculatum</i>	Red-eared Firetail	"
<i>Lonchura flaviprymna</i>	Yellow-rumped Mannikin	"

Birds required to be given special protective measures under Article III of the Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds and Birds in Danger of Extinction and Their Environment.

<u>Scientific Name</u>	<u>Common Name</u>	<u>Government Gazette</u>
<i>Pterodroma leucoptera leucoptera</i>	Goulds Petrel	8.4.83
<i>Pterodroma solandri</i>	Providence Petrel	"
<i>Sula abbotti</i>	Abbott's Booby	"
<i>Fregata andrewsi</i>	Christmas Island Frigatebird	"
<i>Pedionomus torquatus</i>	Plains Wanderer	"
<i>Tricholimnas sylvestris</i>	Lord Howe Island Woodhen	"
<i>Cyanoramphus novaezelandiae cookii</i>	Norfolk Island Parrot	"
<i>Cyclopsitta diophthalma coxeni</i>	Coxens Fig Parrot	"
<i>Neophema crysogaster</i>	Orange-bellied Parrot	"
<i>Psephotus chrysopterygius</i>	Golden-shouldered Parrot	"

Birds (contd.)

<u>Scientific Name</u>	<u>Common Name</u>	<u>Government Gazette</u>
<i>Psephotus dissimilis</i>	Hooded Parrot	8.4.83
<i>Psephotus pulcherrimus</i>	Paradise Parrot	"
<i>Ninox novaeseelandiae rayana</i>	Norfolk Island Boobook Owl	"
<i>Ninox squamipila natalis</i>	Christmas Island Owl	"
<i>Podargus ocellatus plumiferus</i>	Plumed Frogmouth	"
<i>Amytornis dorotheae</i>	Dorothy's Grass-wren	"
<i>Strepera graculina crissalis</i>	Lord Howe Island Currawong	"
<i>Pardalotus quadragintus</i>	Forty-spotted Pardalote	"
<i>Zosterops albogularis</i>	Norfolk Island Silvereye	"
<i>Lichenostomus melanops cassidix</i>	Helmeted Honeyeater	"
<i>Manorina flavigula melanotis</i>	Black-eared Miner	"
<i>Drymodes superciliaris colcloughi</i>	Northern Scrub Robin	"

Reptiles

<u>Scientific Name</u>	<u>Common Name</u>	<u>Government Gazette</u>
<i>Crocodylus porosus</i>	Salt-water Crocodile	8.4.83
<i>Crocodylus johnstoni</i>	Fresh-water Crocodile	"
<i>Pseudemydura umbrina</i>	Western Swamp (Short-necked) Tortoise	"
<i>Dermochelys coriacea</i>	Leathery Turtle	"
<i>Ctenophorus yinnietarra</i>		
<i>Ctenotus delli</i>		
<i>Ctenous lanceolini</i>	Lancelin Island Skink	"
<i>Ctenotus youngsoni</i>		
<i>Egernia stokesii stokesii</i>	Spiny-tailed Skink (Houtman Abrolhos)	"
<i>Egernia stokesii aethiops</i>	Spiny-tailed Skink (Baudin I)	"
<i>Lerista christinae</i>		
<i>Lerista humphriesi</i>		
<i>Lerista lineata</i>	Lined Skink	"
<i>Menetia amaura</i>		
<i>Aspidites ramsayi</i>	Woma	"
<i>Liasis olivaceus barroni</i>	Pilbara Olive Python	"
<i>Python carinatus</i>		
<i>Python spilotos</i>	Carpet Snake	"
<i>Denisonia atriceps</i>		
<i>Vermicella calonotos</i>		

Amphibians

<u>Scientific Name</u>	<u>Common Name</u>	<u>Government Gazette</u>
<i>Arenophryne rotunda</i>	Round Frog	8.4.83
4. OPEN SEASONS		
Open seasons declared in 1983/84		<u>Government Gazette</u>
Finch Trapping Season 1 September to 15 November 1984		15.6.84
Waterfowl Hunting Season (Kimberley, North-West and Eastern Land Divisions) 1 January 1984 to 31 December 1984		16.12.83
Waterfowl Hunting Season (South-West and Eucla Land Divisions) 14 January 1984 to 25 March 1984		16.12.83
Waterfowl Population Management (South-West and Eucla Land Divisions) (Mountain Duck) 1 January 1984 to 13 January 1984 and 26 March 1984 to 31 December 1984		16.12.83
Management of certain species of birds of prey, parrots, cockatoos, crow species and Silvereyes in various Shires		9.9.83
Management of the Red-capped (or Western King) Parrot, the Ring-necked (or Twenty-eight or Port Lincoln) Parrot and the Western Rosella in various Shires		16.3.84
Open Season on various venomous front-fanged land snakes and all Sea Snakes of the family <i>Hydrophiidae</i> when they constitute an immediate danger to human life, farm stock or domestic animals and birds		22.6.84
Existing Open Seasons		
Management of Populations of Red Kangaroo (<i>Megaleia rufa</i>) and Euro (<i>Macropus robustus</i>)		21.11.80
Management of Populations of Emu (<i>Dromaius novaehollandiae</i>)		21.11.80
Management of Sulphur-crested Cockatoos (Eastern sub-species) (<i>Cacatua galerita queenslandica</i> , <i>Cacatua galerita rosinae</i> , <i>Cacatua galerita melvillensis</i> , <i>Cacatua galerita interjecta</i>)		22.5.81
Management of Agile Wallabies (<i>Marcopus agilis</i>)		21.11.80

OPEN SEASONS (contd.)

Existing Open Seasons (contd.)

Government
Gazette

Management of Populations of Grey Kangaroo (<i>Macropus fuliginosus</i>)	21.11.80
Management of Populations of White-tailed Black Cockatoos spp. - <i>Calyptorhynchus</i> <i>baudinii</i> and <i>Calyptorhynchus latirostris</i>	17.7.81
Management of Populations of Black Cormorant (<i>Phalacrocorax carbo</i>) and Pied Cormorant - (<i>Phalacrocorax varius</i>)	20.11.81
Hunting Season - Brown Quail (<i>Synoicus</i> <i>ypsilophorus</i>) and Stubble Quail (<i>Coturnix</i> <i>pectoralis</i>) 1 January to 30 June each year	10.6.83

5. IMPORTATION AND KEEPING OF MONKEYS AND OTHER PRIMATES

By notice in the "Government Gazette" on 5 January, 1979, the Hon Minister for Fisheries and Wildlife prohibited the import into Western Australia and the keeping of any animal of the order "Primates", unless specific authorisation is obtained.

6. SPECIES DECLARED TO BE FAUNA UNDER SECTION 6(2) OF THE WILDLIFE CONSERVATION ACT

(Notice in "Government Gazette" on 23 November 1979)

White Swan (*Cygnus olor*)
Peafowl and Pheasants of the genera *Pavo* and *Phasianus*
respectively on Rottnest Island.

III THE FLORA

The following classes of flora are declared to be protected flora (Government Gazette 18 April 1980):

<i>Pteridophyta</i>	(ferns and fern allies)
<i>Gymnosperms</i>	(conifers and cycads)
<i>Angiosperms</i>	(flowering plants)

Protected flora of the taxa listed below, growing in a natural state and not in a domesticated or cultivated state, are declared to be rare throughout Western Australia. (Government Gazette 12 March 1982)

<i>Acacia anomala</i>	Chittering Grass Wattle
<i>Acacia aphylla</i>	Leafless Rock Wattle
<i>Acacia argutifolia</i>	East Barrens Wattle
<i>Acacia depressa</i>	Echidna Wattle
<i>Acacia guinetii</i>	Guinet's Wattle
<i>Acacia simulans</i>	Barrens Kindred Wattle
<i>Adenanthos cunninghamii</i>	Albany Woollybush
<i>Adenanthos detmoldii</i>	Yellow Jugflower
<i>Adenanthos dobagii</i>	Fitzgerald Woollybush
<i>Adenanthos ellipticus</i>	Oval-leaf Adenanthos
<i>Adenanthos eyrei</i>	Toolinna Adenanthos
<i>Adenanthos ileticos</i>	Club-leaf Adenanthos
<i>Adenanthos pungens</i>	Spiky Adenanthos
<i>Adenanthos velutinus</i>	Velvet Woollybush
<i>Aponogeton hexatepalus</i>	Stalked Water-Ribbons
<i>Asplenium obtusatum</i>	Shore Spleenwort
<i>Baeckea arbuscula</i>	Albany Baeckea
<i>Banksia brownii</i>	Feather-leaf Banksia
<i>Banksia chamaephyton</i>	Fishbone Banksia
<i>Banksia cuneata</i>	Quairading Banksia
<i>Banksia goodii</i>	Good's Banksia
<i>Banksia meisneri</i>	Meisner's Scott River
var. <i>ascendens</i>	Banksia
<i>Banksia sphaerocarpa</i>	Ironcap Banksia
var. <i>dolichostyla</i>	
<i>Banksia tricuspis</i>	Pine Banksia
<i>Boronia tenuis</i>	Blue Boronia
<i>Caladenia bryceana</i>	Dwarf Spider Orchid
<i>Caladenia gemmata</i>	
forma <i>lutea</i>	Yellow China Orchid
<i>Caladenia lavandulacea</i>	Lavender Spider Orchid
<i>Caladenia triangularis</i>	Shy Spider Orchid
<i>Casuarina fibrosa</i>	Woolly Sheoak
<i>Conostylis misera</i>	Grass Conostylis
<i>Conostylis pauciflora</i>	Dawesville Conostylis
<i>Cooperhooikia georgei</i>	Mauve Cooperhooikia

declared rare flora (continued)

<i>Cooperhooikia georgei</i>	Mauve Cooperhooikia
<i>Darwinia acerosa</i>	Fine-leaved Darwinia
<i>Darwinia carnea</i>	Mogumber Bell
<i>Darwinia collina</i>	Yellow Mountain Bell
<i>Darwinia macrostegia</i>	Mondurup Bell
<i>Darwinia masonii</i>	Mason's Darwinia
<i>Darwinia meeboldii</i>	Cranbrook Bell
<i>Darwinia oxylepis</i>	Gillham's Bell
<i>Darwinia squarrosa</i>	Fringed Mountain Bell
<i>Darwinia wittwerorum</i>	Wittwer's Mountain Bell
<i>Daviesia euphorbioides</i>	Wongan Cactus
<i>Diuris purdiei</i>	Purdie's Donkey Orchid
<i>Dodonaea hackettiana</i>	Perth Hop Bush
<i>Drosera occidentalis</i>	Minute Pygmy Sundew
<i>Drummondita ericoides</i>	Moresby Range Drummondita
<i>Drummondita hassellii</i>	Peak Charles Drummondita
<i>var. longifolia</i>	
<i>Eremophila denticulata</i>	Fitzgerald Eremophila
<i>Eremophila inflata</i>	Swollen-flowered Eremophila
<i>Eremophila merrallii</i>	Bruce Rock Eremophila
<i>Eremophila microtheca</i>	Heath-like Eremophila
<i>Eremophila resinosa</i>	Resinous Eremophila
<i>Eremophila serpens</i>	Snake Eremophila
<i>Eremophila virens</i>	Campion Eremophila
<i>Eremophila viscida</i>	Varnish Bush
<i>Eucalyptus aquilina</i>	Mt Le Grand Mallee
<i>Eucalyptus bennettiae</i>	Bennett's Mallee
<i>Eucalyptus brachyphylla</i>	Binyarinrinna Mallee
<i>Eucalyptus burdettiana</i>	Burdett Gum
<i>Eucalyptus caesia</i>	Caesia
<i>Eucalyptus calcicola</i>	Hamelin Bay Mallee
<i>Eucalyptus carnabyi</i>	Carnaby's Mallee
<i>Eucalyptus coronata</i>	Crowned Mallee
<i>Eucalyptus desmondensis</i>	Desmond Mallee
<i>Eucalyptus exilis</i>	Boyagin Mallee
<i>Eucalyptus insularis</i>	Twin Peak Island Mallee
<i>Eucalyptus johnsoniana</i>	Johnson's Mallee
<i>Eucalyptus kruseana</i>	Bookleaf Mallee
<i>Eucalyptus pendens</i>	Badgingarra Mallee
<i>Eucalyptus rhodantha</i>	Rose Mallee
<i>Eucalyptus steedmanii</i>	Steedman's Gum
<i>Franklandia triaristata</i>	Plumed Lanoline Bush
<i>Gastrolobium appressum</i>	Scale Leaf Poison
<i>Gastrolobium glaucum</i>	Wongan Poison
<i>Grevillea baxteri</i>	Cape Arid Grevillea
<i>Grevillea cirsiifolia</i>	Varied-leaf Grevillea
<i>Grevillea drummondii</i>	Drummond's Grevillea
<i>Grevillea dryandroides</i>	Phalanx Grevillea
<i>Grevillea inconspicua</i>	Cue Grevillea
<i>Grevillea infundibularis</i>	Fan-leaf Grevillea

declared rare flora (continued)

<i>Grevillea involucrata</i>	Lake Varley Grevillea
<i>Grevillea prostrata</i>	Pallarup Grevillea
<i>Grevillea ripicola</i>	Collie Grevillea
<i>Grevillea saccata</i>	Pouched Grevillea
<i>Hakea aculeata</i>	Column Hakea
<i>Hakea megalosperma</i>	Lesueur Grevillea
<i>Halosarcia bulbosa</i>	Large-articled Samphire
<i>Halosarcia entrichoma</i>	Eyelash Samphire
<i>Hibbertia bracteosa</i>	Porongurups Hibbertia
<i>Hibbertia miniata</i>	Orange Hibbertia
<i>Hydrocotyle lemnoides</i>	Aquatic Pennywort
<i>Kennedia beckxiana</i>	Cape Arid Kennedia
<i>Kennedia glabrata</i>	Northcliffe Kennedia
<i>Kennedia macrophylla</i>	Augusta Kennedia
<i>Lambertia echinata</i>	Prickly Honeysuckle
<i>Lambertia orbifolia</i>	Round-leaf Honeysuckle
<i>Lambertia rariflora</i>	Green Honeysuckle
<i>Lasiopetalum bracteatum</i>	Helena Velvet Bush
<i>Lechenaultia pulvinaris</i>	Cushion Lechenaultia
<i>Lechenaultia superba</i>	Barrens Lechenaultia
<i>Leucopogon obtectus</i>	Hidden Beard-heath
<i>Myoporum salsoloides</i>	Jerramungup Myoporum
<i>Pityrodia augustensis</i>	Mt Augustus Foxglove
<i>Pomaderris bilocularis</i>	Tutanning Pomaderris
<i>Pomaderris grandis</i>	Large Pomaderris
<i>Prasophyllum lanceolatum</i>	Brown Leek Orchid
<i>Prasophyllum triangulare</i>	Dark Leek Orchid
<i>Ptychosema pusillum</i>	Dwarf Pea
<i>Pultenaea skinneri</i>	Skinner's Pea
<i>Rhizanthella gardneri</i>	Underground Orchid
<i>Ricinocarpus trichophorus</i>	Barrens Wedding Bush
<i>Roycea pycnophylloides</i>	Saltmat
<i>Sowerbaea multicaulis</i>	Many-stemmed Lily
<i>Spirogardnera rubescens</i>	Spiral Bush
<i>Stachystemon axillaris</i>	Leafy Stachystemon
<i>Stawellia dimorphantha</i>	Arrowsmith Stilt-lily
<i>Stylidium coroniforme</i>	Wongan Triggerplant
<i>Stylidium expeditionis</i>	Tutanning Triggerplant
<i>Stylidium galioides</i>	Yellow Mountain Triggerplant

declared rare flora (continued)

<i>Synaphea pinnata</i>	Helena Synaphea
<i>Tegicornia uniflora</i>	Mat Samphire
<i>Thelymitra fuscolutea</i> var. <i>stellata</i>	Star Orchid
<i>Thelymitra macmillanii</i>	Salmon Sun Orchid
<i>Thelymitra psammophila</i>	Sandplain Sun Orchid
<i>Urocarpus niveus</i>	Bindoon Starbush
<i>Urocarpus phebaeioides</i>	Gairdner Range Starbush
<i>Verticordia helichrysantha</i>	Barrens Feather Flower
<i>Verticordia staminosa</i>	Wongan Feather Flower
<i>Villarsia calthifolia</i>	Mountain Villarsia
<i>Wurmbea humilis</i>	Wongan Dwarf Nancy
<i>Wurmbea tubulosa</i>	Long-flowered Nancy

IV NATURE RESERVES

1. INTRODUCTION

The Wildlife Conservation Act defines a Nature Reserve as "land reserved to Her Majesty, or disposed of, under the Land Act 1933 or any other Act, for the conservation of flora or fauna".

Prior to 1975 Nature Reserves were known as "Wildlife Sanctuaries" and included only reserves set aside for the conservation of fauna.

2. TABLE OF RESERVES

Year 30 June	Total Number	Area (ha)	Vested in the W. A. Wildlife Authority	
			No.	Area (ha)
1969	278	2 342 966	127	818 442
1970	315	2 100 318	156	867 362
1971	359	4 955 893	213	4 415 595
1972	404	5 077 224	242	4 533 944
1973	440	5 013 287	265	4 607 266
1974	454	5 033 935	281	4 626 617
1975	491	5 103 037	320	4 713 482
1976	918	5 339 947	351	4 747 403
1977	946	7 520 839	385	6 927 627
1978	995	8 398 648	412	8 086 314
1979	1016	8 536 654	493	8 205 197
1980	1036	9 065 634	555	8 805 310
1981	1062	9 883 231	620	9 663 637
1982	1069	9 889 474	645	9 683 211
1983	1075	9 890 798	674	9 717 039
1984	1131	9 900 531	742	9 877 866

3. SUMMARY OF NATURE RESERVES - JUNE 30, 1984.

As at June 30, 1983	1075 reserves	9 890 796.9663 ha
New Reserves 1983/84	58 reserves	14 115.3192 ha
Amendments 1983/84	28 reserves	-4 369.2771 ha
Cancelled Reserves 1983/84	2 reserves	-11.6346 ha
TOTAL	1131 reserves =	9 900 531.3738 ha

4. NATURE RESERVES VESTED IN WESTERN AUSTRALIAN WILDLIFE
AUTHORITY - JUNE 30, 1984.

As at June 30, 1983	674 reserves	9 717 038.0315 ha
New reserves 1983/84	50 reserves	12 555.9522 ha
Amendments 1983/84	27 reserves	-4 368.9536 ha
Existing reserves vested 1983/84	18 reserves	152 641.3222 ha
TOTAL	742 reserves =	9 877 866.3523 ha

5. NEW RESERVES 1983/84

NO.	NAME	VESTING	AREA	GAZETTED
640		W.A.W.A.	127.5322	1/7/83
12712		Min. Water Res.	45.3097	1/7/83
8937		W.A.W.A.	34.82	1/7/83
36563		Min. Water Res.	397.4302	15/7/83
5062	Niagara Dam	W.A.W.A.	577.4864	25/7/83
38371	Damboring Siding	W.A.W.A.	386.2404	28/7/83
38379		W.A.W.A.	186.0315	28/7/83
30516		W.A.W.A.	106.2198	15/7/83
38334		W.A.W.A.	407.8176	10/6/83
19209		W.A.W.A.	115	29/7/83
33192		W.A.W.A.	78.0605	15/7/83
13232		W.A.W.A.	20.2621	29/7/83
A38395		W.A.W.A.	70.2198	29/7/83
35428		W.A.W.A.	97.1726	29/7/83
37054		W.A.W.A.	16.3127	12/8/83
26005		W.A.W.A.	84.9840	12/8/83
20529		Min. Water Res.	384.15	12/8/83
16068		W.A.W.A.	52.3342	12/8/83
A36936		W.A.W.A.	309.678	12/8/83
38415		W.A.W.A.	40.4686	12/8/83
38401		W.A.W.A.	107.0432	29/7/83
30429		W.A.W.A.	121.4006	15/7/83
15564		W.A.W.A.	16.9933	12/8/83
A20436		W.A.W.A.	141.6096	15/7/83
26799		W.A.W.A.	159.7217	12/8/83
16945		W.A.W.A.	2.0241	26/8/83
15121		W.A.W.A.	3.5612	26/8/83
27385		W.A.W.A.	70.6581	15/7/83
27387		W.A.W.A.	812.2041	15/7/83
38420		W.A.W.A.	36.2061	26/8/83
8019		W.A.W.A.	640	26/8/83
37083		W.A.W.A.	1099.1996	12/8/83
16805		Min Water Res.	139.314	23/9/83
28689		W.A.W.A.	192.5286	23/9/83
24282		Min. Water Res.	307.5	23/9/83
38450		W.A.W.A.	1009.4959	23/9/83
A38393		W.A.W.A.	5.2623	23/9/83
11211		Min. Water Res.	87.5487	23/9/83
29574		W.A.W.A.	858.6	4/11/83
29576		W.A.W.A.	512	4/11/83
15703		Min. Water Res.	5.3760	14/10/83
38522		W.A.W.A.	69.2599	4/11/83
38545		W.A.W.A.	1670.5074	18/11/83
38553		W.A.W.A.	44.0341	2/12/83
38567		W.A.W.A.	64.0204	2/12/83
38544		W.A.W.A.	839.0247	2/12/83
38578		W.A.W.A.	81.2932	30/12/83
17946		W.A.W.A.	259.0619	20/1/84
13102		W.A.W.A.	16.2036	3/2/84
A38649		W.A.W.A.	40.4686	22/3/84
16293		W.A.W.A.	21.5304	16/3/84

32782		W.A.W.A.	609.7525	30/3/84
38703		W.A.W.A.	70.2161	30/3/84
38731		W.A.W.A.	71.5768	4/5/84
21523		Min. Water Res.	45.2266	3/2/84
15057		W.A.W.A.	91.0416	13/4
38574		W.A.W.A.	92.1582	3/2/84
23886	Haddleton Flora	W.A.W.A.	164.1658	16/3/84

TOTAL : 58 New Reserves 14 115.3192 ha

TOTAL of New Reserves Vested in W.A.W.A. = 50

TOTAL Area of New Reserves Vested in W.A.W.A. = 12 555.9522

6. OTHER CHANGES
(i) Amendments to Area 1983/84

NO.	NAME	VESTING	OLD AREA	NEW AREA	DIFFERENCE	DATE
16235		W.A.W.A.	1298.6040	761.4955	-537.11	15/7/83
26664	Lake Dumbleyung	W.A.W.A.	4192.5332	3958.5561	-233.9771	15/7/83
30469		W.A.W.A.	9.3331	10.3792	+1.0482	29/7/83
24532		W.A.W.A.	46.7588	60.7682	+14.0094	29/7/83
A37060		W.A.W.A.	134.0066	135.9198	+1.9132	15/7/83
14039	Gairdner River	W.A.W.A.	431.3949	622.4883	+191.0934	29/7/83
24496		-	69863.3867	69863.0632	-0.3235	Statistical correction
28558	Namning	W.A.W.A.	5411.3388	5431.6392	+20.3004	12/8/83
26894	Mettler Lake	W.A.W.A.	266.4906	401.6065	+135.1159	15/7/83
8291		W.A.W.A.	1100ha	137.1885	-962.8115	12/9/83
15388	Mettabinup	W.A.W.A.	157.0989	156.7652	-0.3337	14/10/83
						Statistical correction
29322	Wean	W.A.W.A.	224.6005	221.5533	-3.0472	29/7/83
17298		W.A.W.A.	271.6680	251.4337	-20.2343	14/10/83
23068		W.A.W.A.	34.3250	27.7454	-6.5796	14/10/83
25884	Wandjagill	W.A.W.A.	752.1512	763.8367	+11.6864	4/11/83
25872		W.A.W.A.	440.7963	536.7904	+95.9941	18/11/83
25904		W.A.W.A.	43.7060	163.1500	+119.4440	2/12/83
28940		W.A.W.A.	4367.8179	4377.3492	+9.5313	2/12/83
32777	Kau Group	W.A.W.A.	9039.4782	8550.7739	-488.7043	16/12/83
19628		W.A.W.A.	21.1449	57.0881	+35.9432	20/1/84
27080	The Broadwater	W.A.W.A.	25.4421	44.3833	+18.9412	3/2/84
A17662	Scruvner's Rock	W.A.W.A.	798.6143	903.4126	+104.7983	16/4/84
12329	Baandee	W.A.W.A.	199.0158	90.1655	-108.8503	4/5/84
25194	Anderson's Lake	W.A.W.A.	436.9096	424.4770	-12.4326	25/5/84
20262	Jilbadgi Rocks	W.A.W.A.	1020.8721	1018.7072	-2.1649	13/1/84
4990		W.A.W.A.	139.2119	70.5373	-68.6746	25/5/84
36913		W.A.W.A.	6090	3402	-2688	25/5/84
29322	Wean	W.A.W.A.	221.5533	225.7008	+4.1475	11/5/84
			Total -	=		
			Total +	=		
			Total area amended	=		
			Total 27 W.A.W.A. Reserves amended	=		

(ii Existing Reserves Vested 1983/84

(including "other than" W.A.W.A.)				
NO.	NAME	VESTING	AREA (ha)	DATE
27388		W.A.W.A.	4467.1228	1/7/83
29589		W.A.W.A.	40.4686	15/7/83
16235		W.A.W.A.	761.4955	15/7/83
25126		Min. Water Resources	79.8850	5/8/83
23991		W.A.W.A.	723.2895	5/8/83
2737		W.A.W.A.	40.4686	5/8/83
15855		W.A.W.A.	40.4686	11/8/83
26669		W.A.W.A.	54.0580	12/8/83
7128		Min. Water Resources	40.4686	12/8/83
12899		W.A.W.A.	59.0841	12/8/83
16683	Gabbin	W.A.W.A.	9.0295	12/8/83
31744	Cascade (group)	W.A.W.A.	288.3031	15/7/83
32131	Beaumont (group)	W.A.W.A.	1057.6586	29/7/83
737		W.A.W.A.	18.6838	12/8/83
24944		W.A.W.A.	416.8869	12/8/83
31742	Cascade Group	W.A.W.A.	1179.3830	9/9/83
32129	Beaumont (group)	W.A.W.A.	1751.5680	14/10/83
34385	Nambudding	W.A.W.A. & Shire	14.1613	1/7/83

(iii)

Existing Reserves, Change of Purpose 1983/84

NO.	NAME	VESTING	FROM	TO	AREA	GAZETTED
640		W.A.W.A.	Water & stopping place for teams	Cons flora & fauna	127.5322	1/7/83
27388		W.A.W.A.	Con of flora	Con flora & fauna	4467.1228	1/7/83
8937		W.A.W.A.	Government Requirements	Con. Flora & fauna	34.82	1/7/83
36563		Min. Water Resources	Water & Gravel	Water & Cons. Flora & Fauna	397.4302	15/7/83
5062	Niagra Dam	W.A.W.A.	Water	Water & Cons. Flora & Fauna	577.4864	25/7/84
29589		W.A.W.A.	Cons. of Flora	Cons. Flora & Water	40.4686	28/7/83
25126		Min. Water Resources	Water	Cons flora & fauna	79.8850	5/8/83
23991		W.A.W.A.	Water	Flora & Fauna		
2737		W.A.W.A.	Rest Place. Travellers and Stock	Cons. Flora & Fauna	723.2895	5/8/83
15855		W.A.W.A.	Cons of Flora	Cons flora & fauna	40.4686	5/8/83
26669		W.A.W.A.	Cons. of Flora	Cons Flora & fauna	40.4686	11/8/83
7128		Min. Water Resources	Water	Cons flora & fauna	54.0580	12/8/83
16683	Gabbin	W.A.W.A.	Water	Water & Cons. of Flora & Fauna	40.4686	12/8/83
30516		W.A.W.A.	Water	Cons flora & fauna	9.0295	12/8/83
18772		W.A.W.A.	Timber	Cons flora & fauna	106.2198	15/7/83
1432	Sandford Rocks	W.A.W.A.	Protection of of flora	Cons flora & fauna	192.6304	15/7/83
19209		W.A.W.A.	Water & cons of flora & fauna	Cons flora & fauna	805.9391	29/7/83
33192		W.A.W.A.	Timber	Cons flora & fauna	115.00	29/7
13232		W.A.W.A.	Timber	Cons flora & fauna	78.0605	15/7/83
737		W.A.W.A.	Water	Cons flora & fauna	20.2621	29/7
35428		W.A.W.A.	Cons of flora Parkland &	Cons flora & fauna	18.6838	12/8/83
		W.A.W.A.		Cons. flora & fauna	97.1726	29/7/83

31561	recreation				
35621	Cons flora	W.A.W.A.	Cons flora & fauna	52.3056	12/8/83
	Govt require- ments	W.A.W.A.	Cons flora & fauna	12.876	12/8/83
37054	Protec. of Indigenous timber	W.A.W.A.	Cons flora & fauna	16.3127	12/8/83
26005	Recreation	W.A.W.A.	Cons flora & fauna	84.9840	12/8/83
20529	Water	Min Water Resources	Water cons flora & fauna	384.15	12/8
30429	Timber	W.A.W.A.	Cons flora & fauna	121.4006	15/7/83
15564	Water	W.A.W.A.	Cons flora & fauna	16.9933	12/8/83
26661	Cons flora	W.A.W.A.	Cons flora & fauna	347.2203	12/8/83
26894	Cons of flora	W.A.W.A.	Cons flora & fauna	401.6065	15/7/83
20878	Cons of flora	W.A.W.A.	Cons flora & fauna	24.8327	15/3/83
17298	Water & cons of of flora	W.A.W.A.	Cons flora & fauna & water	271.6680	12/8/83
A20436	Water supply purpose	W.A.W.A.	Cons flora & fauna	141.6096	15/7/83
26799	Public utility	W.A.W.A.	Cons flora & fauna	159.7217	12/8/83
15121	Recreation	W.A.W.A.	Cons flora & fauna	3.5612	26/8/83
16945	School site	W.A.W.A.	Cons flora & fauna	2.0234	26/8/83
27385	Water & cons flora	W.A.W.A.	Cons flora & fauna	70.6581	15.7.83
27387	Cons flora	W.A.W.A.	Cons flora & fauna	812.2041	15/7/83
8019	Water	W.A.W.A.	Cons flora & fauna	416.8869	12/8/83
16805	Water & cons of indigenous timber	Min Water Resources	Water cons flora & fauna	139.314	25/9/83
28689	Gravel	W.A.W.A.	Cons flora & fauna	192.5286	23/9/83
24282	Water supply	W.A.W.A.	Water cons flora & fauna	307.5	23/9
11211	Water	Min Water Resources	Water cons	87.5487	23/9/83
798	Water & stopping place	W.A.W.A.	Cons flora & fauna	50.5072	24/10/83
689	Water	Shire & W.A.W.A.	Cons flora & fauna	258.9988	1/7/83
10992	Picnic.	Shire &	Cons flora & fauna	258.9988	1/7/83

Mettler Lake

23877	W.A.W.A. Shire &	Protection of flora	Cons flora & fauna	1/7/83
23068	W.A.W.A.	Protect. of native flora	Cons flora & fauna	14/10/83
29574	W.A.W.A.	Govt require- ments	Cons flora & faun.	4/11/83
29576	W.A.W.A.	Govt require- ments	Cons flora & fauna	4/11/83
15703	Min Water Resources	Railway, Water Supply	Water Cons flora &	14/10/83
17798	W.A.W.A.	Cons of flora	Cons flora & fauna	4/11/73
11522	W.A.W.A.	Cons of flora	Cons flora & fauna	4/11/83
25904	W.A.W.A.	Cons of flora	Cons flora & fauna	2/12/73
19628	W.A.W.A.	Cons of flora	Cons flora & fauna	20/1/84
17946	W.A.W.A.	Timber	Cons flora & fauna	20/1/84
13102	W.A.W.A.	Townsite & recreation	Cons flora & fauna	3/2/74
26564	W.A.W.A.	Cons of flora	Cons flora & fauna	17/2/84
31913	W.A.W.A.	Cons of flora	Cons flora & fauna	16/3/84
A26762	Heathland N/R	Cons flora	Cons flora & fauna	2/5/84
16293	W.A.W.A.	Government requirements	Cons flora & fauna	16/3/84
32782	W.A.W.A.	Recreation & Water	Cons flora & fauna	30/3/84
AL7662	Scriveners Rock	Water & Cons flora & fauna	Cons flora & fauna	13/4/84
21523	Min Water Resources	Water	Water cons flora & fauna	3/2/74
15057	W.A.W.A.	Water	Cons flora & fauna	13/4/84
32178	Hammond Park	Cons flora & fauna	Parkland	4/5/84
17646	W.A.W.A.	Timber	Cons flora & fauna	20/1
23886	Haddleton flora	Protection of Boronia & other flora	Cons flora & fauna	164.1658 16/3/84

iv) Cancellations: Vesting/Reserves etc 1983/84

NO.	ORIGINAL PURPOSE	NEW PURPOSE	AREA	DATE
24045	Preservation of Flora	Preservation of River Erosion	2.4863	11/5/84
32178	Cons. Flora & Fauna	Parkland	9.1483	4/5/84

V RESERVE MANAGEMENT

1. INTRODUCTION

The Reserve Management Section has further consolidated its function within the Wildlife Research Branch with the appointment of a Reserve Management Officer and Reserves Officer at Katanning in June of 1984. This is part of the continuing strategy, authorised by Cabinet and the Public Service Board in 1977, to improve reserve management operations throughout the south-west by basing staff in country areas. The Katanning team is the second rural-based management team to be established; the first being the Pingelly team in 1977-78. The appointment of the Katanning team should solve the previous difficulties which have existed for the Department in providing adequate fire protection arrangements for the region.

A proposal for a third country-based management team at Wongan Hills has not yet been approved. Similar problems to those being experienced in the Katanning area can be expected to develop in the Wongan Hills area if delays continue. In addition to the immediate need for fire protection for many of the district's nature reserves, the appointment of the Wongan Hills team is vital to the successful implementation of the recently completed management plan for the nature reserves in the southern half of the shire of Dandaragan. The rapid and successful implementation of such plans is important, both in terms of indicating the Department's active interest in its reserves, and in encouraging community appreciation of their local nature reserve system.

2. MANAGEMENT PLANNING

(i) Management Plans

Seven management plans have passed through various stages of the management planning process. These are:

- | | | |
|----|--|---|
| 1. | Nature Reserves of the Shire of Dandaragan, Volume 1 | Final Plan in press |
| 2. | Nature Reserves of the Shire of Toodyay | Audit of public submissions and final plan in preparation |
| 3. | Mooradung Nature Reserve | Draft plan in press |
| 4. | Nature Reserves of the Shire of Wyalkatchem | Draft plan in preparation |

- | | | |
|----|---|----------------------------------|
| 5. | Nature Reserves of the Shires of York and Northam | Pre-planning surveys in progress |
| 6. | Nature Reserves of the Dampier Archegelago | Draft plan in preparation |
| 7. | Two Peoples Bay Nature Reserve | Draft plan in preparation |

Work is continuing on management plans for Chiddarcooping Nature Reserve and for nature reserves of the Perth Metropolitan Region.

(ii) Metropolitan Nature Reserves.

The department held a one-day seminar in September 1983 on the management of small bush areas in the Perth metropolitan region. The seminar brought together government departments, local government authorities, tertiary institutions and community groups to listen to 22 speakers. The speakers emphasised the problems of fire and weed control, the need for survey and planning, and for continuing management input, if management for nature conservation in the urban environment is to be successful. Proceedings of this seminar were published in April 1984.

3. MANAGEMENT OPERATIONS: PINGELLY MANAGEMENT DISTRICT

The Pingelly Reserve Management Team (PRMT) comprised two permanent officers plus a casual employee. The additions of new Nature Reserves has brought the total area managed by the PRMT to 273 and the total area to 180,777 ha. It is quite apparent that to properly manage these areas, increased staffing levels are required to provide greater opportunity for technical study and effective fire protection.

(i) Biological Survey

Twenty six Nature Reserves, or areas of bushland, were surveyed by the PRMT in the past year. Ten proposed reserves were inspected and six of these were recommended, while seven unvested Nature Reserves were inspected and all but one recommended for vesting in W.A.W.A. Three Nature Reserves were surveyed for specialised reasons, two for on-site developments, and one for A Class classification. The remaining six Nature Reserves were surveyed as part of the work program.

Contract biological surveys were let during the year for two major Nature Reserves from the south-east and north-west corners of the PRMT District. These surveys were conducted on the Dunn Rock Nature Reserve in the Lake Grace Shire, and the three Nature Reserves of the Dobaderry group in the Beverley

Shire. The plant specimens from these surveys are being incorporated into the Pingelly herbarium which at present houses over 750 species.

(ii) Firebreak Construction

During 1983/84 considerable firebreak construction and upgrading work was performed. The construction of the Dunn Rock (84 km) and Dragon Rocks (160 km) firebreak systems was continued, and an external firebreak was constructed around the central Dobaderry Nature Reserve (17.5 km).

Improvements to the Tutanning and Boyagin Nature Reserves firebreak systems continued as an ongoing project during 1983/84, with 17.5 km of external firebreaks at Tutanning being upgraded, while 7.8 km of old breaks at Boyagin were upgraded and 7.7 km of new firebreaks constructed. In addition the external firebreak on Staunton Nature Reserve (9.6 km) was upgraded.

The work on the Dunn Rock and Dragon Rocks Nature Reserves will continue into 1984/85, with the Dunn Rock vegetation survey being used to plan the construction of internal firebreaks. With the preparation of the Mooradung Nature Reserve management plan nearing completion, the internal firebreak system for this reserve will also be constructed during 1985.

In the PRMT District 53% of the Nature Reserves are greater than 100 ha in size. Of these only 30% are firebreaked. 33% are either not vested in W.A.W.A., or have low firebreak requirements due to being principally granite outcrops or salt lake systems, leaving 37% (53 Nature Reserves) being vested in W.A.W.A., of a significant size, and requiring firebreaks. The fulfilling of this requirement would take many years on present levels of funding.

(iii) Firebreak Maintenance

The length of firebreaks maintained by PRMT totals 1031 km, being 760 km of external breaks and 271 km of internal breaks. Fifty five reserves (four of which are encompassed in larger reserves) are firebreaked. The firebreak maintenance organised by the PRMT has been reduced slightly with the formation of the Katanning Management Team.

(iv) Wildfires and Fire Control

During 1983/84 the PRMT attended one wildfire adjacent to a Nature Reserve and were instrumental in preventing it entering that reserve. One very mild wildfire was discovered and extinguished on Mooradung Nature Reserve by the Waroona Wildlife Officer. This

did not cause any major damage.

Ten controlled burns adjacent to Nature Reserves were attended by the PRMT. Despite several "hopovers" into Nature Reserves, no fire damage resulted and this was largely attributable to the presence of the PRMT. One fire escape occurred into private bush and assistance was given to combat this.

Six other controlled burns occurred adjacent to Nature Reserves, but these were not attended by PRMT personnel. This lack of attendance was partially due to a lack of notification on the day, but the main reason was the commitment of resources at other burns. This is a problem of attempting to manage so many Nature Reserves with so few personnel. It was only fortunate that despite several wildfires occurring at these burns, no area of Nature Reserve was burnt.

(v) Prescribed Burns

Weather conditions prevented the planned research burn at Tutanning Nature Reserve being carried out. The only prescribed burn done by the PRMT during 1983/84 was the edge burn at Tutanning in preparation for this burn, and a buffer burn at Yillimilling Nature Reserve in June 1984.

(vi) Other Activities

General management activities undertaken during the year include:

- (a) Nature Reserve inspections for firebreak maintenance, rare flora and general information gathering;
- (b) production and improvement of fire access maps for each Nature Reserve;
- (c) liaison and meetings with local Shires with regards fire control, tourism and gravel/sand extraction;
- (d) examination of mining proposals on Nature Reserves;
- (e) liaison with Government Departments and Tertiary Institutions with regards research and developmental activity on Nature Reserves;
- (f) supervising and accessing rehabilitation work;
- (g) interaction with the Departmental Wildlife Officers; and
- (h) general maintenance activity, especially with

regards to firebreaks.

4. MANAGEMENT OPERATIONS - WANNEROO AND OTHER DISTRICTS

(i) Firebreak Maintenance

With the appointment of the Katanning Reserve Management Team a large number of Nature Reserves previously managed from Wanneroo became the responsibility of that team. Whilst this has led to a reduction in the total length of firebreaks being maintained from Wanneroo it is becoming apparent that in the remaining areas there are two aspects which require attention; these being:

- (a) Noticably in the region known generally as the "Northern Sandplains" there is a need for construction, both on Nature Reserves which do not have firebreaks and to consolidate existing firebreak systems (e.g. Mt Lesueur Nature Reserve).
- (b) It has been found that there are a number of Nature Reserves on which firebreaks are maintained but are not part of a planned maintenance schedule.

Total length of firebreaks managed from Wanneroo is now 1270 km.

A total of 360 km of firebreaks were maintained by contract during 1983/84

(ii) Firebreak Construction

<u>Reserve No.</u>	<u>Name</u>	<u>Length (km)</u>	<u>Local Authority</u>
2663	-	10	Greenough
28167	Banksia Road	0.5	Serpentine- Jarrahdale

(iii) Fire control

The number of wildfires attended by crews from Wanneroo both on and adjoining Nature Reserves was 25 (1982/83 - 20). Of this number three fires were in the Katanning Management District.

The main cause of wildfires is the escape from adjoining prescribed burning operations.

The following is a summary of wildfires attended:

a) Wildfires on Nature reserves. Total No. 16

<u>Reserve No.</u>	<u>Name</u>	<u>Local Authority</u>
15762	Big Brook	Manjimup
23012	-	Serpentine- Jarrahdale
A 15556	Thomsons Lake (2 fires)	Cockburn
24496	"Beekeepers"	Dandaragan Coorow Carnamah Irwin
A 25210	Eganu & Pinjarrega Lakes	Coorow
33842	Quarram	Denmark
A 23756	Harvey Estuary (3 fires)	Murray
34811	Benger Swamp (3 fires)	Harvey
22199	-	Waroona
32202	Karnet	Serpentine- Jarrahdale
A 25113	Lake Magenta	Lake Grace/Kent

(b) Wildfires adjoining Nature Reserves. Total No. 9

<u>Reserve No.</u>	<u>Name</u>	<u>Local Authority</u>
A 15556	Thomsons Lake (3 fires)	Cockburn
A 30191	Moodyne	Toodyay
4990	-	Murray
30809	Woodvale (3 fires)	Wanneroo
31781	Nilgen	Gingin

The summary of prescribed burning activities is as follows:

(a) Prescribed Burns on Nature Reserves. Total No. 3

<u>Reserve No.</u>	<u>Name</u>	<u>Local Authority</u>
31781	Nilgen (2 burns)	Gingin
30809	Woodvale	Wanneroo

(b) Prescribed Burns adjoining Nature Reserves. Total No. 10

<u>Reserve No.</u>	<u>Name</u>	<u>Local Authority</u>
31781	Nilgen (2 burns)	Gingin
A 30191	Moodyne (3 burns)	Toodyay
30809	Woodvale	Wanneroo
A 15556	Thomsons Lake	Cockburn
36203	- (2 burns)	Irwin
A 27620	Ellen Brook	Swan

(iv) Projects

The large commitment to fire control restricts general maintenance and project work during the fire

season. Nonetheless there are four general areas, apart from routine maintenance, that are receiving the attention of the Wanneroo Reserve Management Team.

- (a) 17 Nature reserves now have signs following the Department's Sign Standard placed on them. The placement of signs on further Nature Reserves as well as the maintenance of existing signs is expected to be an ongoing project.
- (b) A fire control program for Nature reserves in the Murray Shire is being drawn up. This program will necessitate works such as drain causeway construction, the placement of low post and rail fences across firebreaks, in an attempt to control vehicle access and the burning of perimeter and block buffer strips.
- (c) Rubbish removal from Nature Reserves is receiving attention. This is at present mainly taking place on the metropolitan and near metropolitan Nature Reserves.
- (d) Whilst a substantial amount of work has already been undertaken on the Nature Reserves in the Toodyay Shire, following the period of Public Submission on the draft Management Plan, a further commitment will be made toward the implementation of the Toodyay Management Plan when it is finalised.

5. MANAGEMENT OPERATIONS - KATANNING MANAGEMENT DISTRICTS

As a result of a report written by Dr A.A. Burbidge and Senior Technical Officer T, Evans in 1976 (Department of Fisheries and Wildlife Report No 23), the Cabinet of the day endorsed a proposal to establish reserve management teams in Pingelly, Katanning and Wongan Hills. Following the establishment of the Pingelly Management team in 1978 no further funds were allocated to complete the initial system of management teams.

Recognising the high importance of rural based management teams and given that no new funds were available, the Department converted two existing items to management positions to enable a reserve management team to be established at Katanning. These new items were filled in 1983 by Reserve Management Officer K. Wallace (previously Reserve Management Officer at Pingelly) and Reserves Officer M. Graham (previously Reserve Management Assistant at Pingelly). Both officers commenced duties as the Katanning Reserve Management Team (KRMT) during October 1983.

As the Two Peoples Bay Nature Reserve lies within the Katanning Management District the Reserves Officer based at the Bay has been included within the KRMT. The team

has also been fortunate to have the services of Ms A. Napier as a temporary Reserve Management Assistant for several months.

The Katanning Management District includes 18 Local Authorities and one Town Authority (Table 1). General data on the reserves in the District is given in Table 2.

With the exception of the officer at Two Peoples Bay, the personnel of the KRMT were initially based in Perth. However when the construction of office facilities was completed during June 1984, the KRMT shifted to Katanning.

While based in Perth the KRMT expended its efforts in three general areas. These were:

1. dealing with urgent management problems as they arose;
2. monitoring or increasing the level of ongoing activities such as firebreak maintenance;
3. gathering data and equipment required by the KRMT in Katanning.

The period in Perth provided a most useful opportunity to acquire equipment and information, a point which should be considered when new management teams are established in the future.

The following is a general account of the work undertaken by the KRMT since its establishment.

(i) Biological Survey

(a) Crown Land

An unvested reserve and an area of vacant Crown land were surveyed during the year. Of these, the former was recommended as a nature reserve and the latter for inclusion into an adjoining nature reserve.

(b) Unvested Nature Reserves

One unvested nature reserve was surveyed. No recommendation will be made concerning the vesting of this reserve until data has been collated on other bushland areas within the region.

(c) Vested Nature Reserves

Data on the wildlife of vested nature reserves has been collected on an opportunistic basis during the year. Apart from providing an improved data base for reserves, this work has also resulted in the extension of the known geographic range of Drummond's Gum (Eucalytus drummondii) and an orchid, (Caladenia corynephora).

(d) Private Property

One area of privately-owned bushland was examined during the year and recommended as a nature reserve. While this area would provide a most useful addition to the system of nature reserves, it is unlikely that funds will be available to purchase this land.

(e) Consultancies

A report was completed on the vegetation of the Unicup, Yarnup, and Kulunilup Nature Reserves by consultant Mr E. Griffin during May 1984. This report will be used for management planning.

(ii) Management Planning

A draft management plan for Mooradung Nature Reserve is now ready for public release and comment. It is hoped that the final plan will be published during 1984/85. Although Mooradung Nature reserve lies within the Pingelly Management District, the plan will be completed by the Katanning Reserve Management Officer who began the project while in Pingelly. Once this plan is published, planning will begin for a nature reserve within the Katanning Management District.

Since October the KRMT has completed an interim fire protection plan for Smiths Brook Nature Reserve in the Shire of Manjimup.

(iii) Jarrah Dieback

Jarrah Dieback is a well known disease caused by the pathogen Phytophthora cinnamomi. Of the four management districts, that of Katanning contains the largest area of land infested with or threatened by dieback. Consequently the protection of nature reserves in relation to this disease will be accorded high priority within the district.

...s part of a four year program aimed at defining the extent of dieback within the Katanning nature reserves, consultant Mr R. Hart prepared a document detailing a method for assessing nature reserves for infection. Over the next three years, if personnel and funds are available, nature reserves in the most dieback prone areas will be assessed for disease.

6. TWO PEOPLES BAY NATURE RESERVE

(i) Public Usage

11,700 vehicles were recorded entering the reserve during 1983/84. This represents a 3.7% increase in public usage over the past year. A large number of ornithologists, both amateur and professional,

continue to visit the reserve each year and many of these visitors request assistance from Reserves Officer G. Folley.

(ii) Education

Lectures and natural history activities continue to be conducted with local schools and organised groups. This program has been expanded over the past two years with the inclusion of one or two "camps" for senior high school biology students and the acceptance of students participating in the Education Department's work experience program. The owners of "Tandara", a property adjoining the reserve, have greatly assisted by providing a camp site for the high school biology students.

(iii) Research and Species Management

Reserves Officer G. Folley has put a great deal of effort into the Noisy Scrub Bird (Atrichornis clamosus) translocation project during 1983/84. The first attempt to establish a second colony of Noisy Scrub Birds, at Mount Many Peaks, commenced in June 1983. This project appears to have been successful as translocated birds have established new territories and held them throughout the past year. A report on the translocation project is currently being prepared.

Meanwhile the Noisy Scrub Birds on Two Peoples Bay have continued to increase with 137 territorial males recorded during the 1983 census.

Other research projects have included work by Mr Hopkins on post fire regeneration of flora; an initial collection of mosses on the reserve by Drs Hopper and Wyatt; and a project on the Western Bristle Bird (Dasyornis brachypterus) by Reserves Officer G. Folley assisted by an amateur ornithologist.

(iv) Management Planning

A large number of people have contributed to a bulletin which will include biophysical and historical information on the reserve. It is anticipated that this bulletin will be completed during 1984/85 and that work on a management plan will begin.

(v) Management Projects

No new management projects have been commenced during 1983/84. The increase in the Reserves Officer's workload created by the Noisy Scrub Bird translocation project has meant that management has been confined to maintaining existing facilities. The existence of "dieback" in many areas is restricting the use of

machinery, for example ploughs, thus hampering firebreak maintenance.

(vi) Research Station

The research station at Two Peoples Bay was occupied 31 times throughout the year by research and management staff from both the Department of Fisheries and Wildlife and other institutions. Length of visits ranged from one day to ten weeks.

(v) Fire Protection

(a) Firebreak Construction

The KRMT has not as yet received a specific allocation of funds for fire control, therefore the program for firebreak construction during 1984/85 has not been finalised. During 1983/84 short sections of firebreak were constructed by the team at the Lake Muir and East Brook Nature Reserves.

(b) Firebreak Maintenance

Approximately 1 221 km of firebreaks on 81 nature reserves are managed by the KRMT. During the 1983/84 financial year approximately 800 km of firebreaks on 44 nature reserves were included in the annual maintenance program.

(c) Prescribed Burns (adjoining nature reserves)

During the past year personnel from the KRMT have attended eight burns on private property adjoining nature reserves. Six of these burns were in the Katanning District and two in the Wanneroo District. A total of nine man days were involved in this aspect of fire control.

(d) Prescribed Burns (on nature reserves)

As wildfires occurred into May 1984, and these were immediately followed by heavy rain in many areas, the prescribed burning program for 1983/84 had to be deferred.

(e) Wildfires

During the past fire season there were nine wildfires in the Katanning District. These fires involved Katanning District personnel for the equivalent of 40 man days, plus a heavy involvement by Wanneroo personnel and District Wildlife Officers. In addition Katanning personnel assisted at seven wildfires in the Wanneroo Management District for the equivalent of 21 man days, and at a National Park in the Avon Valley for three man days.

(vi) Public Relations and Education

During the year talks were given to the Advanced School of the Bush Fires Board and to National Parks Rangers at Yanchep.

(vii) Official Committees of Enquiry

During March 1984 both Reserve Management Officer K. Wallace and Reserves Officer G. Folley attended meetings with the State Select Committee on Bush Fires in Western Australia. On July 2 both officers were called before the Committee to give evidence.

Also during March, Reserve Management Officer K. Wallace travelled to Manjimup with the Federal Standing Committee on Environment and Conservation to assist with their investigation into the environmental impact of bush fires.

(viii) Committees

Apart from involvement with Bush Fires Advisory Committees, the Katanning Reserve Management Officer is now the Departmental representative on the South Coast National Park Advisory Committee.

(ix) Other

A wide range of general management activities have been undertaken by the KRMT during 1983/84. These have included the following:

1. assessment of proposals to mine on nature reserves and proposed nature reserves;
2. inspection of nature reserves;
3. production of fire suppression maps for nature reserves;
4. liaison with the Agriculture Protection Board to arrange the control of declared plants and animals on nature reserves;
5. liaison with local authorities, government bodies and reserve neighbours on a variety of matters;
6. a range of activities related to establishing the KRMT as an efficient unit based at Katanning.

In conclusion it is interesting to note that from October 1983 to June 1984 inclusive the two Katanning based officers expended a total of 73 mandays on prescribed burns and wildlife. This represents approximately 20% of the available work time during

the period.

TABLE 1

Local Authorities in Katanning Management District

Albany	Boyup Brook	Broomehill
Cranbrook	Denmark	Dumbleyung
Gnowangerup	Jerramungup	Katanning
Kent	Kojonup	Manjimup
Plantagenet	Ravensthorpe	Tambellup
Wagin	West Arthur	Woodanilling
Town of Albany		
Totals:	<u>Shires</u> 18	<u>Towns</u> 1

TABLE 2

Katanning Management District - General Reserve Data

Reserve Data as at 30/3/1984

Total Number of Reserves including Unvested Nature Reserves	292
Total area of Nature Reserves	approx. 234 465.84 ha*
Average Size	802.965 ha
Size Range of Reserves	0.2342 ha - 94 170.3799 ha
Total Reserves Vested in WAWA	198

*Figure includes all of Lake Magenta. It does not include the unsurveyed Doubtful Islands and is inaccurate for five reserves which are part of other management districts.

5. KARRATHA

Dampier Archipelago

Preparation of the draft management plan for nature reserves in the Dampier Archipelago is now well underway and the plan should be available for comment by mid 1985.

On 25 May 1984, all the remaining small islands and rocks previously VCL were added to Nature Reserve 36913. East and West Lewis Island were removed from 36913 and gazetted as recreation reserves, vested in the Minister for the Environment.

Biological survey and research has continued on the islands and flora and fauna inventories have been prepared. A Zoology honours degree student, Mr Garry Connell, was supervised with his work on the reptile fauna of the islands. Another honours degree student is working on the rodent distribution of the islands during 1984.

Several work experience students from WAIT and Karratha Senior High School have also been supervised.

The distribution of turtle breeding was studied over the summer months and it is intended to commence a turtle tagging program in 1984/85.

The amount of public utilisation of nature reserves in the Dampier Archipelago has also been monitored, and has increased in the last year. Two illegal structures were removed from Nature Reserves and prosecution proceedings have been commenced against the owners of a third illegal dwelling. No signs have yet been erected on the Nature Reserves in the Dampier Archipelago.

Other Island Nature Reserves

(i) Rattus rattus eradication program:

Double and Pascoe Islands were baited with oats/pindone in October 1983. Previous baiting of Boomerang Island appears to have been successful. Boodie Island is to be baited in December 1984.

Bedout Island was inspected in June 1984, after reports of Rattus on the island. No signs of Rattus was found and it appears that this baiting program has also been successful.

(ii) Feral goat eradication - Bernier Island:

Funds were granted by the Australian National Parks and Wildlife Service to charter a helicopter to eradicate the feral goats on Bernier Island. This was done in May 1984, after the Department of Agriculture had removed some of the goats alive for experimental breeding purposes. A total of 80 goats were either removed alive or shot. Follow up inspections of the island will be undertaken to ascertain the success of this operation.

(iii) Mungaroona Range Nature Reserve:

This Nature Reserve was inspected in May 1983, to ascertain potential access for a proposed biological survey of the area. No vehicular access in the reserve is possible and helicopters would be required to transport personnel and equipment around the reserve.

(iv) Pilbara Regional Herbarium

The herbarium was opened in March by the Premier and is presently being operated by a management committee, of which the Department's Reserve Officer, Islands, Mr Keith Morris, is Chairman. The Karratha College hopes to appoint a Lecturer in Biology shortly.

7. OFFSHORE ISLANDS

(i) Shoalwater Bay Islands

Signs have now been placed on all the islands in Shoalwater Bay. Advisory signs have also been placed at the boat ramp in Safety Bay as well as at the carpark from which it is possible to look out toward the islands.

Further investigative work is required before an attempt is made to control public useage of this area. It is envisaged that this will take place in the forthcoming year.

(ii) Adele Island

In July 1982, Brunswick Oil N.L. began exploratory drilling for oil on Adele Island, an important seabird breeding area off the Kimberley coast. The Department acted as environmental supervisor for the Commonwealth Government which is the owner of the island. The drilling operation was guided by environmental conditions developed by Departmental staff in consultation with Brunswick. Drilling finished in late August and all equipment was removed from the island by 9 September. Brunswick abided by the environmental conditions. The area was visited in March 1984 to determine the success of regeneration of vegetation on the drilling site. The site has regenerated well, being barely discernible from adjacent areas.

8. INFORMATION SYSTEMS

Over the past year the Department has been involved in the Rural Information System (RIS) Joint Project.

The objectives of the Department's involvement in the Project were to use the project to test the appropriateness of a combined graphic and non-graphic data storage system in the management (both short and long term) of part of the State's Nature Reserve system; and to analyse the suitability of data, obtained from a variety of sources (both intra- and inter- departmental) for a range of management and research purposes. The Lake Magenta area, centering on Lake Magenta Nature Reserve and covering an area of approximately 5 000 km², and the State of Western Australia were selected as project areas. The Lake Magenta project was based on the entry, storage and manipulation of reserve management data, while the latter project was based on data transferred from the Atlas of the Western Australian Flora.

Intensive Departmental involvement in the Project ended in November/December 1983, with the production of the Rural Joint Project Technical Report. This report emphasised the value of land information systems to the successful management of the State's nature reserves and flora.

MAP OF WESTERN AUSTRALIA

SHOWING LOCAL AUTHORITY BOUNDARIES

As at June 1972

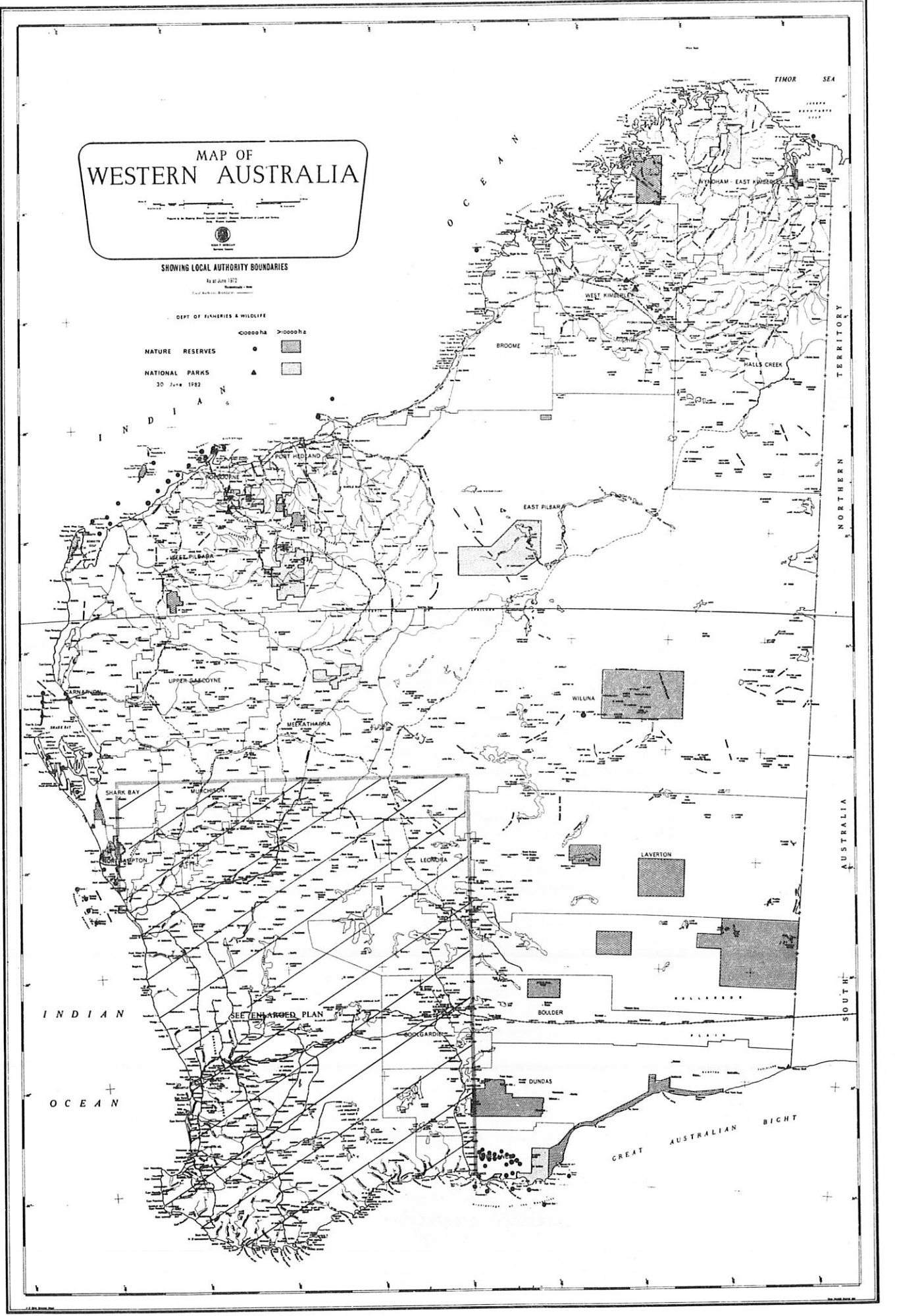
Dept. of Fisheries & Wildlife

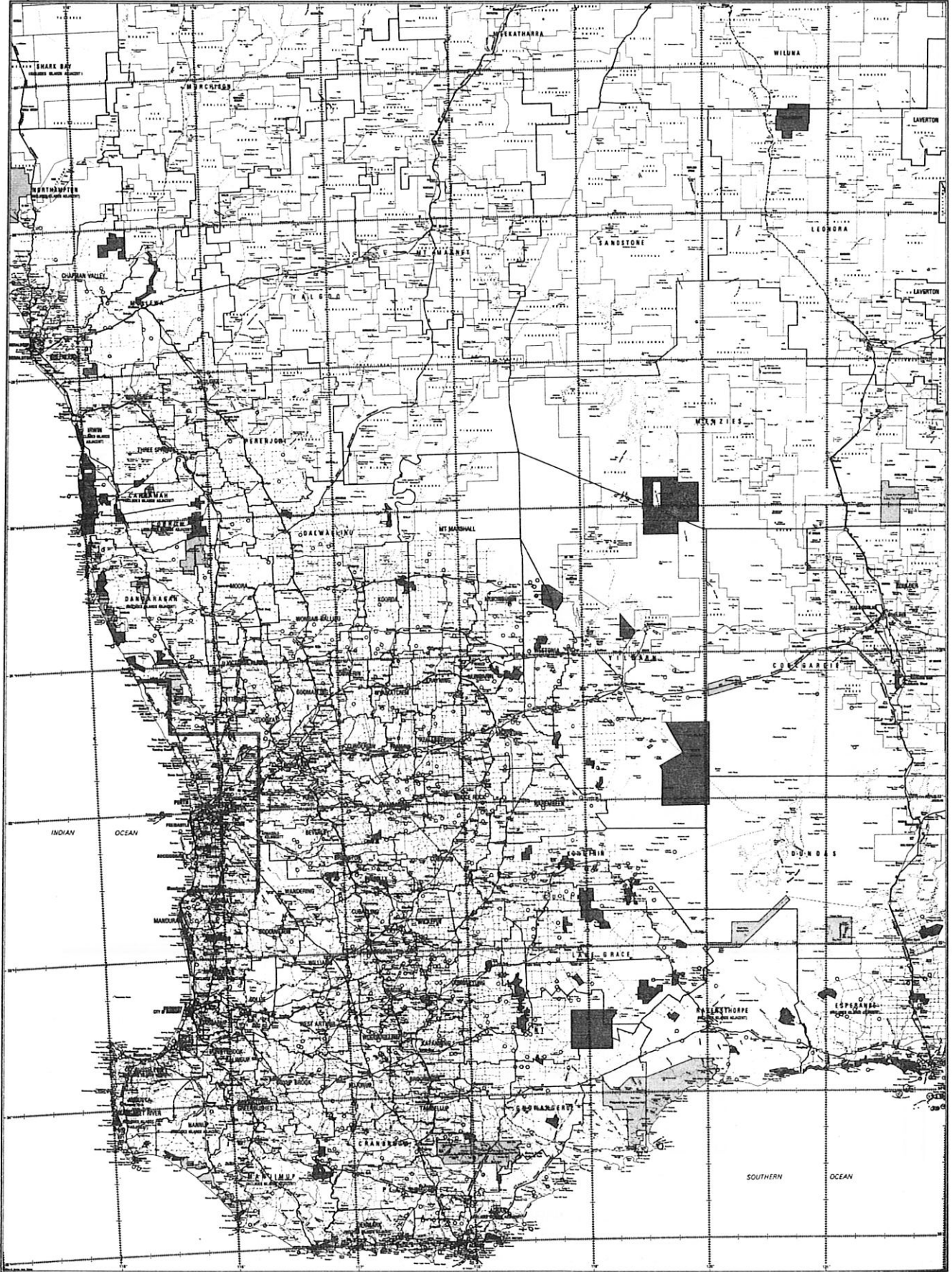
DEPT. OF FISHERIES & WILDLIFE

NATURE RESERVES

NATIONAL PARKS

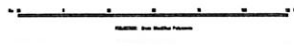
30 June 1982





Approved by the Director General, Survey, Western Australia
 and the Director General, Planning, Western Australia
 under the Survey Act, 1947 and the Planning Act, 1947

DEPT. OF FISHERIES AND WILDLIFE
 NATURE RESERVES
 NATIONAL PARKS



LOCAL AUTHORITY BOUNDARIES
 SHIPES
 TOWNS

SOUTH WESTERN SECTION
 WESTERN AUSTRALIA

VI WILDLIFE RESEARCH

1. BIOLOGICAL SURVEY

A biological survey of the Nullarbor Plain was designed, organized and undertaken in conjunction with the South Australian Department of Environment and Planning. An interim report on the results of the study was prepared by June 30 and submitted to Australian National Parks and Wildlife Service, which funded the study, along with an application for further funds to extend the work.

A paper was prepared on the philosophies behind current biological survey strategies in Western Australia and the most appropriate methodology for broad scale survey and monitoring in future. It included analyses of vertebrate data from the Kalgoorlie/Kurnalpie cell of the Eastern Goldfields, in particular, the adequacy of the sampling approach adopted.

No further fieldwork was carried out in relation to agricultural land releases because of the Agricultural Land Release Inquiry and associated moratorium on land release. Dr A.A. Burbidge, the Chief Research Officer, Wildlife, was appointed to the working party which is assisting the Agricultural Land Release Review Committee in its deliberations.

2. ANIMAL ECOLOGY

(i) Kangaroo Management Programs

Monitoring of the commercial red kangaroo harvest is now a responsibility of administration. Work continued on the preparation of bulletins on kangaroo management in Western Australia and a wildlife management program was written to meet the requirements of the Commonwealth Wildlife Protection (Regulation of Exports and Imports) Act 1982, which was proclaimed on 1 May 1984.

The Western Grey Kangaroo Management Program continued unchanged.

(ii) Rock-wallabies

(a) Wheatbelt Rock-wallaby Project (Petrogale lateralis)

There are 5 populations of rock-wallabies persisting on granite outcrops near Kellerberrin. These colonies are remnants of a population that was once widespread in the southwest, and under the present conditions the populations are considered to be

endangered.

Initial studies suggested that the rock-wallabies were subject to predation by foxes and feral cats. In order to test this hypothesis, the populations were divided into two areas; in one area predators were to be eliminated and in the other area no effort to control predators was made. Rock-wallaby numbers were estimated by trapping. By 1982 methods for predator control were perfected and the experiment began.

In March 1984 a census was carried out: in the area where foxes and feral cats were kept down, the number of rock-wallabies nearly doubled, whereas in the area where no effort was made to control predators there was only a slight increase.

From these results, it would appear that the fox (in particular) and the feral cat are an ever-present threat to many species of wildlife. This work is being extended to other areas of the state.

(b) Dampier Archipelago Project

The rock-wallaby species Petrogale rothschildi is found in abundance on Enderby and Rosemary Islands in the Dampier Archipelago. This species is also found on Dolphin Island but at very low densities.

Previous work has shown that the extensive sandplain habitat on Enderby and Rosemary Islands is important because the sandplain vegetation serves as the major food source. This habitat coupled with the absence of exotic predators (i.e. foxes and feral cats) accounts for the marked differences in population densities between these islands and Dolphin Island.

The sandplain habitat is of interest to the mining industry because of the lime content which is suitable for iron ore refining. Accordingly many of these sand deposits are held under mining lease, but it is now clear that mining of the sands would severely reduce the carrying capacity of Enderby and Rosemary Islands.

In 1982 experiments were conducted to determine the carrying capacity of other islands in the archipelago; rock-wallabies were released on West Lewis Island near a sandplain and have been kept under observation. Survival has been excellent, but the rock-wallabies have dispersed widely and have persisted as isolated colonies. None have used the nearby sandplain. In August 1983 a comparison of the vegetation between West Lewis and Enderby Islands revealed that key food plants were absent on the West Lewis sandplain.

It is planned to keep the West Lewis population under

observation. At this point in time it is not possible to predict how the present population will fare, but it is abundantly clear that West Lewis and the other islands of the archipelago represent marginal habitats for P. rothschildi.

(c) Depuch Island

Depuch Island was surveyed in 1962 by a party from the W.A. Museum and a thriving population of rock-wallabies (P. lateralis) was recorded along with the fox. In 1982 the island was visited by staff of this Department and only the fox was sighted. A year later, the island was systematically surveyed for five days but no signs of rock-wallabies were found.

The most plausible explanation for the extinction of the population was the fox (see below). Studies in the central wheatbelt support this interpretation, and plans are being prepared to exterminate the fox population on Depuch Island and to re-establish a population of rock wallabies using stock from Pilbara populations.

(iii) Numbat Research

(a) Study of numbat biology and ecology at Dryandra

Further new information concerning reproduction, social organisation, habitat utilisation and feeding activity of the Dryandra numbat population has been gathered during the last year. Several interesting aspects have emerged.

The brown mallee (Eucalyptus astringens) plantations at Dryandra are heavily used by numbats. Woylies (Bettongia penicillata) and mallee-fowl (Leipoa ocellata) also use these plantations, so their value as habitat for rare and endangered species appears much greater than was previously realised.

The dispersal of several young numbats from their parents' area has now been traced. This dispersal occurs between November and January, and the longest recorded movement was 11 km, travelled by one animal in less than a week. The young are particularly vulnerable to predation by birds of prey at this time.

The survival of adult numbats over the last six to nine months has been very high, as no deaths were recorded amongst a study group of ten animals. This supports the impression gained, from the increased rate of sightings in the forest, that the population is in a phase of recovery since the decline of the mid 1970s.

A more objective assessment of this recovery will be

made in late 1984, as well as an investigation into its causes.

This aspect of the numbat research program is nearing completion - further fieldwork will be oriented more towards species management techniques.

(b) Survey of numbat distribution

A survey of the distribution of the numbat is now underway. A contract biologist, Mr G. Connell, has been engaged to carry out this survey, following up reports of sightings by members of the public and examining likely areas of bushland, searching for diggings, scats and other signs of numbat presence. A detailed knowledge of numbat distribution is most desirable before a management strategy is proposed.

(c) Numbat captive breeding colony

In October 1983, a grant of \$57 500 over two years to set up a captive breeding colony was made to the Department of Fisheries and Wildlife by World Wildlife Fund Australia. Mr D. Whitford was employed in December to maintain the captive numbats, and since then two animals have been taken into captivity and maintained on live termites. Numbats mate late in the year and produce young in summer, so no breeding has occurred to this stage.

(iv) Banded Hare Wallaby reintroduction program - Dirk Hartog Island

Materials for construction of a second field release enclosure to complement the original experimental enclosure (see Annual Report, W.A.W.A. 1978), plus those required to secure the area surrounding these sites from further use by sheep and feral goats, have been purchased.

Construction of the new fences and the introduction of additional wallabies required to revive this project is planned for spring 1984.

(v) Dugong

Monitoring of coastal surveillance reports of dugong on the Kimberley coast was continued.

Reports of killer whale (Orcinus orca) attacks on dugong in Shark Bay late May 1983 were investigated and verified. A paper recording this predation has been submitted for publication in Journal of Mammology.

Professor Paul Anderson continued his research interest in Shark Bay dugong during another visit in September 1983.

Funds to undertake a preliminary assessment of potential habitat, dugong distribution, and status in waters off the Kimberley coast were provided by the Australian National Parks and Wildlife Service in June 1984. Work will be completed in July-August 1984.

(vi) Waterbird and Wetland Research

- (a) Routine monitoring of water level and water quality of selected Wetland Nature Reserves (WNR) in the South West and Eucla Land Division continued during 1983-1984. The total number of wetlands now gauged and monitored is 119. Depth, salinity and pH levels were monitored by research staff at two-monthly intervals during the year from July 1983. The same level of monitoring will continue through until May 1985.

The West Australian Field and Game Association again provided valuable assistance in the collection of data.

All data from the program are on computer and available in tabular or graphic form.

The program of wetland monitoring of wetland nature reserves provides a sound basis for wetland and waterbird management in:

- i) annual evaluation of conditions for waterfowl breeding,
 - ii) prediction of summer conditions for waterfowl,
 - iii) determination of seasonal, annual and long term variations in water depth and quality - important aspects of the conditions of WNRs,
 - iv) management of particular WNRs, e.g., Lakes Chittering, Nonalling, Byenup, Tordit-Garrup, Poorginup and Chandala,
 - v) assisting in the studies of distribution and occurrence of aquatic macrophytes and invertebrates in relation to salinity and permanence of habitats; and
 - vi) providing information of value to the Royal Australasian Ornithologists' Union's "Waterbird Usage" project.
- (b) In conjunction with rainfall statistics, wetland monitoring data were compiled and presented in the 1983 Rainfall and Wetland Review. The report was submitted to the Bird Committee of

the Western Australian Wildlife Authority in support of a recommendation for a full duck shooting season in the South West and Eucla Land Divisions for 1983-1984.

- (c) Data from the Wetland Monitoring Program was utilised to provide further information on WNRs which are under application for lease as peat mines in the Lake Muir area (Manjimup Shire). This ongoing program is conducted under the revised conditions of an agreement between the Department of Mines, the Department of Fisheries and Wildlife and Magnet Industries Pty Ltd.
- (d) University of Western Australia Zoology Honours student Ms M Silberstein's 1983 study of feral duck/black duck (Anas superciliosa) interaction on metropolitan wetlands indicated that gene flow between the two populations is minimal. Culling of feral ducks by Department staff has therefore been deferred indefinitely. The situation will however continue to be monitored at yearly intervals, hopefully with the assistance of the RAOU and WAFGA.
- (e) Continued operation of the check structure at Lake Chittering provided waterbird habitat throughout the summer of 1983-1984.
- (f) A consultant was employed to provide expert advice on management problems of Benger Swamp. This advice includes an assessment of present agricultural use of the Swamp and of existing wildlife values. These, and other related studies, will continue for three years and will form a basis for the preparation of a management plan for the area.
- (g) During 1983/84 research staff continued to provide assistance to the Western Australian and Australian Wader Study Groups. Aerial surveys were conducted along the North West coast during national wader census periods. A course on wader identification, ageing and trapping was again held at Eyre Bird Observatory. Assistance and advice was provided for the production of a documentary on migratory waders in Western Australia.
- (h) The Royal Australasian Ornithologists' Union four-year assessment of waterbird usage of W.A.W.A. vested WNRs in the South West and Eucla Land Divisions is currently in its fourth year. So far, 103 active participants have submitted approximately 2000 completed survey sheets, covering more than 200 wetlands.

The RAOU will produce annual summaries of the

information obtained along with a final report discussing the methods, the results and their implications for the management of Wetland Nature Reserves.

(vii) Western Swamp (Short-necked) Tortoise

The situation has changed little. During the 1983 winter five animals were captured, one at Twin Swamps Nature Reserve and four at Ellen Brook Nature Reserve.

No eggs were obtained from captive females and trials are continuing to try and induce egg production. Other trials are aimed at documenting the best conditions for hatchling survival and growth.

The species remains close to extinction with a total population of less than 50.

(viii) Pesticides and the thinning of birds' eggs

There has been no further progress.

(xi) Dalgyte (or Bilby) Macrotis lagotis

Work proceeded under the World Wildlife Fund Australia grant to the Conservation Commission of the Northern Territory and the Department of Fisheries and Wildlife. Surveys and discussions with Aboriginal communities which were carried out in the Gibson Desert, the southern Kimberley, the Pilbara and the Great Sandy Desert, resulted in a much better understanding of the distribution and abundance of the Dalgyte in Western Australia. The project officer visited the south-west during February 1984 to investigate the past distribution there and interview people who remembered seeing dalgytes on their properties.

(x) Desert Mammals

Both in conjunction with the dalgyte study and separately, a series of interviews have been carried out with Aborigines living in the deserts to try and document past and present distributions of desert mammals. The long term aim of this study is to find out the reasons for the disappearance of so many species and see if management techniques can be developed to reverse the trend or allow the reintroduction of those species which are not totally extinct.

(xi) Bat Taxonomy

On morphometric, anatomical and electrophoretic grounds, 8 species groups can be recognised within the Genus Mormopterus in Australia. Four of these

occur in Western Australia.

3. PLANT ECOLOGY

(i) Fire Ecology

At Two Peoples Bay, the coastal shrubland vegetation regenerating from fires in Spring 1976 and late summer 1979 was sampled by harvesting and the results were processed. Preliminary assessment shows a return prefire after seven years but no change in the number of species after the first year. Results from the Middle Island, (Archipelago of the Recherche) regeneration studies, 1973-1980 are being incorporated into a comprehensive publication on the island. This document is in its final editing stages.

Development of the computerized land management information system (incorporating fire behaviour predictions) is progressing. Topographic soil and vegetation maps for Tutanning Nature Reserve have been digitized and an experimental burn is planned for 1985. Similar baseline maps have been prepared for Two Peoples Bay and data collection for the proposed Mt Lesueur Nature Reserve has commenced.

(ii) Other

A pilot project has been set up to develop methodologies for and to establish a program of long term monitoring suitable for use on all natural areas for recording the changes occurring in the biota, either as a result of the passage of time or after disturbance.

A survey of the floristics and life form characteristics of twenty heaths in central wheatbelt nature reserves has commenced.

Considerable time has been spent organising the Fourth International Conference on Mediterranean Ecosystems held in Perth in August 1984.

4. FLORA CONSERVATION

(i) Atlas of the W.A. Flora - Pilot Project

Activities this past year have included:

- (a) continued development by Consultant P. Gioia of computer programs that allow mapping of species distribution data on microcomputer screen; the current system now incorporates over 200 town names, has boundaries of Nature Reserves and National Parks which are over 2000 ha and the plotting program can be used in a multi-disk environment.

- (b) the soliciting of sight records on the distribution of orchids from members of the W.A. Orchid Study and Conservation Groups;
- (c) A Series II FLORAPLOT MAP was prepared showing the distribution of orchids. This information was extracted from site records which were on computer file at September 1983. A Series III map is under preparation.
- (d) preparation continued on the manuscript for a colour book on Orchids of Perth which will serve as a guide to identification in future Atlas work.

(ii) Licensing and Management of the Wildflower Industry

The examination and storage of incoming pickers returns which illustrate species exploitation continues. Temporary Research Officer Miss J. Mutter and Consultant Miss A. Napier have travelled to a number of locations this year to observe the harvesting of native flora by licensed pickers. This Department is now familiar with some techniques and procedures used in the harvesting of indigenous flora.

The allocation of funds from the Australian National Parks and Wildlife Service has enabled the employment of a consultant, Miss J. Mutter, to document the presence on National Parks and Nature Reserves of those species of wildflowers which are heavily exploited in the Commercial flora industry. This work is continuing.

(iii) Conservation Status and Biology of Rare Species

Information on rare species was obtained through literature searches, consultation with local botanists, active field programs, and through the letting of consultancies for surveys of particular species. Attempts to acquire reserves for rare plants were continued. A major effort to prepare material for publication was undertaken.

(a) Systematics

A large proportion of research time was allocated to systematic studies on rare flora these past 12 months. Field work, herbarium studies and preparation of manuscripts were undertaken to clarify the status of rare flora in the genera Eucalyptus, Anigozanthos, Blancoa, Drakaea and Caladenia. Projects continuing and nearing completion include revisions of Drakaea, Conostylis, Blancoa and Anigozanthos, papers describing new rare taxa among eucalypts of the Mt Lesueur and Stirling Range regions, and among

Caladenia species in the Perth region.

(b) Surveys

Largely through the labours of consultants, survey information on rare plants was obtained from herbarium records and through field work. The projects undertaken varied from general collations of existing data on rare and geographically restricted plants through to detailed searches for individual species.

- (c) Consultant S. Van Leeuwen has collated published literature, photographs and herbarium records for the Geographically Restricted Plants of the Pilbara-Fortescue Botanical District and the Kimberley-Northern Botanical Province. These data are contained in two confidential unpublished Reports Nos. 24 and 25.
- (d) A grant of \$20 000 awarded by the Australian Heritage Commission has enabled the survey of six rare wheatbelt plants to be undertaken by Mrs S Patrick, Temporary Research Officer. In addition Mrs Patrick has completed 60 line drawings of trees and tall shrubs of the Perth region and 26 drawings of Banksia taxa for insertion into the new Banksia Atlas Instruction Booklet and Supplementary Field Guide.
- (e) An Australian Biological Resources Study grant of \$25 000 was used in 1983 for the flora survey of the mallee belt on the inland margin of current farms between Ravensthorpe and Cape Arid National Park and a further grant of \$25 000 from ABRS was made in April 1984 for this work to continue. This region has a flora that is poorly known but apparently rich in species of woody shrubs and mallees. Many of these (at least an estimated 20%) have not yet been named by botanists.

The mallee flora is under imminent threat of broadscale destruction, as extensive areas are being cleared for agriculture or are under consideration for release for this purpose. While a small percentage of land routinely is set aside for flora and fauna conservation in any agricultural land release, government officers responsible for defining boundaries of such reserves have been hampered in the past by a dearth of data on the presence and distribution of flora in specific areas.

This project has engaged consultant botanist Mr M Burgman for two years to survey this mallee flora and to deposit extensive collections in the Western Australian Herbarium as a permanent

record on which future studies of the naming, geography and conservation of the flora may be undertaken. Emphasis will be placed on poorly known and presumably rare plants.

Extensive collections of mallee zone flora in the Roe Botanical District have been made in 1983/84. 2000 specimens were collected and 850 species identified to date. A confidential and unpublished interim report No 4 has been compiled detailing the collections, including the number of new and rare taxa and the likely impact of agricultural development projects on the flora.

Soils were collected and analysed for chemical and physical parameters. Vegetation sampling sites were located in preparation for extensive field work in spring of 1984.

(iv) Banksia Atlas

In December 1983 a grant of \$32,500 was received from the Australian Biological Resources Study to help support the first year of a proposed three year project titled Banksia Atlas.

This national survey of banksias is based at the W.A. Wildlife Research Centre, Woodvale, but will be relying on the assistance of volunteers throughout Australia to help build up a computerised Atlas of the Nation's banksias. Mrs Anne Taylor, Temporary Research Officer, was appointed as Co-ordinator on February 6 1984.

A volunteer's field kit has been designed and tested in the field. An audio-visual about the Atlas was also produced. Funds for this were provided by Extension and Publicity Service of the Department of Fisheries and Wildlife.

(v) Computer Based Flora Data Processing

A new flora data base for the study of selected species of native flora within our nature reserves has been created for use by Research Officer J. Mutter in her study of species exploitation (see Section II).

Major modifications to various data processing facilities on the W.A. University Computer have been completed. The change from CYBER NOS/BE to CYBER NOS systems is completed and this will permit the full flow of flora data processing from this centre. This includes the transfer of data from the CYBER to the TEKTRONIX minicomputer.

(vi) District Flora Reference Field Herbarium

The co-operation of the Curator of the W.A. Herbarium Dr J Green and staff together with that of the Chief Wildlife Officer has enabled the successful planning for the introduction of the field reference herbarium at all District offices. The north west areas will be fully operational in July 1984 to be followed by the remaining stations at soon as possible.

The new system will add greatly to the present flora data base of this state be of considerable benefit to public enquiry on flora matters at field offices.

(vii) Overseas Scientific Visitors

This office has been the base for assistance to a number of scientific overseas visitors on sabbatical leave studies of species of W.A. flora. These studies contribute to our own knowledge of the behavioural patterns of selected species of indigenous flora.

(vi) General

This office appreciates the contribution and assistance from public wildflower study groups within the State and from District Wildlife Officers of the Departments enforcement staff.

5. PUBLICATIONS

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In The Australian Museum "Complete Book of Australian Mammals", Edited by Ronald Strahan and published by Angus and Robertson Publishers in 1983, Wildlife Research Centre staff contributed to species' descriptions as follows:

A.A. Burbidge: Sminthopsis longicaudata, Perameles bougainville, Wyulda squamicaudata, Bettongia lesueur, Lagorchestes conspicillatus, Lagorchestes hirsutus, Onychogalea lunata.

J.A. Friend: Myrmecobius fasciatus

J.E. Kinnear: Myrmecobius fasciatus

N.L. McKenzie: Sminthopsis hirtipes, Ningauai ridei, Isoodon auratus, Nyctophilus arnhemensis, Mesembriomys macrurus.

R.I.T. Prince : Lagostrophus fasciatus

A.A. Burbidge and S.D. Hopper provided scientific advice on wrote the captions for the Department's Fauna Posters Nos. 1 and 2 and Flora Posters No. 1 and 2.

VII ENFORCEMENT

1. ACTIVITIES

The Wildlife Investigations Branch has a total staff of thirty officers, two of whom are trainee wildlife officers. The State is divided into fifteen wildlife districts, twelve of which are manned by one wildlife officer, two are manned by two wildlife officers and the remaining staff is based in the metropolitan area. Six metropolitan based wildlife officers have statewide patrol responsibilities.

Specialised vehicles and the present radio communications system have improved patrol capabilities particularly in remote areas. Expansive wildlife districts however adversely affect patrol efficiency to adequately check many areas. Current staff numbers cannot maintain the desired level of control in seeking compliance with the Wildlife Conservation Act and conserving flora and fauna populations in the wild. The safety of wildlife officers who through necessity work alone is cause for concern. Regular patrols are being maintained for illegal bird trapping, nest robbing young parrots and the illegal taking of reptiles. Co-ordinated joint patrols by wildlife officers are being maintained in various areas of the State to minimise these activities.

A major activity for many wildlife officers and in particular the Flora Wildlife Officers was the policing of flora legislation. Oversight of the licensed picking of Boronia in the south-west and licensed picking of other commercial species of flora throughout the State was maintained. Patrols to minimise the illegal taking of protected flora and rare flora continued. It was demonstrated that specific patrols, in response to complaints of picking flora on road verges for example, resulted in the activity being discontinued. Significant results were achieved in minimising the illegal taking of geographically restricted flora and the taking of large quantities of protected flora from nature reserves and national parks.

The provisions of the Agriculture and Related Resources Protection Act, Declared Bird Regulations continued to be enforced. Import and export inspections of fauna and exotic birds at Perth Airport were maintained. Aviary inspections were also maintained to ensure compliance with the provisions of these Regulations.

The use of small power boats by wildlife officers to patrol offshore islands remains an important function. Seabird rookeries, seals and sea-lions, reptiles and other fauna and flora were inspected regularly to ensure protection. Wildlife officers who operate power boats are now, due to changes in legislation, required to hold seagoing qualifications. Those officers possessing sufficient sea time sat for examinations and obtained the coxswains ticket.

Reports of large scale fauna emergencies are now directed to a single wildlife officer who has been designated to accept reports and co-ordinate volunteers in rescue operations. Contingency plans are being developed to cope with fauna affected by botulism outbreaks, oil spills, and severe weather. Implementation of the National Contingency Plan for Stranded Cetaceans has commenced. The Australian National Parks and Wildlife Service has provided funds for the purchase of cetacean rescue equipment.

Surveys of various areas of land to determine suitability as nature reserves, searching for new populations of rare flora and determining the status of flora thought to be rare are routine wildlife management functions maintained by wildlife officers. They include also the monitoring of rare flora and various fauna populations, in particular those fauna species of significant interest including marine mammals, dangerous fauna and fauna causing damage to crops. Wildlife officers continue to liaise with wildlife interest groups and to perform their part in community education.

2. RESERVES

Enforcement surveillance of nature reserves is maintained throughout the year to seek compliance with regulations relating to these reserves. Removal of timber and gravel, illegal grazing, camping, erection of structures, the taking of flora and fauna and dumping rubbish continue to be areas of concern. A number of serious fires occurred on nature reserves throughout the State.

Island nature reserves are patrolled regularly by wildlife officers to minimise disturbance of fauna and damage to habitat. Illegal structures have been detected and subsequently removed from some islands.

Management of the Abrolhos Islands and the rock lobster fishermen and structures based there was maintained. Oversight continues of the tourist facilities development at Woody Island in the Archipelago of the Recherche.

3. MANAGEMENT PROGRAMME

Finch Trapping

Seven licensed finch trappers operated during the open season for finches which was approved for the period 1 September 1983 to 15 November 1983. Yellow tailed Finches, Zebra Finches and Gouldian Finches were excluded from the open season. 21 500 finches were taken during the open season. This figure was slightly less than the previous year's total figure. Finch populations in the Kimberleys continue to be monitored throughout the year.

Grey and Red Kangaroos

Enforcement involvement within the Red and Grey Kangaroo Management Programmes was maintained throughout the State. Professional shooters and their field chillers were regularly checked, as were all processing factories and skin dealers in the city and country areas. Consistent patrols for illegal shooting of kangaroos are regularly carried out by all wildlife officers throughout the State.

Duck Shooting Season

The open season for duck shooting, of species declared as game species was approved for the period 1 January 1984 to 31 December 1984, in those parts of the State which lie within the boundaries of the Kimberley, North West and Eastern Divisions as defined in Section 28 of the Land Act 1933.

An open season for game species of wild duck was gazetted for the period 14 January 1984 to 25 March 1984, in the South West and Eucla Land Divisions as defined in the Land Act 1933. A bag limit of 10 game species (not including Mountain Duck) was imposed. Wildlife officers policed the opening day shoots and monitored shooting operations throughout the duration of the 10 week season.

An open season for the taking of Mountain Duck was gazetted from 1 January 1984 to 13 January 1984 and from 26 March 1984 to 31 December 1984 (the intermediate period being for the declaration of an open season period for normal game species). The open season for the Mountain Duck was to allow farmers to control that species causing damage to primary production and water storage. In built control measures were incorporated in the open season notice.

4. PROSECUTIONS - JULY 1, 1983 TO JUNE 30, 1984

Various offences against the Wildlife Conservation Act and Regulations occurred throughout the year. Of these, some 24 were considered to be of a less serious nature and warning letters were sent. The following offences are recorded according to the district in which they occurred. Verbal warnings were given by wildlife officers in many instances.

Details of prosecutions are as follows:

DISTRICT NO. 1 - WYNDHAM Prosecutions - 1	1 Case Pending
DISTRICT NO. 2 - KARRATHA Prosecutions - 7	7 Cases Pending
DISTRICT NO. 3 - MOUNT MAGNET Prosecutions - 3	3 Cases Pending
DISTRICT NO. 4 - CARNARVON Prosecutions - 4	Fines \$120.00 Costs \$112.80
DISTRICT NO. 5 - GERALDTON Prosecutions - 10	Fines \$560.00 Costs \$173.60 6 Cases Pending
DISTRICT NO. 6 - MOORA Prosecutions - 23	Fines \$610.00 Costs \$195.00 18 Cases Pending
DISTRICT NO. 7 - WONGAN HILLS Prosecutions - 3	Fines \$100.00 Costs \$91.40 1 Case Pending
DISTRICT NO. 8 - WAROONA Prosecutions - 9	Fines \$260.00 Costs \$147.90 6 Cases Pending
DISTRICT NO. 9 - PINGELLY Prosecutions - 3	Fines 80.00 Costs \$45.70 2 Cases Pending
DISTRICT NO. 10 - KALGOORLIE Prosecutions - 2	2 Cases Pending
DISTRICT NO. 11 - BUSSELTON Prosecutions - Nil	
DISTRICT NO. 12 - ALBANY Prosecutions - 9	9 Cases Pending
DISTRICT NO. 13 - PERTH Prosecutions - 19	Fines \$340.00 Costs \$212.80 13 Cases Pending
GRAND TOTALS	FINES \$2,070.00 COSTS \$ 979.20
PROSECUTIONS - 93	68 Cases Pending

SECTION OF ACT OR REGULATION	NO.	DESCRIPTION	FINES	(TOTAL)	COSTS
			₹		₹
DISTRICT NO. 1 - WYNDHAM Section 16(1)	1	Taking of Protected Fauna (7 Red Collared Lorikeets)	Case Pending		
DISTRICT NO. 2 - KARRATHA Reg. 44(4)	6	Erecting a structure on a nature reserve	Case Pending		
Reg. 46(a)(b)(c)	1	Removing/disturbing soil from a nature reserve	Case Pending		
DISTRICT NO. 3 - MOUNT MAGNET Section 16A(1)	2	Possession of Protected Fauna (3 Euros, 9 Red Kangaroos)	Case Pending		
Section 16A(2)	1	Transporting fauna without Royalty Tags affixed	Case Pending		
DISTRICT NO. 4 - CARNARVON Reg. 44(2)a	4	Camping on a Wildlife Sanctuary	120.00		112.80
DISTRICT NO. 5 - GERALDTON Section 23D(1)(b)	1	Taking flora on private property without the owner's permission	Case Pending		
Reg. 46(b)	2	Cut trees on a nature reserve	160.00		91.40
Section 23B(1)	1	Taking Protected Flora from Crown land without a license	Case Pending		
Section 16(1)	2	Taking of Protected Fauna (2 Long-billed Corellas)	400.00		82.20
Section 16(1)	2	Taking of Protected Fauna (2 Galahs and 1 Long-billed Corella)	Case Pending		
Section 25(1)e	1	Giving a false name to a Wildlife Officer	Case Pending		
Section 25(1)(d)	1	Refuse to state name to a Wildlife Officer	Case Pending		

SECTION OF ACT OR REGULATION	NO.	DESCRIPTION	FINES	(TOTAL)	COSTS
			\$		\$
DISTRICT NO. 8 - WAROONA					
Section 25(1)(a)	2	Obstruction of a Wildlife Officer	Case Pending		
Reg. 44(1)	1	Littering on a nature reserve	Case Pending		
Section 17B(2)(a)	1	Taking of Protected Fauna (Duck) in a closed area	Case Pending		
Section 17B(2)(a)	1	Taking of Protected Fauna (Duck) in a closed area	Case Pending		
Section 16A(1)	2	Possession of Protected Fauna (Kangaroo carcasses)	160.00		92.20
Reg. 46(b)	1	Cutting plants on a nature reserve	100.00		55.70
Reg. 44(1)	1	Depositing offal on a nature reserve	Case Pending		
DISTRICT NO. 9 - PINGELLY					
Section 16(1)	1	Taking of Protected Fauna (Duck) during the closed season	Case Pending		
Section 16(1)	1	Taking of Protected Fauna (1 Grey Teal)	Case Pending		
Reg. 46(a)	1	Removal of rocks from a nature reserve	80.00		45.70
DISTRICT NO. 10 - KALGOORLIE					
Reg. 28	1	Keeping fauna without a license	Case Pending		
Reg. 29(a)	1	Clipping the wings of avian fauna	Case Pending		
DISTRICT NO. 12 - ALBANY					
Section 23B(1)	2	Taking flora from Crown land without authority	Case Pending		
Reg. 49(5)(b)	2	Shooting a bird unable to be identi- fied as a game bird (2 Freckled Duck)	Case Pending		
Reg. 26(4)	5	Possession of 16 untagged Kangaroo carcasses	Case Pending		

SECTION OF ACT OR REGULATION	NO.	DESCRIPTION	FINES	(TOTAL)	COSTS
			\$		\$
DISTRICT NO. 13 - PERTH Section 16A(1)	1	Possession of Protected Fauna (2 Freshwater Crocodiles)	Case Pending		
Section 17(2)(e) Reg. 28(1)	1	Selling avian fauna without a license	Case Pending		
	1	Keeping 7 Red-collared Lorikeets without the authority of a license	Case Pending		
Section 23B(1)	1	Taking Protected Flora from Crown land without a license	Case Pending		
Section 16(1)	1	Trapping fauna without a license	Case Pending		
Section 16(1)	1	(3 Twenty-eight Parrots)	Case Pending		
	1	Attempting to take fauna (1 Black Duck)	Case Pending		
Reg. 52	1	Selling immature avian fauna (2 Major Mitchells)	40.00	45.70	
Section 16(1)	1	Taking protected fauna (2 immature Major Mitchells)	Case Pending		
Reg. 28(1)	1	Keeping 4 Crested Pigeons without the authority of a license	20.00	50.70	
Section 16(1)	1	Taking of protected fauna (Hawks)	40.00	20.35	
Section 17(3)a	1	Using an illegal device to take fauna	40.00	20.35	
Section 16(1)	1	Taking of Protected Fauna (1 Grey Kangaroo)	100.00	37.85	
Section 17(3)a Section 16(1)	1	Using an illegal device	100.00	37.85	
	2	Taking of Protected Fauna (1 Kangaroo)	Case Pending		
Section 16(1)	4	Taking of Protected Fauna (4 Galahs)	Case Pending		

SECTION OF ACT OR REGULATION	NO.	DESCRIPTION	FINES	(TOTAL)	COSTS
			\$		\$
DISTRICT NO. 6 - MOORA					
Section 23B(1)	2	Taking Protected Flora on Crown land without authority	Case Pending		
Section 23B(1)	1	Taking Protected Flora from a Road Reserve	300.00		45.70
Section 23D(b)(1)	1	Taking Protected Flora from private property without the owner's permission	50.00		45.70
Section 23D(b)(1)	1	Taking Protected Flora from private property without the owner's permission	Case Pending		
Section 16(1)	4	Taking of Protected Fauna (4 Galahs)	Case Pending		
Section 16(1)	3	Taking of Protected Fauna (2 Long-billed Corellas)	Case Pending		
Reg. 46(i)	3	Disturbing fauna on a nature reserve	Case Pending		
Reg. 28(L)	1	Keeping fauna without a license (16 Galahs, 1 White-tailed Cockatoo and 2 Long-billed Corellas)	Case Pending		
Reg. 46(g)	1	Drove a motor vehicle onto a Nature Reserve	Case Pending		
Reg. 46(i)	2	Taking of Protected Fauna from a Nature Reserve	160.00		91.40
Section 25(1)(a)	1	Wilfully misleading a Wildlife Officer	Case Pending		
Section 16(1)	2	Taking of Protected Fauna (1 Grey Kangaroo)	Case Pending		
Section 16(1)	1	Taking of Protected Fauna (1 Kangaroo)	100.00		12.20
DISTRICT NO. 7 - WONGAN HILLS					
Section 23B(1)	1	Taking Protected Flora on Crown land	50.00		45.70
Section 23D(1)(b)	1	Taking flora on private property without the owner's permission	50.00		45.70
Reg. 46(L)	1	Clearing part of a nature reserve	Case Pending		

VIII LICENSING

The keeping of or dealing with fauna not in its natural environment is controlled under the licensing system. During the twelve months ending 30 June 1984, the following licenses were issued.

1. SCIENTIFIC PURPOSES - REGULATION 17

These licenses were issued mainly to official scientific organisations or their employees. 103 licenses were issued to take fauna for general scientific purposes.

2. EDUCATIONAL AND PUBLIC PURPOSES - REGULATION 15

There were 30 licenses issued for the following purpose:

Care of derelict fauna	4
Collection and Study	7
Study and Display	10
Educational	1
Photography	6
Miscellaneous	2

3. AVICULTURE

(i) Licenses to Keep and Breed Avian Fauna in Captivity - Regulation 12

4 574 licenses were issued, mainly to aviculturists

(ii) Licenses to Deal in Avian Fauna - Regulation 13

68 were issued

(iii) Licenses to Trap Avian Fauna - Regulation 11

11 were issued

List of Parrots Trapped

Ringneck Parrots	2 360
Western Rosella	1 587
Red-capped (WA King)	1 479
Galahs	28
White-tailed Black Cockatoo	63

List of Finches Trapped

Long-tailed (Black heart)	3 930
Masked	1 756
Star	5 756
Crimson (Blood)	2 046
Double-barred Mannikin	2 528
Chestnut-breasted Mannikin	2 564
Pictorella Mannikin	2 821
Painted	27
Gouldian (for research)	22

4. GAME

Licenses to Take Game - Regulations 21 and 22

59 quail shooters' licenses were issued
5 684 duck shooters' licenses were issued

5. KANGAROOS

Licenses to Take Red Kangaroos for Sale - Regulation 6

133 licenses were issued

Licenses to Deal in Kangaroo Carcasses - Regulation 8

25 licenses were issued

Licenses to Deal in Kangaroo Skins - Regulation 10

16 licenses were issued

Licenses to Process Fauna - Regulation 7

19 licenses were issued to process kangaroos

6. IMPORTS AND EXPORTS OF FAUNA

The Wildlife Conservation Regulations provide that no fauna shall be imported or exported from this State without a license.

(i) Export Interstate

Finches:

Crimson (Blood)	808
Chestnut-breasted Mannikin	808
Double-barred Mannikin	1 019
Gouldian	2
Long-tailed (Black-heart)	2 241
Masked	712
Pictorella Mannikin	1 540
Star	2 331
Painted	33

Parrots:

Ringneck Parrots	1 980
Western Rosella	786
Red-capped (WA King)	813
Red-collared Lorikeet	7
Purple-crowned Lorikeet	23
Elegant	63
Mulga	33
Green Rosella	2
Northern Rosella	3
Scarlet-chested Parrot	2
Regent	99
Alexandra's (Princess)	5
Superb	14
Cockatiel (Weero)	10
Red-tailed Black Cockatoo	4

Export Interstate (contd.)

Parrots (contd.)

White-tailed Black Cockatoo	60
Galah	21
Little Corella	4
Long-billed Corella	37
Sulphur-crested Cockatoo	2
Major Mitchell	2
Eastern Rosella	4
Eastern King	2
Rainbow Lorikeet	5
Red-rumped	1
Scaly-breasted Lorikeet	2
Musk Lorikeet	1
Eclectus	2

Other Species:

Little Quail	15
Splendid Wren	1
White-breasted Robin	(Preserved) 5
Western Spinebill	" 5
Little Wattlebird	" 4
Rufous Treecreeper	" 1
Brown Honeyeater	" 1
Yellow-throated Miner	" 1
Yellow-plumed Honeyeater	" 1
Charadriidae)	
Scolopacidae) (5 specimens of each	
Phalaropidae) of these families)	
Glareolidae)	

Exotics:

Love Birds - Peach Face	12
Masked	20
Ringneck Pheasant	14
Mute Swan	6

Mammals:

<i>Rattus villosissimus</i>	2
<i>Setonix brachyurus</i>	7
<i>Lagorchestes conspicillatus</i>	6
<i>Notomys alexis</i>	6
<i>Conilurus penicillatus</i>	13
<i>Melomys burtoni</i>	12
<i>Zyomys argurus</i>	2
<i>Sarcophilus harrisii</i>	1

Reptiles:

<i>Vermicella littoralis</i>	1
<i>Vermicella semifasciata</i>	1
<i>Notechis coronatus</i>	1
<i>Ramphotyphlops australis</i>	1
<i>Ramphotyphlops diversus</i>	1
<i>Phyllodactylus marmoratus</i>	6
<i>Heteronotia binoei</i>	18
<i>Aspidites melanocephalus</i>	1
<i>Aspidites ramsayi</i>	1

Export Interstate (contd.)

Reptiles (contd.)

<i>Liasis olivaceus</i>	1
<i>Python spilotus variegatus</i>	1
<i>Acanthophis pyrrhus</i>	1
<i>Pseudechis australis</i>	1
<i>Pseudonaja nuchalis</i>	1
<i>Pseudonaja affinis</i>	1
<i>Rhinoplocephalus gouldii</i>	1
<i>Rhinoplocephalus monachus</i>	1
<i>Rhinoplocephalus nigriceps</i>	1
<i>Diplodactylus conspicillatus</i>	5
<i>Crenadactylus ocellatus</i>	4
<i>Gehyra variegata</i>	13
<i>Gehyra punctata</i>	4
<i>Varanus caudolineatus</i>	2
<i>Varanus rosenbergi</i>	2
<i>Varanus gouldii</i>	1

Amphibians:

<i>Ranidella signifera</i>	20
<i>Ranidella parinsignifera</i>	20
<i>Ranidella sloanei</i>	20
<i>Ranidella glauerti</i>	15
<i>Ranidella insignifera</i>	15
<i>Ranidella pseudinsignifera</i>	15
<i>Ranidella subinsignifera</i>	15
<i>Neobatrachus centralis</i>	3
<i>Arenophryne rotunda</i>	2

(ii) Import Interstate

Finches:

Plum-headed	56
Gouldian	285
Blue-faced	86
Black-throated	52
Star	21
Painted	110
Parson	10
Masked	6
Long-tail (Black heart)	10

Parrots:

Blue-winged	4
Alexandra's (Princess)	8
Blue-Bonnet	10
Cockatiel (Weero)	163
Red-winged	3
Eastern King	23
Regent	4
Ringneck	4
Red-rumped	9
Adelaide Rosella	6
Crimson Rosella	36
Eastern Rosella	56
Pale-headed Rosella	9

Import Interstate (contd.)

Parrots (contd.)

Turquoise	19
Yellow Rosella	4
Superb	2
Gang Gang	4
Eclectus	4
Scaly-breasted Lorikeet	13
Blue-winged	1
Musk Lorikeet	6
Scarlet-chested	70
Bourke's	95
Rainbow Lorikeet	10
Long-billed Corella	2
Little Corella	323
Galah	1541
Sulphur-crested Cockatoo	17
Major Mitchell	7
Varied Lorikeet	2
Little Lorikeet	10

Other Species:

Magpie Geese	6
Diamond Dove	24
Brown Quail	21
Bar-shouldered Dove	2
Red-backed Quail	5
Burdekin Duck	4
Flock Pigeon	1
Green winged Pigeon	1
Plumed Pigeon	2
Bronzewing Pigeon	7
Australian Pelican	12
Partridge Pigeon	4
Top knot Pigeon	10
Peaceful Dove	24
Stubble Quail	16
Wonga Pigeon	9
Painted Quail	13
White headed Pigeon	5

Exotics:

Melba Finch	103
Cordon-bleu Finch	272
Aurora Finch	82
Orange-breasted Waxbill	106
Cuban Finch	10
Blue-capped Waxbill	4
African Firetail	31
Bleeding Heart Pigeon	2
Jacarine	18
Red-faced Parrot Finch	72
Green Peacock	5
Blue-breasted Waxbill	18
Hooded Siskins	50
Siskins	38
Alexandrine Parakeet	2

Import Interstate (contd.)

Exotics:

Red-crested Cardinal	2
Ring neck Pheasant	24
Razor-billed Currasaws	2

Mammals:

<i>Notomys alexis</i>	6
<i>Arctocephalus pusillus doriferus</i>	1
<i>Nyctophilus sp.</i>	5
<i>Eptesicus sp.</i>	5
<i>Pipistrellus sp.</i>	5
<i>Sarcophilus harrisii</i>	4
<i>Neophoca cinerea</i>	1
<i>Perameles sp.</i>	1
<i>Bettongia gaimardi</i>	1
<i>Trichosurus vulpecula</i>	1

Reptiles:

<i>Tiliqua rugosa</i>	20
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Amphibians:

<i>Limnodynastes peronii</i>	20
<i>Limnodynastes tasmaniensis</i>	10
<i>Ranidella signifera</i>	20
<i>Ranidella parinsignifera</i>	20
<i>Ranidella sloanei</i>	20
<i>Bufo marinus</i> (preserved)	400

(iii) Export Overseas

Birds:

Galah	22
Cockateil (Weero)	1
Maned Goose	8
Little Corella	3
Banded Rail	12
Wedge-tailed Eagle	4
Pied Heron	2
Night Heron	6
Sacred Ibis	30
Black Duck	6
Gouldian Finch	80
Stone Curlew	2
King Penguin	1
Singing Honeyeater	12
Galah/Corella hybrid	2
Emu eggs	6

Mammals:

<i>Macropus parryi</i>	3
<i>Macropus robustus</i>	4
<i>Macropus fuliginosus</i>	3

Reptiles:

<i>Python spilotus variegatus</i>	4
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7. LICENSES TO KEEP FAUNA

- (i) For Educational or Public Purposes - Regulation 16 - 40 issued
- (ii) To keep and breed fauna in captivity - Regulation 12A - 162 issued

8. EMUS

Licenses to Process Fauna - Regulation 7

3 licenses were issued to process Emu eggshells

9. FLORA

During the twelve months ending 30 June 1984, the following licenses were issued:

Commercial Purposes License

634 licenses were issued authorising the taking of protected flora for sale from Crown land only.

Commercial Producer's License

95 licenses were issued authorising the taking of protected flora for sale from Private land only.

Scientific or Prescribed Purposes License

547 licenses were issued authorising the taking of protected flora from Crown land for the following purposes: Scientific, educational, hobby, propagation, personal enjoyment. Holders of this license are not permitted to sell flora taken.

IX LEGISLATION

1. WILDLIFE CONSERVATION ACT

No amendment was made to the Wildlife Conservation Act during the period of this report.

2. WILDLIFE CONSERVATION REGULATIONS

No amendment was made to the Wildlife Conservation Regulations during the period of this report.

X STAFF

1. The Wildlife Conservation Act is administered by Mr. B.K. Bowen, Director of the Department of Fisheries and Wildlife and Chairman of the Western Australian Wildlife Authority; Mr. A.G. Errington, Assistant Director Administration; Mr. I. G. Crook, Assistant Director Wildlife and Conservator of Wildlife; Mr. D.W. Arnold, Administrative Officer of the Department of Fisheries and Wildlife and Executive Officer of the Western Australian Wildlife Authority; and clerical staff of the Department of Fisheries and Wildlife.

2. ENFORCEMENT

Disposition of Wildlife Officers as at 30 June 1983

Perth

Chief Wildlife Officer	D.J. Mell
Supervising Wildlife Officer	Vacant
Senior Wildlife Officer	Vacant
Wildlife Officer (Special Invest.)	P. Pennings
Wildlife Officer	Vacant
Wildlife Officer	M. Mahoney
Wildlife Officer	T. Walley
Wildlife Officer	A. Shields
Wildlife Officer (Rel.)	G. Hanley
Wildlife Officer (Rel.)	D. Noble
Wildlife Officer (Flora)	S. Hancocks (B. App. Sc.)
Wildlife Officer (Flora)	D. Coughran
Trainee Wildlife Officer	L.R. Anderson
Trainee Wildlife Officer	J.C. Crane
Wildlife Officer (attached)	P. Counsel

Districts

Wyndham	District Wildlife Officer	M. Osborn
Karratha	District Wildlife Officer	K. Marshall
Carnarvon	District Wildlife Officer	J. Wilson
Mt. Magnet	District Wildlife Officer	R. Gueho
Geraldton	District Wildlife Officer	K. Miller
	Vacant	
Moora	District Wildlife Officer	B. Haberley
Wongan Hills	District Wildlife Officer	P. Roberts
Kalbarrie	District Wildlife Officer	P. Collins
Pingelly	District Wildlife Officer	L. Silvester
Waroona	District Wildlife Officer	R. Fitzgerald
Busselton	District Wildlife Officer	P. Lambert
Esperance	District Wildlife Officer	I. Cooke
Manjimup	District Wildlife Officer	R. Coughran
Albany	District Wildlife Officer	R. Smith
	Wildlife Officer	L. Coyne

3. RESEARCH AND RESERVE MANAGEMENT

The Wildlife Research Section comprises eight Research Officers, seven Technical Officers and one Technical Assistant, all of whom are based at the Western Australian Wildlife Research Centre, Woodvale. During the year two new positions, a Computer Systems Officer and a Computer Programmer, were created. These have been advertised and will be filled in the near future.

The Reserve Management Section comprises six professional Reserve Management Officers, four Reserves Officers, one Technical Officer and five temporary reserve management assistants. Two officers are based at Pingelly, two at Katanning, one at Karratha, one at Two Peoples Bay Nature Reserve, one in Perth and the remainder at Woodvale.

XI EXTENSION AND PUBLICITY

As in previous years the growth in demand for information material on wildlife conservation continued, at all levels. Daily requests and enquiries were received (by mail, telephone or personal contact) from all sectors of the Western Australian community. Nationwide and worldwide interest also markedly increased over the last year, with numerous inquiries about the State's indigenous flora and fauna.

A corresponding increase in interest was also shown by the number of additions to the mailing lists for Wildlife Research Bulletins, Reports, S.W.A.N.S., Nature Reserve Management Plans and the Western Australian Wildlife Authority Annual Report.

The second in each of the Flora and Fauna series of posters were released: "Rare Fauna of Western Australia" and "Rare Flora of Western Australia". These will add to "Mammals of the South-West of W.A." and "Kangaroo Paws and Catpaws of W.A." which in one year have proved extremely popular.

Departmental publications on wildlife conservation published during the year were:

Wildlife Research Bulletin No 12
Burbidge, A.A. and McKenzie, N.L. (1983)
Wildlife of the Great Sandy Desert, Western Australia.

Western Australian Nature Reserve Management Plan No 6
(DRAFT) Moore, S., Williams, A., Crook, I. & Chatfield, G.
Nature Reserves of the Shire of Toodyay.

Other publications

Re-establishing Local Trees and Shrubs on Farms.
R. Powell
The Management of Small Bush Areas in the Perth
Metropolitan Region.

Audio Visuals

The Banksia Atlas Survey and the Waterbirds Wetlands Survey, available as a 3 projector slide show are now also available on VHS or Beta format video cassette.

Three editions of the wildlife journal S.W.A.N.S. were published during 1983-84 (Vol. 13, No. 2 & 3, Vol. 14, No. 1).

The Extension and Publicity Office's static displays showing native mammals and rare flora species were in almost constant use during the year from schools, shopping centres, wildlife societies etc. Another display, also with captioned colour photographs was set-up showing the activities of the Banksia Atlas Survey.

Stocks of pamphlets, brochures and other general information material were maintained; several of these publications being updated and reprinted.

XII FINANCE

1. WILDLIFE CONSERVATION ACT

The demands on the Department to continually expand its involvement in the areas of wildlife conservation, research and enforcement, and the requirement to maintain existing activities, require increasing expenditure each year from the Consolidated Revenue Fund. This trend has continued in 1983-84.

2. WILDLIFE CONSERVATION TRUST FUND

A financial statement as at 30 June 1984 is presented on the following page.

WILDLIFE CONSERVATION TRUST FUND

STATEMENT OF RECEIPTS AND PAYMENTS FOR THE YEAR ENDED JUNE 30, 1984

Balance as at July 1, 1983		\$	90,088
<u>Add Receipts</u>		\$	
Flora Licenses	4,289		
Duck Licenses	28,845		
Quail Licenses	296		
Sale of Posters	2,807		
Sale of Skins and Carcasses	55		
Gifts and Bequests	965		
Interest on Investments	10,616		
			<u>47,873</u>
			137,961
<u>Less Payments</u>			
Atlas of W.A. Flora Project - Computer Programming	7,200		
Publication of Wildlife Posters	785		
Numbat Research Survey	240		
Lake Toolibin Salinity Study	2,100		
Survey of Waterbird Usage of Wetland Nature Reserves	18,500		
Translocation of Noisy Scrub Bird	5,340		
			<u>34,165</u>
Balance at June 30 1984			<u><u>103,796</u></u>

BK Bowen

Director
DEPARTMENT OF FISHERIES
AND WILDLIFE *subll*

August 2, 1984



AUDIT DEPARTMENT

State Insurance House, 815-823 Hay Street,
Perth. W.A. 6000. Telephone 321 9256

IN REPLY PLEASE QUOTE


846/66

REPORT OF THE AUDITOR GENERAL FOR WESTERN AUSTRALIA

WILDLIFE CONSERVATION TRUST FUND - AUDIT OF ACCOUNTS

The accounts of the Wildlife Conservation Trust Fund have been audited for the year ended June 30, 1984 and were found to be in order.

In my opinion the Statement of Receipts and Payments submitted for audit is properly drawn up so as to present a true and fair view of the transactions for the year and the balance of the fund as at June 30, 1984.


W.F. ROLSTON
AUDITOR GENERAL
August 20, 1984.