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**SOME NATURE RESERVES  
OF THE  
WESTERN AUSTRALIAN  
WHEATBELT**

**PART 20  
KONDININ SHIRE**

**B.G. MUIR**

**1979**

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COMO RESOURCE CENTRE  
DEPARTMENT OF CONSERVATION  
& LAND MANAGEMENT  
WESTERN AUSTRALIA

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SOME NATURE RESERVES OF THE KONDININ SHIRE

B.G. MUIR

Introduction

Kondinin Shire lies in the eastern-central wheatbelt and has an area of ca 7340 square km. There are 22 Nature Reserves within the Shire, totalling <sup>ca 198 km<sup>2</sup> or</sup> ca 2.7% of the area of the Shire. Of the Nature Reserves 6 are larger than 1,000 ha, and 1 of them (A 20338) exceeds 5,000 ha. Seven of the Reserves are less than 200 ha in size.

Two Reserves have 'A' classification (21253, Lake Gounter and 20338, Bending). Only 9 have a current vesting: 20338, 21253, 27837, 29535 and 29810 in the Western Australian Wildlife Authority; 23128, 23704 in the Kondinin Shire Council; 20528 in the Minister for Water Supply, Sewerage and Drainage and 22906 in the Minister for Works. The remaining 13 are unvested and have no particular protection.

The current survey took place in March 1979 and consisted of brief examinations of 10 Reserves, 10716, 17662, 22906, 23366, 26661, 27175, 27639, 28047, 28715 and 34295

Methodology

Physical characteristics of the reserves were obtained directly from the most recently available lithographs as published by the Department of Lands and Survey, and interpreted from observations made on the reserve.

Reserves were examined by vehicle where tracks were available, and on foot. Local knowledge and air-photographs were consulted to find areas of particular interest. Only a very short time could be spent on each reserve, the smaller ones being examined in 1 or 2 hours, the larger ones in a full day.

Vegetation was classified using Muir's (1977) system (Table 1), which was designed specifically for describing wheatbelt vegetation. In the presentation of the abbreviated descriptions (in the section titled "Vegetation") capital letters in descriptive terms refer to specific classes of life form, height and canopy cover as used in the classification.

As the survey period on any reserve was very brief only the commonest plant species could be noted. Any species in which less than 3 individual plants were encountered within a space of 10-15 minutes examination of the vegetation were considered uncommon and are not listed. As much of the survey work was carried out rapidly and in unfavourable seasons, many plants were not flowering and so identifications were made from foliage alone. Only if an important dominant plant was not recognised were specimens bought back to the laboratory for examination.

Soil was examined very briefly and classified according to Northcote's (1971) texture groups and Munsell (1954) colour terms.

Fire history was determined from observation of the area, appearance of air-photographs and information from nearby farmers.

Fauna were not specifically sought, but some species (usually the most obvious) were encountered while examining vegetation. The lists provided are only a small fraction of the species present on nearly every reserve examined. Scats, footprints, burrows, nests and other indirect evidence is used only where identification is certain. Observations by farmers are used if considered reliable.

Opinion and recommendations expressed in these reports are entirely those of the author and are based on extensive experience in vegetation mapping and description in the wheatbelt, and association with faunal and habitat studies conducted by suitably qualified researchers.

TABLE 1: VEGETATION CLASSIFICATION AS USED IN WHEATBELT SURVEY

LIFE FORM/HEIGHT CLASS		CANOPY COVER			
		DENSE 70-100% <sup>d</sup>	MID-DENSE <sup>c</sup> 30-70%	SPARSE <sup>i</sup> 10-30%	VERY SPARSE <sup>r</sup> 2-10%
T	Trees >30m	Dense Tall Forest	Tall Forest	Tall Woodland	Open Tall Woodland
M	Trees 15-30m	Dense Forest	Forest	Woodland	Open Woodland
LA	Trees 5-15m	Dense Low Forest A	Low Forest A	Low Woodland A	Open Low Woodland A
LB	Trees <5m	Dense Low Forest B	Low Forest B	Low Woodland B	Open Low Woodland B
KT	Mallee tree form	Dense Tree Mallee	Tree Mallee	Open Tree Mallee	Very Open Tree Mallee
KS	Mallee shrub form	Dense Shrub Mallee	Shrub Mallee	Open Shrub Mallee	Very Open Shrub Mallee
S	Shrubs >2m	Dense Thicket	Thicket	Scrub	Open Scrub
SA	Shrubs 1.5-2.0m	Dense Heath A	Heath A	Low Scrub A	Open Low Scrub A
SB	Shrubs 1 0-1.5m	Dense Heath B	Heath B	Low Scrub B	Open Low Scrub B
SC	Shrubs 0.5-1.0m	Dense Low Heath C	Low Heath C	Dwarf Scrub C	Open Dwarf Scrub C
SD	Shrubs 0.0-0.5m	Dense Low Heath D	Low Heath D	Dwarf Scrub D	Open Dwarf Scrub D
P	Mat plants	Dense Mat Plants	Mat Plants	Open Mat Plants	Very Open Mat Plants
H	Hummock Grass	Dense Hummock Grass	Mid-Dense Hummock Grass	Hummock Grass	Open Hummock Grass
GT	Bunch grass >0.5m	Dense Tall Grass	Tall Grass	Open Tall Grass	Very Open Tall Grass
GL	Bunch grass <0.5m	Dense Low Grass	Low Grass	Open Low Grass	Very Open Low Grass
J	Herbaceous spp.	Dense Herbs	Herbs	Open Herbs	Very Open Herbs
VT	Sedges >0.5m	Dense Tall Sedges	Tall Sedges	Open Tall Sedges	Very Open Tall Sedges
VL	Sedges <0.5m	Dense Low Sedges	Low Sedges	Open Low Sedges	Very Open Low Sedges
X	Ferns Mosses, liverwort	Dense Ferns Dense Mosses	Ferns Mosses	Open Ferns Open Mosses	Very Open Ferns Very Open Mosses

3

## Results and discussion

The features of each Reserve can be summarised as follows:

- Reserve 10716 - ca 238 ha; 2 types woodland, a mallee and a lithic complex; large topographic range although of small area; requires immediate attention to prevent a clay hillslope collapsing onto the main road; may support numbat.
- Reserve 17662 - ca 799 ha; 3 types woodland, 2 types mallee, a shrubland, 2 types heath, a lithic complex; inaccessible and therefore little disturbed; rugged topography with complex mosaic of granite outcrops and vegetation; probably contains rich fauna; recommend 'A' class protection.
- Reserve 22906 - ca 28 ha; woodland; useful rest site for migrating or transient birds, excellent windbreak for town of Kondinin, salt prone if cleared; some rehabilitation needed.
- Reserve 23366 - ca 937 ha; mostly bare salt flat with scattered clumps of shrubs; valuable to prevent erosion and slow further salt expansion onto farmland.
- Reserve 26661 - ca 347 ha; a mallee, 3 heaths and a lithic complex; rich in species and supports several plants of interest or taxonomic uncertainty; location assists in preventing wind erosion.
- Reserve 27175 - ca 1573 ha; 3 types of woodland, a heath, a lithic complex and some salt complex; the combined areas of this Reserve and Reserves 27639 and 18735 form an important conservation area; clearing would result in further salt encroachment on farms.
- Reserve 27639 - ca 467 ha; woodland, mallee, 2 types shrubland, a heath, lithic complex and salt complex; reserve little disturbed; rich in fauna; recommend purchase of Roe location 1480 (salt marsh) and addition to the Reserve.
- Reserve 28047 - ca 628 ha; 2 types Gimlet woodland (1 with 2 types of post-clearing regrowth), Jam woodland, mallee, 3 types heath (one with post-clearing regrowth), lithic complex and salt complex; rich in plant species and probably in fauna, some areas may be prone to salt encroachment or wind erosion if cleared.
- Reserve 28715 - ca 434 ha; 3 types mallee, 5 types heath, 2 types lithic complex; relatively undisturbed; heaths rich in species; prevents wind erosion; requires immediate action to investigate purpose behind cleared swathe in N part of Reserve.

Reserve 34295 - ca 929 ha; mallee, shrubland and heath; rich in plant species and probably fauna; valuable windbreak for adjacent farmland which is prone to wind erosion; partly sheep browsed.

Almost all the Reserves contain valuable areas of bushland and some are very rich in plant formations, associations and species. The reserves with salt flat are of less value to fauna and flora conservation but vital in preventing further encroachment of salt into adjacent farmland. In contrast those reserves on hilltops rather than in low laying areas are generally sandy and the surrounding country prone to wind erosion. Any clearing of such reserves would lead to serious erosion.

Two Reserves within Kondinin Shire have previously been studied in detail (Muir 1977a,b; Kitchener et al. 1977) and these, together with many of the reserves examined in the present survey, provide one of the most valuable complexes of reserves in any wheatbelt Shire.

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Reserve 10716

Karlgarin Hill Reserve

Located ca 14 km W of Karlgarin Townsite and 26 km E of Kondinin Townsite. Shown on lithograph 376/80, CD. and Lands and Survey Department 1:50000 sheet 2633 III (Dryden Hill).

Background

Originally set aside as a "Water" Reserve of ca 41 ha on 24 May 1907. The area of the Reserve was increased to 238 ha on 15 November 1940 and again to 238.1803 ha on 8 April 1960. Its purpose was changed to "Water and Conservation of Flora and Fauna" on 24 April 1969.

Physical characteristics

Reserve 10716 is square, ca 1.5 km on a side, with a total perimeter of ca 6.1 km and an area of 238.1803 ha. There is a topographic variation of 90m, with three hills being the high points (Karlgarin Hill 355m above sea level (ASL) and 2 unnamed hills SE of Karlgarin Hill being 370m ASL. The lowest point is the SE corner with an altitude of 280m ASL.

Vegetation

Jam - York Gum woodland : Jam and York Gum Low Forest A.

Gimlet woodland ; Gimlet Dense Low Forest A over scattered shrubs.

Mallee area : 4 species - Open Shrub Mallee or Shrub Mallee over mixed Open Dwarf Scrub C.

Lithic complex : Steep sided granite hill with tumbled boulders and gullies with thickets of shrubs.

Plant species

Fifty-seven plant species were recorded, of which 20 are exploited by the wildflower seed trade. A Baekkea and Grevillea of uncertain affinities were recorded.

Nest hollows

In Gimlet woodlands and in scattered Salmon Gums amongst mallee. Many young gimlets present.

#### Weeds

Scarce except in disturbed areas and on roadsides. Commonest species were: Oat Grass (Avena sativa fatua), Wild Mint (Chenopodium pumilio), Paddy Melon (Cucumis myriocarpus), Annual Veldt Grass (Ehrharta longiflora), Ptilotus polystachys and Afghan Thistle (Solanum hystrix).

#### Fire history

No fires for at least 30 years.

#### Fauna

Only the following species were recorded:

Grey Kangaroo (Macropus fuliginosus): 2 on S side.

Black-faced Cuckoo-shrike (Coracina novaehollandiae): 2 on power-lines near centre of Reserve.

Pied Butcherbird (Cracticus nigrogularis): 1 in mallee NE corner.

The diverse habitats offered by this Reserve suggest a much richer fauna. This survey took place in late afternoon of an overcast, windy day, resulting in the meagre list presented here.

Of considerable interest is a report by a local farmer (September 1970) of Numbat (Myrmecobius fasciatus) being recorded on or near a point ca 18 km E of Kondinin some years previously. The area in question is ca 8 km E of Reserve 10716. Additionally there is a specimen of Numbat lodged in the Western Australian Museum (Museum number M8446) which was collected 20 km SSW of Reserve 10716 in 1969.

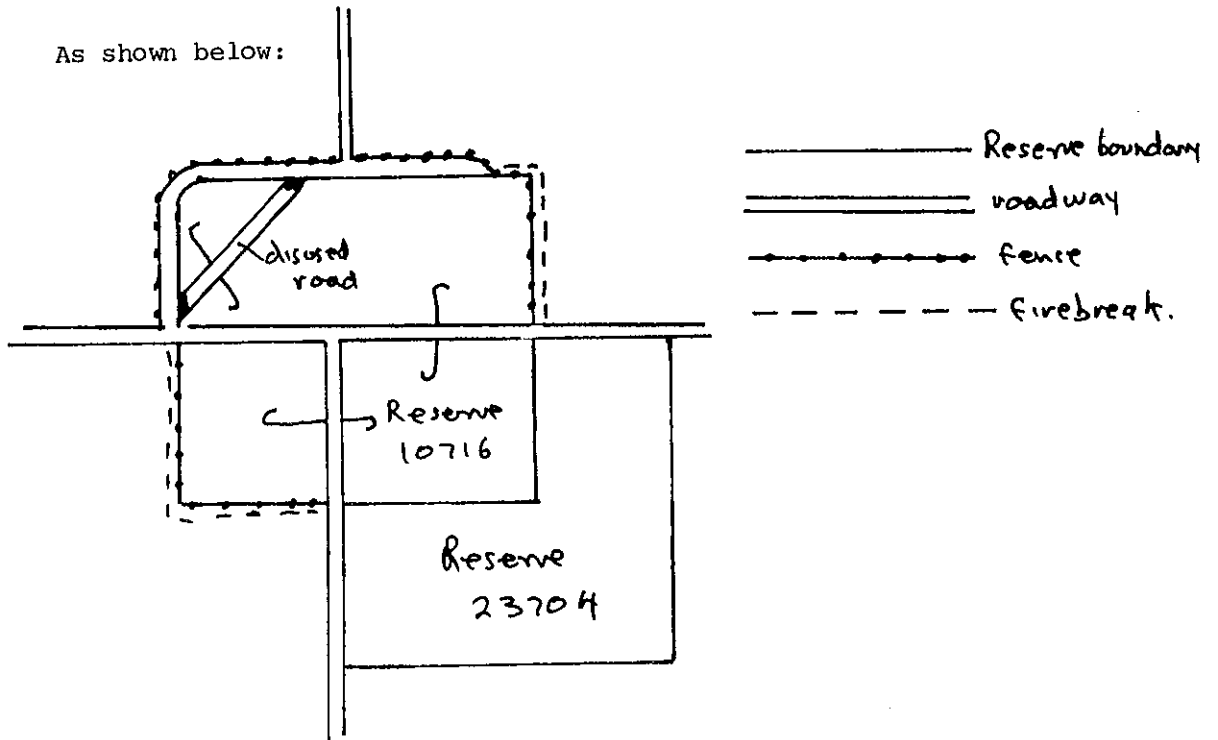
My inspection of Reserve 10716 leads me to believe that there is still many hectares of suitable Numbat habitat left on the Reserve, and also some on Reserve 23704. The area of these Reserves may now be too small to support Numbat, but the possibility of an extant population still exists.

#### Exotic fauna

Rabbit scats and diggings were noted.

Firebreaks and fences

As shown below:



Human usage

A gravel pit, roads, an old powerline and tracks have destroyed much of the Reserve. Some timber has been removed.

Adjacent uncleared land

There is ca 240 ha of uncleared land (mostly woodland) in Reserve 23704 (Flora and Fauna) to the SE of Reserve 10716. Reserve 23704 is for "Flora and Fauna" and is vested in the Kondinin Shire.

Opinion and recommendations

Reserve 10716 is in excellent condition and supports a wide variety of associations, plant species and habitat types. Perhaps the most important habitat is woodland, good stands of which are now scarce in the wheatbelt. Additionally the Reserve has a great topographic range, considering its small area, and is thus prone to erosion if cleared. An example of this is in a woodland N of the central roadway. Here an embankment rises about 3 m above the road level and is eroding badly. Perhaps more importantly slumps and "pothole-like" structures are beginning to develop in the woodland up to 15 m from the embankment. This suggests that sub-surface drainage has been altered and that the whole hill above the

embankment is moving. Alternatively sub-surface drainage will eventually break through to the surface and gullies carrying silt and debris will feed down the hillside onto the roadway. The embankment and road drainage has been designed with no consideration for 1. erosion problems, 2. traffic hazard if erosion persists or 3. effects on the woodland above the embankment. I strongly recommend that the site be investigated by the Shire or Roads Board and that contour drains be dug parallel with the road and feeding to the E or SW onto areas of lesser slope. This work must be done in a manner which does not remove any trees, for once these are lost the hillside will probably become unstable and may slump onto the roadway. There is a slim possibility that this Reserve may support a population of Numbat.

I recommend that the Reserve be left in its present state and that it be vested in the Western Australian Wildlife Authority.

APPENDIX 1  
Reserve 10716

Jam - York Gum woodland.

Acacia acuminata trees 5-8 m tall and Eucalyptus loxophleba trees 12-15 m tall, overall canopy cover 30-70%. Also present were Dampiera juncea, Grevillea paniculata, Lomandra effusa, Loxocarya pubescens, Olearia axillaris and Santalum acuminatum. Soil dark brown, sandy loam; well drained.

Gimlet woodland

Eucalyptus salubris trees 8-12 m tall, 70-100% canopy cover over scattered shrubs to 1 m tall. Also recorded were: Acacia merrallii, Bassia diacantha, Cassia nemophylla, Melaleuca adnata, M. cymbifolia and Santalum acuminatum. Soil red, light clay; poorly drained.

Mallee areas

Eucalyptus transcontinentalis, E. redunca, E. calycogona and E. eremophila shrub mallee of varying dominance but with average height 3-6 m and canopy cover mostly 10-30% but portions up to 30-70% cover. Understorey of mixed shrubs to 1 m tall mostly 2-10% cover, locally to 30% cover. Also recorded were: Acacia graffiana, Bertya cunninghami, Dodonaea bursariifolia, Exocarpus sparteus, Lomandra effusa, Melaleuca laxiflora, M. uncinata, Olearia muelleri, Phebalium tuberculatum. Soil pinkish grey, sandy clay; poorly drained.

Lithic complex

Steep sided granitic and doleritic hill, some bare, but mostly low cover and tumbled boulders.

Gullies carry thickets. Species recorded were: Acacia acanthoclada, A. assimilis, A. trigonophylla, Amphipogon debilis, Baeckea sp. 10, Cassia cardiospermum, C. chatelaineana, Casuarina campestris, Corynothera micrantha, Dianella revoluta, Dodonaea ptarmicifolia, Glischrocaryon flavescens, Grevillea sp 4., Halgania affin. preissii, Hakea peteolaris, Harperia lateriflora, Hibbertia rupicola, Isopogon affin. formosus, Lepidosperma angustatum, L. tenue, Melaleuca elliptica, Pimelia sylvestris, Platysace juncea, Santalum spicatum, Spartochloa scirpoidea, Stackhousia huegellii, Stylidium repens, Stypandra imbricata, Verticordia chrysantha, V. plumosa. Soil pinkish grey to brown sandy loam; well drained.

# Reserve 10716

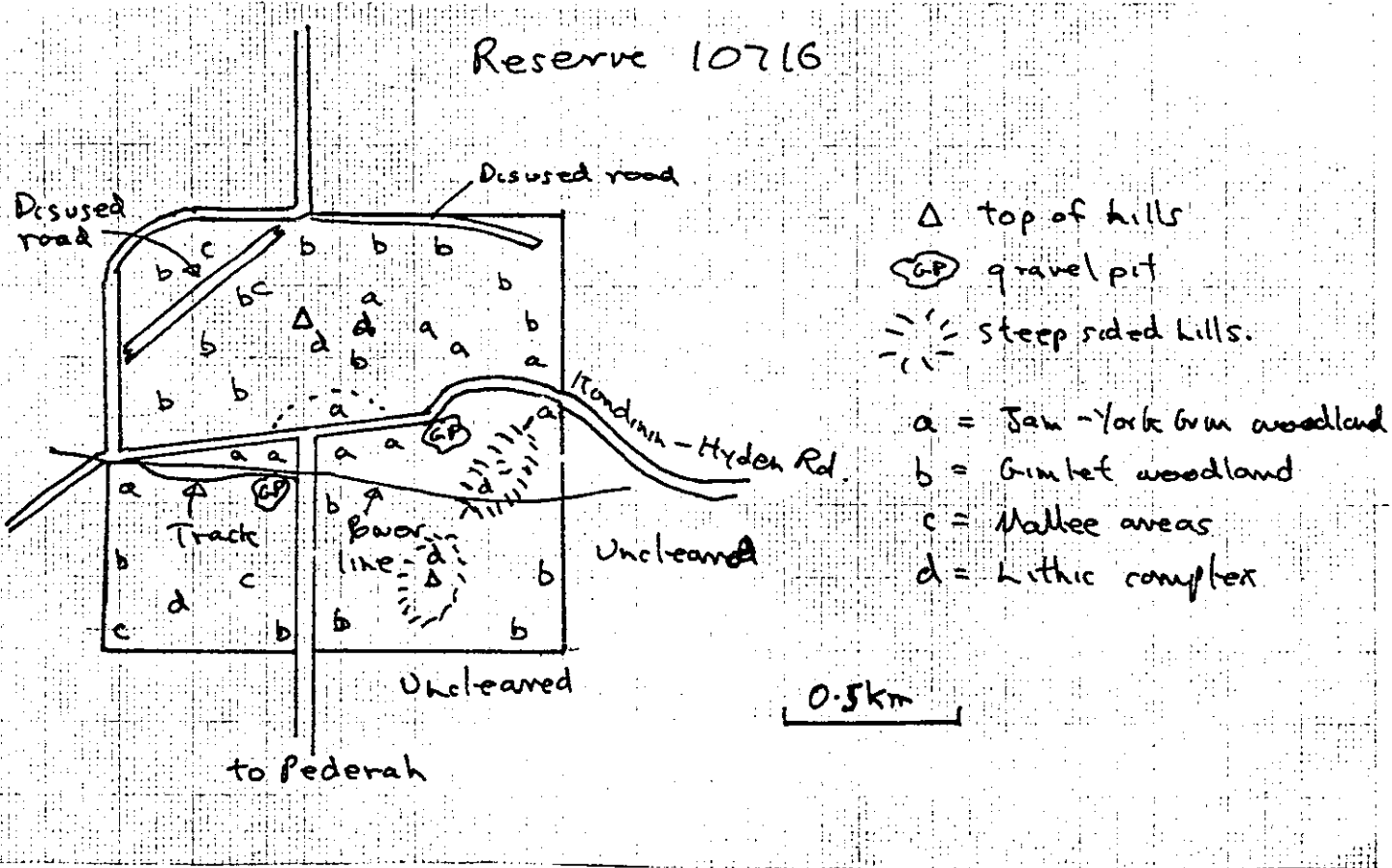




Plate 1. Typical area of gimlet woodland on Reserve 10716. Note scattered, fairly dense clumps of Acacia.



Plate 2. S side of lithic complex S of roadway showing Borya nitida sward and clumps of Platysace juncea

Reserve 17662  
Scriveners Rock Hole

Located ca 8 km N of Karlgarin Townsite and ca 38 km E of Bending Siding. Shown on lithograph 345/80 E4 and 1:50000 sheet 2633 III.

Background

Originally set aside as a reserve for "Water" on 25 February 1921 and with an area of 405 ha. The area of the Reserve was increased to ca 421 ha on 19 July 1963 and again to ca 799 ha on 3 June 1966. Its classification was changed to "Water and Conservation of Flora and Fauna" on 12 September 1969. About 12.5 ha of the original Reserve is set aside as an historical watering place.

Physical characteristics

Reserve 17662 is rectangular, ca 3.2 km long (N-S axis) by ca 2.5 km broad (E-W axis) and with a total perimeter of ca 11.4 km. It has an area of 798.6143 ha. The 1:50000 sheet shows the highest point on the reserve to be 385 m above sea level (ASL) and the lowest point ca 235 m (ASL). There is thus a topographic range of ca 60 m.

Vegetation

Blue Mallet<sup>†</sup> woodland: Blue Mallet Low Woodland A over Casuarina Open Scrub over mixed Open Dwarf Scrub D.

Gimlet woodland: Gimlet Dense Low Forest A over scattered Melaleuca shrubs.

Merrit/Salmon Gum woodland: Merrit/Salmon Gum Low Woodland A.

Comet Vale/Black Marlock mallee: Comet Vale/Black Marlock Open Shrub Mallee over Broombush Heath B.

York Gum Mallee: York Gum Open Shrub Mallee over Broombush Low Scrub B.

Tamma shrubland: Tamma Thicket over Melaleuca Open Dwarf Scrub C.

Tamma heath on ridge: Tamma Dense Heath A with no understorey.

Melaleuca pungens heath: M. pungens Dwarf Scrub C over mixed Low Heath D.

Lithic complex-creek: York Gum and Jam in patches along water course.

Lithic complex-general: scattered shrubs or clumps of shrubs as a mosaic with granite boulders and smooth pavement.



Plant species

Ninety-one plant species were recorded, of which 32 are exploited by the wildflower seed trade.

Nest hollows

Abundant in all woodland areas. Some young trees present in Eucalyptus flocktonii area, very few in remainder.

Weeds

None recorded.

Fire history

Reserve has not been burnt for at least 30 years.

Fauna

Although the Reserve is probably rich in fauna, only the following species were recorded during this survey:

Grey Kangaroo (Macropus fuliginosus): 4 in Jam woodland, 2 in Salmon Gum woodland, 3 in lithic complex E side.

Emu (Dromaius novae-hollandiae): droppings common, mostly containing Astroloma serratifolium fruit.

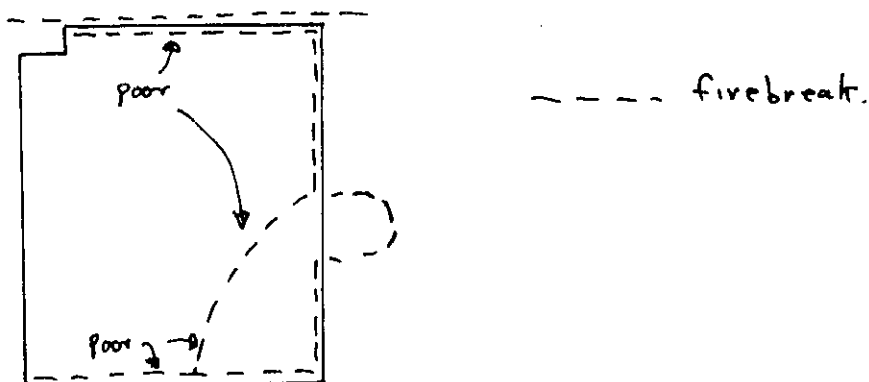
White-eared honeyeater (Meliphaga leucotis): 2 in E. flocktonii woodland.

Exotic fauna

Rabbit scats and diggings common, particularly in lithic complexes.

Firebreaks and fences

Fenced on all sides, firebreaks as shown.



Human usage

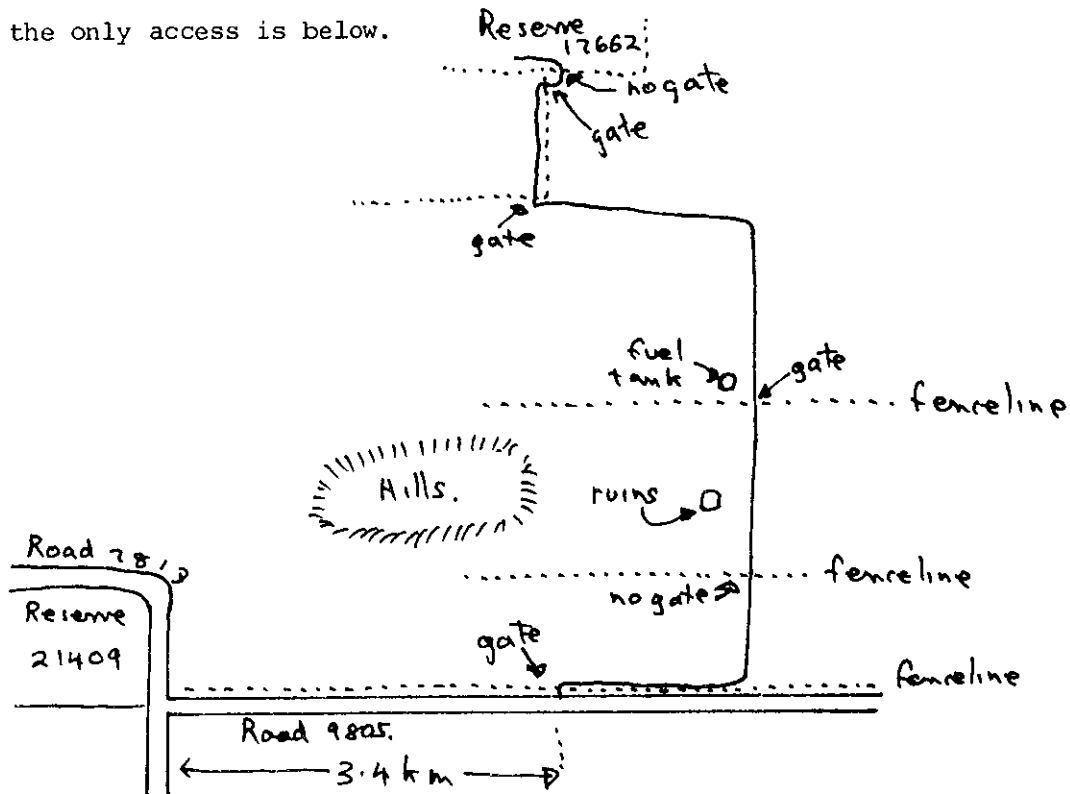
None except for a small amount of timber cutting and a track through the SE corner of the Reserve.

Adjacent uncleared land

Extensive uncleared land to the N and W and some to the S. Probably about 1000 ha, mostly of granite country.

Remarks

The historic rock hole was not examined because of uncertainty as to its location, and <sup>to</sup> inaccessibility. There is very limited access to the Reserve except by one route from the S end. A rough diagram of the only access is below.



Opinion and recommendations

Despite poor access and a limited examination of Reserve 17662 it was obvious that it contains a very diverse flora, both floristically and structurally. The granite outcrops and watercourses have created an extremely mosaic vegetation providing many faunal habitats and ecotones. The poor faunal list is a result of the survey being on a cold, rainy and very windy day, making observation difficult. I suspect the Reserve has a very rich fauna. The reserve also has an historic watering place. Probably one of the major factors in favour of the present little-disturbed nature and future value of the Reserve is its total lack of access except through paddocks, and its rugged geomorphology making

90% or more of it inaccessible except on foot.

I recommend that Reserve 17662 be upgraded to an "A" class reserve and that it be vested in the Western Australian Wildlife Authority. This would ensure its future protection, for although inaccessible at present, this may change in the future. Additionally, damming of some of the watercourses could be possible, thus altering downstream vegetation to the detriment of the fauna.

APPENDIX 2

Reserve 17662

Blue Mallet woodland

Eucalyptus gardneri trees, 8-10 m tall, 10-30% canopy cover over Casuarina acutivalvis shrubs, 2-4 m tall, 2-10% cover over mixed shrubs, no particular dominant, 0.5 m tall, ca 2% cover. Other species recorded were: Beyeria leschenaultii, Hakea adnata, H. multilinea, Hibbertia pungens, Leptomeria preissiana, Leucopogon cuneifolius, Persoonia striata, Phebalium tuberculosum, P. verrucosa. Soil yellow brown, fine sandy loam; moderately drained.

Gimlet woodland

Eucalyptus salubris trees 11-13 m tall, 70-100% canopy over Malaleuca affin. cymbifolia clumps, 2 m, 30-70% cover within clumps, overall cover less than 1%. The only species recorded in the understorey were Acacia merrallii, Eremophila drummondii and Santalum acuminatum. Soil dark red, medium clay; poorly drained.

Merrit/Salmon Gum woodlands

Eucalyptus flocktoniae and/or E. salmonophloia trees to 15 m tall (taller in more open areas) and up to 30% canopy cover. Tallest E. salmonophloia reach 24 m in height. Understorey variable, but usually very sparse to absent. Species noted were Alyxia buxifolia, Exocarpus aphyllus, Olearia muelleri and Rhagodia sp. There are occasional clumps of Atriplex paludosa. Soil reddish grey sandy clay to weak red, light clay; mostly poorly drained.

Comet-vale/Black Marlock mallee

Eucalyptus comitae-vallis and E. redunca shrub mallee, 4-7 m tall, 10-30% canopy cover over Melaleuca uncinata shrubs 1.5 m tall, 30-70% cover. Also recorded were: Bertya cunninghami, Dodonaea bursariifolia, Eucalyptus eremophila, Exocarpus sparteus, Hakea lissocarpha, H. subsulcata, Hibbertia pungens, Melaleuca laxiflora, M. spicigera, M. subtrigona, Phebalium tuberculosum, Platysace maxwellii. Soil light brown, sandy clay; poorly drained.

York Gum mallee

Eucalyptus loxophleba shrub mallee and tree mallee 5-7 m tall, 10-30% cover over Melaleuca uncinata shrubs 1.5 m tall, 10-30% cover. The only other species recorded were Calytrix affin. brachyphylla and Olearia revoluta. Pinkish grey, fine sandy loam; moderately drained.

Tamma shrubland

Casuarina campestris shrubs 2-2.5 m tall, 30-70% canopy cover over Melaleuca pungens 1 m tall, 2-10% cover. Also recorded were: Acacia assimilis, Chamelacium megalopetalum, Grevillea excelsior, Melaleuca cordata, Petrophile ericifolia, P. seminuda, Platysace effusa, Verticordia brownii, V. chrysantha. Yellowish brown, sandy clay loam; moderately drained.

Tamma heath on ridge

Casuarina campestris and some C. acutivalvis shrubs 1.5-2 m, tall 30-100% cover. Situated on hard compact laterite on low ridge. Plants growing in cracks; almost no soil. Astroloma serratifolium and Melaleuca cordata were the only other species recorded.

Melaleuca pungens heath

M. pungens shrubs 1 m tall 10-30% cover over mixed shrubs, no particular dominant, 0.5 m tall 30-70% cover. Also present were: Acacia affin. andrewsii, A. assimilis, Banksia sphaerocarpa, Beaufortia micrantha, Calothamnus quadrifidus, Casuarina campestris, C. humilis, Daviesia cardiophylla, Dryandra cirsioides, D. ferruginea, Grevillea hookerana, Hakea falcata, H. gilberti, H. lissocarpa, H. subsulcata, Isopogon teretifolius, Leptospermum erubescens, Leucopogon conostephioides, Melaleuca spathulata, Persoonia coriacea, Petrophile ericifolia, P. trifida, Xanthorrhoea nana. Soil white, sand; excessively drained.

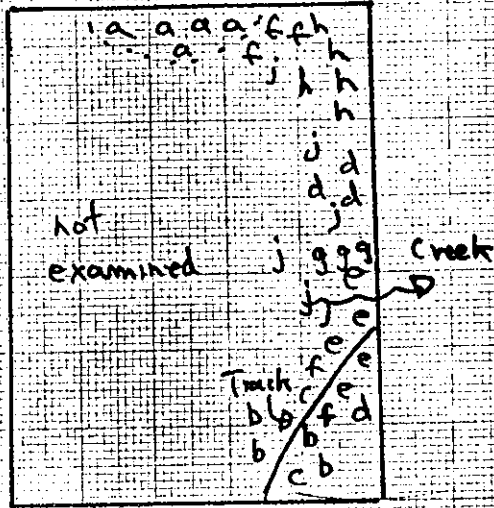
Lithic complex - creek

Scattered Eucalyptus loxophleba and Acacia acuminata trees in patches and in crevices along creek. Scattered plants of Borya nitida, Cassia nemophylla, Exocarpus sparteus, Leptospermum erubescens, Lomandra effusa, Olearia revoluta, Pittosporum phillyraeoides, Santalum spicatum, Spartochloa scirpoidea, Stackhousia huegelii.

Lithic complex - general

Scattered shrubs or clumps of shrubs amongst tumbled boulders or in soil pockets. Soils were very variable in drainage and character but were mostly pinkish-grey to yellowish-brown loamy sand. Species recorded were: Acacia assimilis, A. lasiocalyx, Baeckea sp., Borya nitida, Calothamnus quadrifidus, Cassyltha glabella, Casuarina campestris, Cryptandra polyclada, Dodonaea caespitosa, Eucalyptus eremophila, E. foecunda, Gahnia polyphylla, Grevillea acerosa, Lepidosperma angustatum, Lomandra effusa, Melaleuca uncinata, Petrophile seminuda, Platysace maxwellii, Santalum acuminatum, S. spicatum, ?Scholtzia parviflora, Spartochloa scirpoidea, Stylidium repens.

# Reserve 1.7662



- a = Blue Mallet woodland
- b = Ginkgo woodland
- c = Merritt/salmon gum woodland
- d = Coast Vale / Black Mallet
- e = York Gum mallee
- f = Tamma shrubland
- g = Tamma heath on ridge
- h = Melaleuca pumila heath
- j = Lithic complex: creek and general.

1 km



Plate 3. Reserve 17662. Blue Mallet woodland with shrubby understorey.



Plate 4. Gimlet woodland with Melaleuca affinis cymbifolia understorey.





Plate 5. Comet-vale/Black Marlock mallee on Reserve 17662. Understorey of Broombush.



Plate 6. Melaleuca pungens heath on NE corner of Reserve 17662.



Plate 7. Lithic complex on Reserve 17662. Some areas are developed as Jam woodland with exposed boulders.



Plate 8. Also lithic complex but here shrubs and Spartochloa scirpoidea predominate, with clumps of mallee in soil pockets.

Reserve 22906

Located at Kondinin Townsite. Kondinin is on lithograph 376/80, Al but shows no detail of the Reserve. Details are available on Lands and Survey Department 1:40000 airphotograph Corvigin Run 9, photograph 5117, taken on 6 December 1972. Minor detail is shown on 1:50000 lithograph 2533-11 (Bendering).

Background

Originally set aside for "Conservation of Natural Flora" on 25 March 1949.

Physical characteristics

Reserve 22906 is rectangular, ca 1 km long (N-S axis) by ca 0.5 km broad (E-W axis). It has a perimeter of ca 4.6 km and an area of 28.3280 ha. The 1:50000 lithograph shows the Townsite to have an altitude of ca 268 m above sea level. There is a topographic range of ca 3 m within the Reserve.

Vegetation

The entire reserve is covered with Gimlet, Eucalyptus kondininensis and Salmon Gum Woodland with no understorey but scattered shrubs.

Plant species

Fourteen plant species were recorded, of which 6 are exploited by the wildflower seed trade.

Nest hollows

A few nest hollows are present, but most are too close to houses and traffic to be used.

Weeds

Abundant in most parts of the Reserve, particularly on the W side. Species recorded were: Cape weed (Arctotheca calendula), Tumbleweed (Amaranthus albus), Pimpernel (Anagallis arvensis), Oat Grass (Avena sativa fatua) Wild Turnip (Brassica tournfortii) Paddy Melon (Cucumis myriocarpus), Herons Bill (Erodium cygnonum), Stinkwort (Inula graveolens) Common Purslane (Portulaca oleracea), Ptilotus polystachys, Wild Radish (Raphanus raphanistrum), Afghan Thistle (Solanum hystrix),

Prickly Saltwort (Salsola kali), Sow Thistle (Sonchus oleracea),  
Clover (Trifolium spp.).

#### Fire history

The areas with no understorey or weed growth have probably not been burnt for 30 or more years. The portions with abundant grasses are probably burnt every few years.

#### Fauna

None were recorded during this survey, but the Reserve would support common bird species and possibly 1 or 2 reptile species.

#### Exotic fauna

Dogs and cats are probably frequent visitors to the Reserve.

#### Firebreaks and fences

Only marginal firebreaks and fences exist where adjacent to farmland.

#### Human usage

Timber has been removed from the woodland, and some rubbish dumped. Rubbish is not abundant, but is widespread. There are tracks through the Reserve and one part has been cleared and built up to make a truck loading ramp.

#### Adjacent uncleared land

There is a few ha of uncleared land to the S of the Reserve and some woodland surrounding the sports oval and tennis courts to the SE.

#### Opinion and recommendations

Although of little use for nature conservation Reserve 22906 may provide a resting area for transient bird species. Additionally it provides an excellent windbreak to the Town of Kondinin, particularly from severe, hot, easterlies which are common in the area. The land is also salt-prone and would become more saline if any further clearing occurs. On current trends most expansion of the townsite is to the W but if pressure to develop the Reserve is forthcoming it should be rejected. The value of the Reserve aesthetically and for a windbreak

far outweighs the value of land should it be removed. The understorey of the W part of the Reserve does however need cleaning up and maintenance. I recommend that Kondinin Town Council be approached to arrange for clearing of rubbish and weeds in the areas where these occur and that in future mowing programs be used to minimise weed development. Mowers of suitable type are already used in the oval. This management would allow the Reserve to be an aesthetically pleasing and useful recreation area while requiring minimal labour and expense. I also recommend that Reserve 22906 be vested in the Western Australian Wildlife Authority.

APPENDIX 3

Reserve 22906

Eucalyptus salubris to 20 m tall, E. kondininensis 20 m tall, E. salmonophloia to 9 m tall; dominance varying continually over the Reserve; 10-30% canopy cover. Understorey mostly absent except for grasses in disturbed area. Shrubs recorded were: Acacia aestivalis, Atriplex paludosa, A. semibaccata, Dodonaea attenuata, Enchylaena tomentosa, Exocarpus aphyllus, Maireana brevifolia, Rhagodia preissii, Salsola kali, Santalum acuminatum, Zygophyllum aurantiacium. Soil reddish yellow, light sandy clay loam; poorly drained.

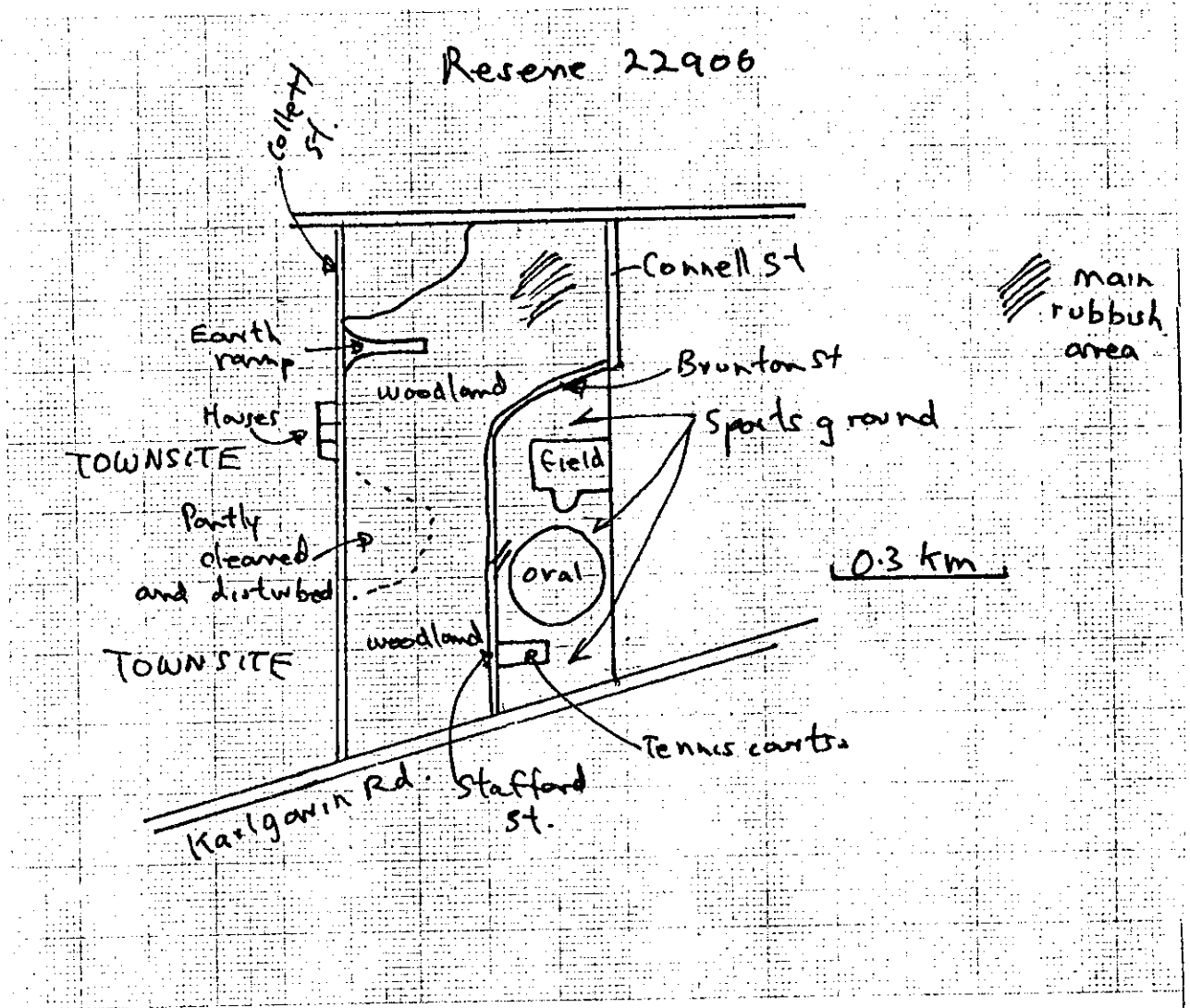




Plate 9. Reserve 22906 showing Eucalyptus kondininensis dominated area with dense grass understorey development.



Plate 10. Young E. kondininensis and Salmon Gum on N end of Reserve.



Reserve 23366

Located ca 19 km WSW of Karlgarin Townsite and ca 23 km ESE of Kondinin Townsite. Shown on lithograph 376/80 Cl.

Background

Originally set aside for "Flora and Fauna" on 12 February 1951.

Physical characteristics

Reserve 23366 is rectangular with a truncated SE corner. It is ca 2.2 km long (N-S axis) by ca 1.8 km broad (E-W axis) and has a total perimeter of ca 7.6 km and an area of 937.2260 ha. No contour maps or spot altitudes are available. A visual estimate of 1 m in topographic range was made.

Vegetation

Clumps of Broombush Scrub with areas of bare salt flat or scattered shrubs.

Plant species

Nineteen plant species were recorded, of which 5 are exploited by the wildflower seed trade.

Nest hollows

None recorded.

Weeds

None recorded.

Fire history

The vegetation would not support fire.

Fauna

None recorded.

Exotic fauna

None recorded.

Firebreaks and fences

No firebreaks; fenced adjacent to paddocks only.

Human usage

Small amounts of rubbish have been dumped.

Adjacent uncleared land

Extensive salt marsh to the NE and SW.

Opinion and recommendations

Although Reserve 23366 is of limited value for flora or fauna it serves a useful purpose for soil conservation. The dead vegetation is helping to reduce water flow and erosion and the living plants assist in reducing further expansion of salt onto adjacent farmland. I recommend that Reserve 23366 be left in its present form, and that it be vested in the Western Australian Wildlife Authority.

APPENDIX 4

Reserve 23366

Melaleuca shrubland

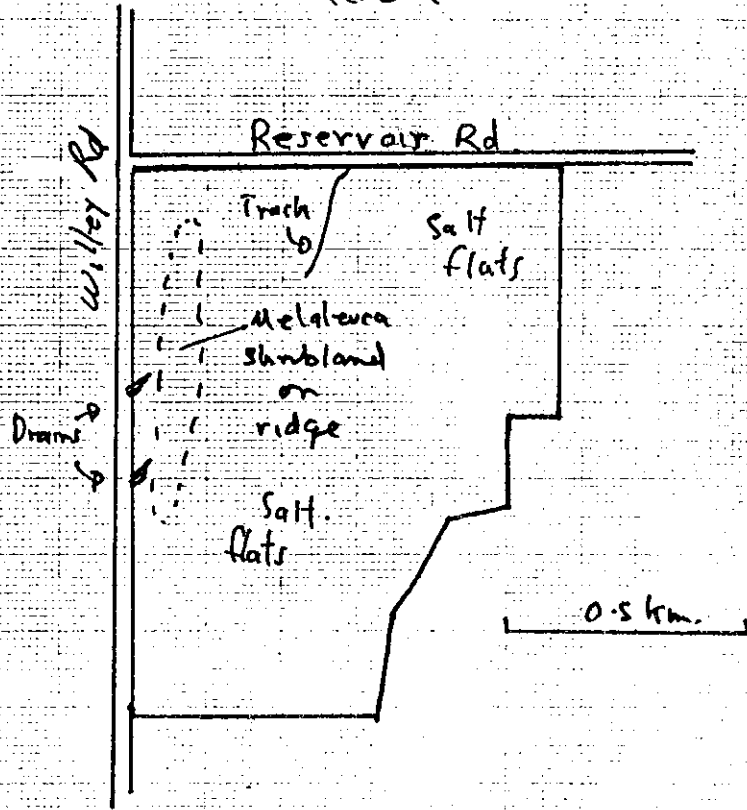
Melaleuca uncinata, M. hamulosa and M. cymbifolia shrubs 1-3 m tall, 10-30% cover (locally up to 70%). Also present were: Acacia colletioides, Argyrolottis turbinatus, Disphyma blackii, Eucalyptus salubris, Exocarpus sparteus, Hakea preissii, Leptospermum ~~er~~obescens Lomandra effusa, Melaleuca cymbifolia, M. thyooides, Santalum acuminatum.

Soil light reddish brown sandy loam; poorly drained.

Scattered plants amongst dead shrubs:

Arthrocnemum bidens, A. halocnemoides, Eucalyptus sargentii, Lycium australe, Melaleuca hamulosa, M. uncinata, Rhagodia nutans.

Reserve 23366



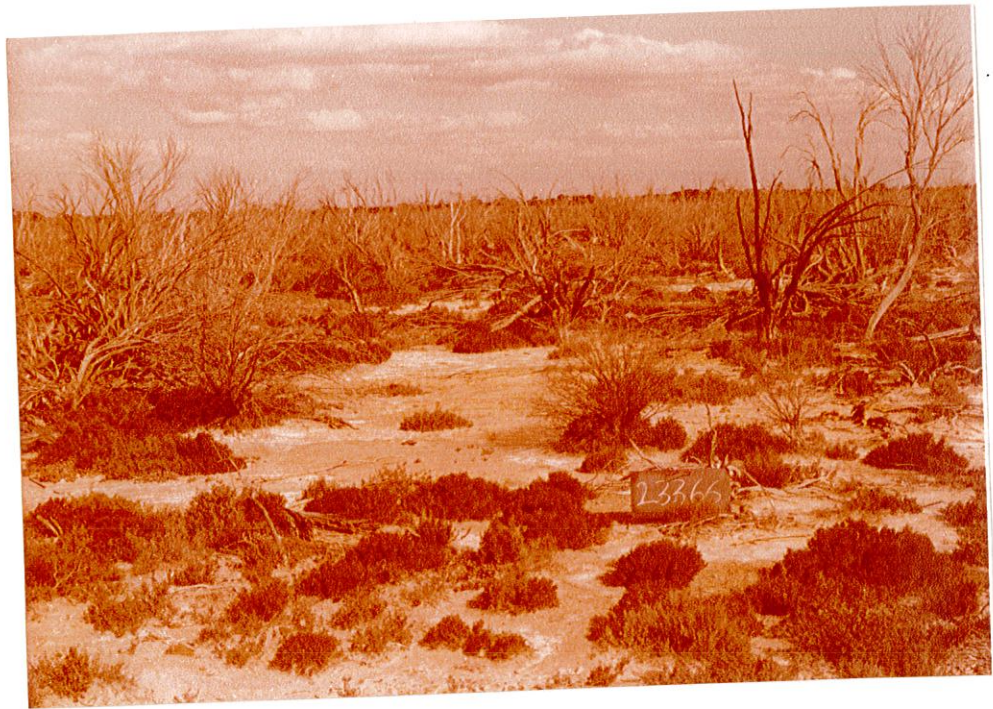


Plate 11. Reserve 23366 showing salt marsh and abundant dead trees.

Reserve 26661

Located ca 15 km due E of Hyden Townsite and shown on lithograph 346/80 C4.

Background


Originally set aside for "Conservation of Flora" on 15 March 1963.

Physical characteristics

Reserve 26661 is rectangular, ca 2.6 km long (N-S axis) by ca 1.3 km broad (E-W axis). It has a total perimeter of ca 7.8 km and an area of 347.2203 ha. No contour maps or spot altitudes are available, but a visual estimate of ca 50 m in topographic range was made.

Vegetation

Mallee area: York Gum and Eucalyptus sheathiana Shrub Mallee over Broombush Low Scrub A.

Bottlebrush/Tamma heath: One-sided Bottlebrush/Tamma  Low Scrub B over mixed Open Dwarf Scrub D.

Casuarina heath: C. corniculata and Tamma Dense Heath B with scattered Banksia elderana.

Melaleuca heath: Melaleuca cordata Dense Low Heath D.

Lithic complex: granite outcrop with clumps of shrubs.

Plant species

Fifty-one plant species were recorded, of which 19 are exploited by the wildflower seed trade.

Nest hollows

None recorded.

Weeds

Afghan Thistle (Solanum hystrix) is common on adjacent farmland but has not penetrated on to the Reserve. Small ephemeral species are common on the wet areas adjacent to granite outcrops.

#### Fire history

Heath at S end is probably older than 30 years and there is some fire patterns at the N end which are probably 20-30 years old. The remainder of the Reserve is much older than 30 years.

#### Fauna

Port Lincoln Parrot (Platycercus zonarius): 3 flying over Reserve.

Yellow-rumped Thornbill (Acanthiza chrysorrhoa): 6 in dense scrub near granite outcrop.

Western Magpie (Cracticus tibicen dorsalis): 8 feeding on edge of paddock on W side.

Australian Raven (Corvus coronoides): several flying over Reserve and in adjacent paddocks.

#### Exotic fauna

Rabbit scats and diggings were seen. A fox was sighted crossing the road into the Reserve on the N end.

#### Firebreaks and fences

Firebreaks and fences on W, S and E sides. N boundary has a roadway which acts as a firebreak, but is unfenced.

#### Human usage

None recorded.

#### Adjacent and recommendations

Reserve 26661 is in excellent condition and supports a good variety of associations and species. The heaths are of particular value and have numerous plant species of interest, particularly Banksia elderana and an undescribed sedge. Closer examination will probably produce other species of restricted range or scientific interest. The reserve is also on a hill top and is of value to prevent wind erosion. I recommend that Reserve 26661 be retained in its present form, and that it be vested in the Western Australian Wildlife Authority.

APPENDIX 5

Reserve 26661

Mallee area

Eucalyptus loxophleba and E. sheathiana shrub mallee, 4-7 m tall, 30-70% canopy cover over Melaleuca acuminata and M. uncinata, to 2 m tall, 10-30% cover. Scattered E. salmonophloia 8-18 m tall. Also recorded were: Acacia acuminata, A. erinacea, A. graffiana, A. merrallii, Cassia nemophylla, Daviesia preissii, Eucalyptus calycogona, Grevillea huegelii, Hakea adnata, Melaleuca sp., Olearia muelleri, Phebalium tuberculosum, Santalum acuminatum, Stylobasium australe, Westringia cephalantha. Soil pink, sandy clay; poorly drained.

Bottlebrush/Tamma heath

Calothamnus quadrifidus, Casuarina campestris and Melaleuca uncinata shrubs, 1.5 m tall, 10-30% cover over mixed shrubs 0.5 m tall, 2-10% cover. Also present were Borya nitida, Melaleuca oldfieldii, M. platycalyx, M. scabra, Petrophile seminuda, Verticordia chrysantha, Vittadinia cuneata. Soil light reddish-brown, sandy clay; moderately drained. Some granite near to soil surface.

Casuarina heath

Casuarina corniculata and C. campestris shrubs, 1.5 m tall, 70-100% canopy cover. Scattered emergent shrubs of Banksia elderana to 2.5 m tall. Also recorded were: Astroloma serratifolium, Baeckea heteranthera, Choretrum pritzellii, Melaleuca cordata and Petrophile seminuda. Soil yellowish brown; clay loam; moderately drained, with some pooling. About 80% laterite pebbles.

Melaleuca heath

Melaleuca cordata and several other species of shrubs 0.5 m tall, 70-100% cover. Scattered Casuarina acutivalvis, Grevillea excelsior and Santalum acuminatum shrubs to 2 m tall. Also recorded were: Acacia dielsii, Baeckea heteranthera, Borya nitida, Choretrum pritzellii, Cyperaceae sp. 1, Daviesia brevifolia, Peysonia coriacea, Platysace effusa, Schoenus sp. Soil yellowish brown clay loam, ca 50% laterite pebbles. Well drained.



Lithic complex

Low rounded granite outcrops with thickets and scattered plants.  
Species recorded were: Acacia assimilis, A. lasiocalyx, Casuarina  
campestris, Dicrastylis parvifolia, Grevillea paniculata, Leptospermum  
crubescens, Melaleuca elliptica, Spartochloa scirpoidea, Thryptomene  
australis.

# Reserve 26661.

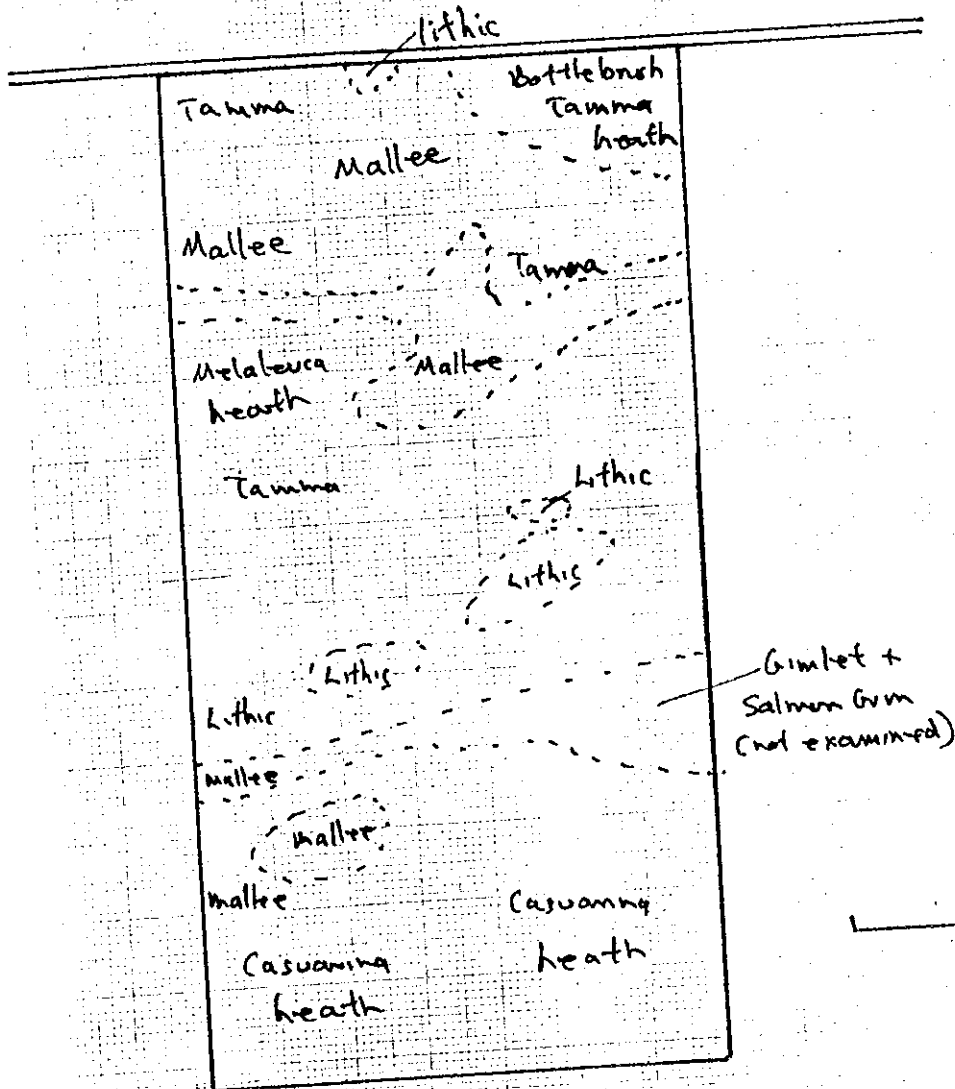




Plate 12. Reserve 26661 showing mallee area in a portion dominated by Eucalyptus sheathiana. Dense Melaleuca understorey present.



Plate 13. Casuarina heath with emergent Banksia elderana shrub



Plate 14. Melaleuca heath with emergent, scattered shrubs.

Reserve 27175

Located ca 7 km E of Hyden Townsite and shown on lithographs 346/80 AB4 and 375/80 AB1.

Background

Originally set aside for "Conservation of Natural Vegetation" on 24 April 1964.

Physical characteristics

Reserve 27175 is irregular in shape, averages ca 10 km long (E-W axis) by ca 2 km broad (N-S axis) and has a total perimeter of ca 22.4 km. The Reserve has an area of 1573.4178 ha. No contour maps or spot altitudes are available. It is very difficult to make a visual estimate of topographic range on such a large reserve but most of it is salt flat with a range of 1 to 2 m. There are local high points up to 5 m in range.

Vegetation

Gimlet woodland: Gimlet Low Woodland A over Melaleuca Open Low Woodland B.

York Gum/Swamp Mallet woodland: York Gum and Swamp Mallet Low Forest A with no understorey.

Yorrell woodland: Yorrell Open Woodland with no understorey.

Melaleuca heath: Melaleuca Dense Heath B.

Lithic complex: granite pavements and areas of tumbled boulders with Huegels' Casuarina Low Forest A and many scattered plants.

Salt complex: mostly dead shrubs and trees.

Plant species

Forty-six species of plants were recorded, of which 15 are exploited by the wildflower seed trade.

Nest hollows

Abundant in woodland areas but most of these areas are dead trees. There are no young trees present.

Weeds

Paddy Melon (Cucumis myriocarpus), Prickly Saltwort (Salsola kali)

and Ptilotus polystachys are common along disturbed road verges. Very few weeds have penetrated the Reserve, except for small ephemerals in the areas of dead vegetation.

#### Fire history

Vegetation is much older than 30 years. Most vegetation would not support a fire.

#### Fauna

Tawny Frogmouth (Podargus strigoides): 1 seen in woodland:

White-eared Honey-eater (Meliphaga leucotis): 2 in single mallee on roadside.

Grey Currawong (Strepera versicolor): 1 in woodland.

Australian Raven (Corvus coronoides): common in most parts of Reserve.

Reserve 27175 has salt marshes and a chain of salt lakes similar to those on Reserve 27639 and a privately owned block of land, Roe Location 1480. Both the Reserve, the block and the fauna recorded on the lake are listed and discussed in the report on Reserve 27639.

#### Exotic fauna

Fox footprints and a scat were recorded, as were scats and diggings of rabbits. Additionally there were sheep footprints in several of the salt pans. These are probably escaped stock from farmland, not sheep deliberately grazed on the Reserve.

#### Firebreaks and fences

No firebreaks, although the majority of the vegetation would not support a fire. Only the Reserve margins are fenced where they are adjacent to farmland.

Human usage

None recorded except for occasional sheep.

Adjacent uncleared land

There is extensive salt marsh to the NW of the Reserve. On the E margin Graham Rocks Reserve (18735) and Reserve 27639 and Roe Location 1430 are bushland and contiguous with the Reserve.

Opinion and recommendations

Reserve 27175, together with Reserves 27639 and 18735 form an important conservation area.

They support considerable areas of woodland and granite associations and bushland as well as salt marsh. Apart from the value of the land for fauna and flora conservation, it is obvious that the S edge of the Reserve has undergone considerable salt encroachment over recent years. Any development of the Reserve is therefore likely to cause further expansion of salt onto adjacent farmland.

I recommend that Reserve 27175 be left in its present state, and that it be vested in the Western Australian Wildlife Authority.

APPENDIX 6

Reserve 27175

Gimlet woodland

Eucalyptus salubris trees, 8-12 m tall, 10-30% cover with patches 4-7 m tall and 30-70% cover. Understorey of Melaleuca cymbifolia trees 2.5-3.5 m tall, ca 2-3% cover. Other species recorded were: Acacia graffiana, A. merrallii, Bassia diacantha, Eucalyptus calycogona, Exocarpus sparteus, Melaleuca hamulosa, Olearia muelleri, Santalum acuminatum, Stipa elegantissima. Soil pinkish grey, light sandy clay; poorly drained.

York Gum/Swamp Mallet woodland

Eucalyptus loxophleba and E. spathulata trees, 6-8 m tall 30-70% canopy cover. No understorey, but scattered shrubs of Acacia merrallii, A. viscifolia, Alyxia buxifolia, Atriplex paludosa, Baeckea affin. muricata, Conostephium preissii, Darwinia diosmoides, Eremophila decipiens, Lomandra effusa, Melaleuca uncinata, Microcybe multiflora, Rhagodia nutans, Santalum acuminatum, Scaevola spinescens, Stipa hemipogon. Soil pinkish grey, sandy clay; poorly drained.

Yorrell woodland

Eucalyptus gracilis trees 12-16 m tall, 2-10% cover. No understorey but scattered plants of Atriplex paludosa and clumps of Gahnia affin. trifida in open areas. Soil grey, sandy clay; poorly drained and salt affected.

Melaleuca heath

Melaleuca hamulosa and M. cymbifolia shrubs, 1.5 m tall, 70-100% cover. No understorey. Scattered shrubs of M. acuminata present. Soil grey, sandy clay; very poorly drained and salt affected.

Lithic complex

Granite outcrops with rounded smooth slopes and areas of tumbled boulders. Casuarina huegeliana woodland to 7 m tall, 30-70% cover forms a cover in some areas, while shallow soil pockets support only occasional shrubs. Marginal soils on the outcrop edges have Acacia acuminata or C. huegeliana woodlands of variable height and density. Species recorded were: Acacia dentifera, A. microbotrya, A. saligna, A. trigonophylla, Billardiera variifolia, Conostephium preissii,

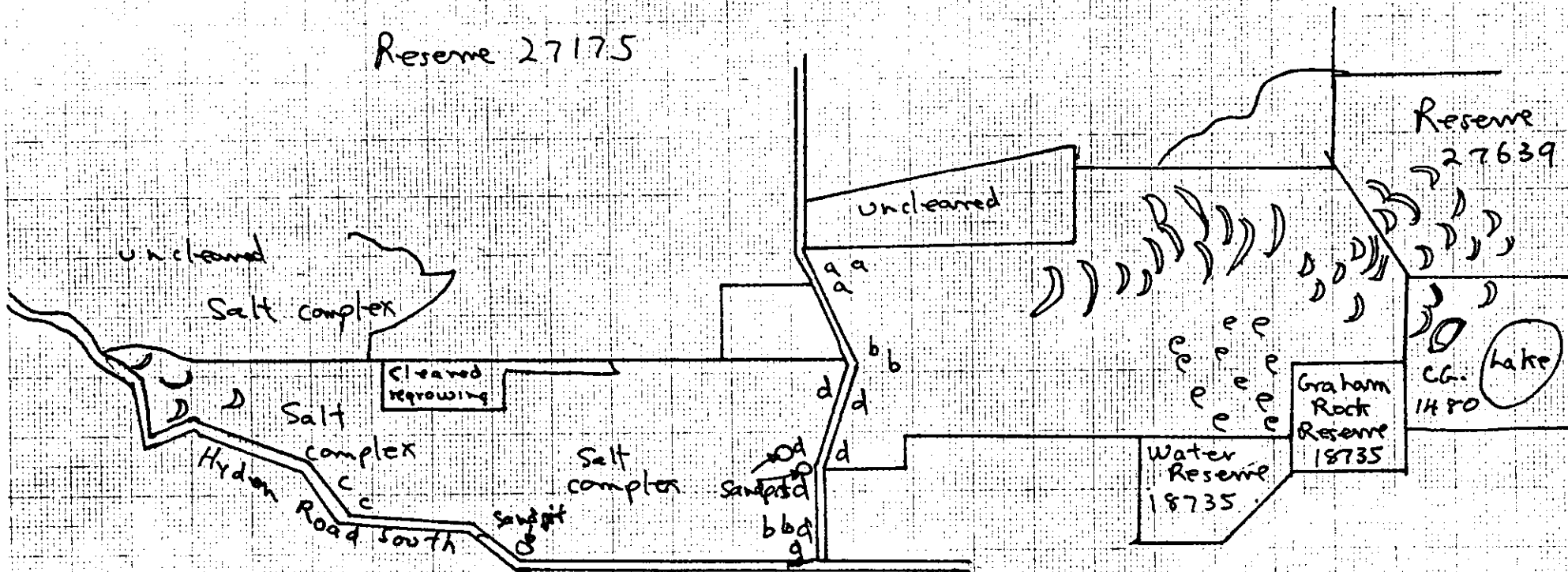


Dodonaea attenuata, Hakea prostrata, Isotoma petraea, Kennedia prostrata, Lomandra glauca collina, Lycium australe, Muhlenbeckia adpressa, Pimelia argentea, Pittosporum phillyraeiodes, Santalum spicatum. Soils mostly light reddish brown, sandy loam; drainage variable.

#### Salt complex

All dead shrubs and trees except for the areas described above. Scattered plants of Enchylaena tomentosa, Eucalyptus spathulata, Hakea preissii and Lycium australe are present on slight ridges on the salt flat. Occasional Eremophila decipiens are present in areas where scattered Eucalyptus kondininensis occur. These are mainly in small clumps on the salt flat margins.

Reserve 27175



- a = gimlet woodland
- b = Yate Gum/Swamp mallet woodland.
- c = Yorrell woodland
- d = Melaleuca heath

e = lithic complex

) crescentic lakes

1 km



Plate 15. Reserve 27175 showing Gimlet woodland with clumps of Melaleuca cymbifolia



Plate 16. York Gum/Swamp Mallet woodland.



Plate 17. Melaleuca heath replacing woodland in salt affected area .



Plate 18. Lithic complex on Graham Rock Reserve. Granite areas on Reserve 27175 are probably very similar.

Reserve 27639

Located ca 19 km E of Hyden and shown on lithograph 346/80, BC4.

Background

Originally set aside for "Preservation of Natural Vegetation" on 18 June 1965.

Physical characteristics

Reserve 27639 is irregular rectangular ca 3.3 km long (E-W axis) by ca 1.5 km broad (N-S axis). It has a total perimeter of ca 9.1 km and an area of 466.4888 ha. No contour maps or spot altitudes are available but there is probably an altitudinal range of ca 100 m (visual estimate).

Vegetation

Salmon Gum woodland: Salmon Gum Open Woodland over Blue-bush Open Dwarf Scrub D.  
Mallee area: mixed Very Open Shrub Mallee over Open Low Sedges.  
Jam - Broombush shrubland: Jam - Broombush Thicket.  
Salt shrubland: Melaleuca Dense Thicket with no understorey.  
Tamma heath: Tamma Heath B over Borya nitida Dense Herbs.  
Lithic complex: low granite exposures with pockets of shrubs.  
Salt flats: scattered plants or ridges surrounded by salt flat.

Plant species

Seventy-nine plant species were recorded, of which 26 are exploited by the wildflower seed trade.

Next hollows

Scattered nest hollows in woodland but this formation is of restricted area. There are very few young trees present.

Weeds

None recorded.

Fire history

Probably all formations much older than 30 years.

Fauna

The following species were recorded on the Reserve.

Grey Kangaroo (Macropus fuliginosus): 4 seen near granite outcrop.

Mountain Duck (Tadorna tadornoides): 2 flying over Reserve.

Port Lincoln Parrot (Platycercus zonarius): common in Salmon Gum woodland.

Willie Wagtail (Rhipidura leucophrys): 2 on salt shrubland E side.

White-browed Babbler (Pomatostomus superciliosus): 8 in Casuarina thicket.

~~Singing Honeyeater (Meliphaga virescens): 2 in E. kondininensis~~  
at S end.

Magpie-lark (Grallina cyanoleuca): 2 in Salmon Gum woodland and 2 on salt flats.

Black-faced Wood-Swallow (Artamus cinereus): 4 on fence at S end.

Pied Butcherbird (Cracticus nigrogularis): 1 in dead tree in salt marsh area.

Amphibolurus ornatus (Ornate Dragon): several seen on granite outcrop.

In addition to these records a salt lake on Roe Location 1480 had a large number of birds on and around it. Many of these species would use the Reserve; either the bushland areas or the areas of salt marsh which extend onto Reserve 27639.

Species recorded were:

White-necked Heron (Ardea pacifica): 2 on lake edge.

White-faced Heron (A. novaehollandiae): 2 on lake edge.

Black Swan (Cygnus atratus): 33 on lake.

Mountain Duck (Tadorna tadornoides): 180 on lake.

Black Duck (Anas superciliosa): 300 on lake.

Grey Teal (Anas gibberifrons): 40 on lake.

Red-capped Dotteral (Charadrius ruficapillus): 1 on lake edge.

Black-winged Stilt (Himantopus himantopus): 80 on lake.

Red-capped Robin (Petroica goodenovii): a pair in Melaleuca thicket on lake edge.

Chestnut-rumped Thornbill (Acanthiza uropygialis): 12 in Melaleuca thicket.

White-fronted Chat (Epthianura albifrons): 4 in heaths on lake margin and 6 in Melaleuca thicket on lake edge.

Pied Butcherbird (Cracticus nigrogularis): 2 in dead tree at S end of lake.

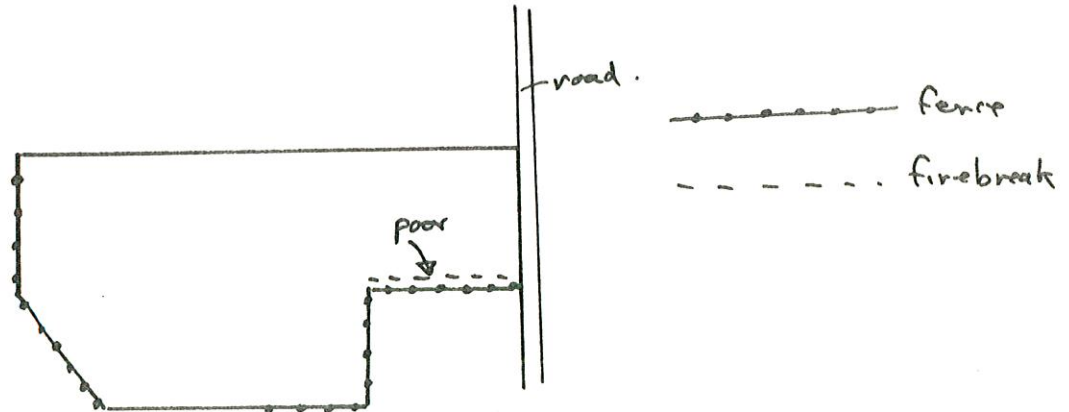
Australian Raven (Corvus coronoides): 4 feeding on beach line.

Exotic fauna

Rabbit scats and diggings were recorded on the sand area and around the granite outcrop.

Firebreaks and fences

As shown on diagram below



Human usage

Timber has been removed from the woodland. There has been some rubbish dumped on the SE corner and there is a gravel and a sand pit in this portion of the Reserve.

Adjacent uncleared land

Extensive salt flats to the N and SW of the Reserve and several hundred hectares of granite outcrop and bushland.

Opinion and recommendations

Reserve 27639 is in excellent condition and supports a wide variety of vegetation formations, associations and species. It is also probably of considerable value to fauna, as indicated by the species list made during this short visit. The salt marshes extend through the centre of Reserve 27639 and probably support most of the species recorded on Roe Location 1480. The contiguous Reserves of 27175 (mostly salt marsh) and 18735 (granite outcrop) make this area diverse and of considerable value to fauna conservation. I recommend that investigations be made to determine if the current owner of Roe

Location 1480 would be prepared to allow purchase of this land and its addition to the Reserve. The lake on 1480 is the largest in the chain of lakes and probably the most valuable. About 80% of the loc. is already salt and not useable for agriculture and the remainder is potentially salty and should not be cleared anyway. The land thus has little value to the farmer for wheat. Even its use for sheep browsing is limited, ca 30% of the land being bare salt flat and much of the rest being woodland with little soft browse.

I further recommend that Reserve 27639 be left in its present condition, and that it be vested in the Western Australian Wildlife Authority.



APPENDIX 7

Reserve 27639

Salmon Gum woodland

Eucalyptus salmonophloia trees, 16-24 m tall, 2-10% canopy cover with scattered E. salubris and E. calycogona to 18 m tall. Understorey absent but scattered shrubs to 2 m tall (1% cover approximately) and Atriplex paludosa shrubs 30 cm tall ca 3% cover. Also recorded were: Acacia merrallii, Alyxia buxifolia, Cassia nemophila, Cassytha racemosa, Daviesia aphylla, Dianella revoluta, Exocarpus aphyllus, Lomandra effusa, Melaleuca adnata, M. uncinata, Olearia muelleri, Pittosporum phylliraeoides, Rhagodia preissii, Santalum acuminatum, Scaevola spinescens. Soil reddish Grey, sandy clay loam; poorly drained.

Mallee area

Eucalyptus rigidula, E. transcontinentalis and E. merrickiae shrub and tree mallee, 6-9 m tall, cover up to 70% (variable). Understorey of Lepidosperma affin. angustatum and scattered shrubs 0.5 m tall, 10-30% cover. Other species recorded were: Acacia acuminata, A. lineolata, Alyxia buxifolia, Borya nitida, Dodonaea bursariifolia, Grevillea affin. circumalata, Harperia lateriflora, Lomandra effusa, Olearia revoluta, Santalum acuminatum. Soil reddish grey, clay loam; poorly drained.

Jam - Broombush shrubland

Acacia acuminata and Melaleuca uncinata shrubs to 2.5 m tall, 30-70% cover. Scattered Eucalyptus kondininensis trees to 15 m tall, and E. redunca mallees to 4 m tall. Other plants recorded were: Atriplex paludosa, Gahnia affin. trifida, Hakea preissii, Lomandra effusa, Lyginea barbata, and Olearia revoluta. Soil pinkish grey, fine sandy clay loam; poorly drained.

Salt shrubland

Clumps of Melaleuca cymbifolia or M. hamulosa 4-6 m tall, 70-100% canopy cover. No other species present. Clumps on mounds and ridges within salt complex.

Tamma heath

Casuarina campestris shrubs 1.5 m tall, 30-70% canopy cover over Borya nitida herbs 10 cm tall, 70-100% cover. Other species recorded were: Acacia dielsii, A. sp., Calytrix fraseri, Chamaexeros sp., Daviesia brevifolia, Grevillea yorkrakinensis, Harperia lateriflora, Hibbertia uncinata, Lepidosperma resinosum, L. sp., Leucopogon dielsianus, L. hamulosa, Platysace effusa, Spartochloa scirpoidea. Soil yellow, sandy clay; well drained but soils very shallow over granite.

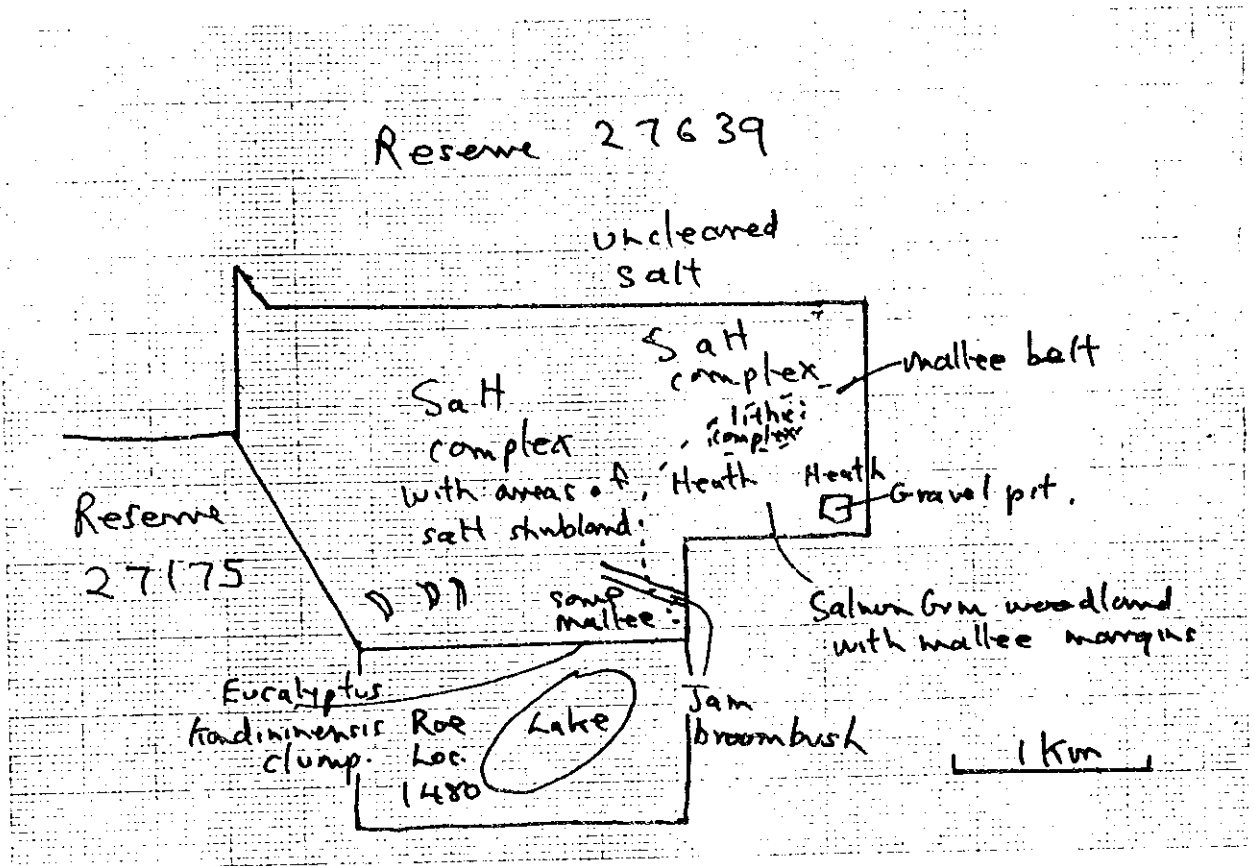
In other areas this association is only 1 m tall and the Borya nitida layer is only 2-10% cover. Species present in these areas are, Acacia sp., Cassytha glabella, Casuarina microstachya, Chamaexeros sp., Grevillea yorkrakinensis, Hakea subsulcata, Harperia lateriflora, Lepidosperma affin. resinosum, Persoonia striata, Platysace effusa, Schoenus sp., Verticordia chrysantha. Soil brownish yellow, sandy clay; moderately drained.

Lithic complex

Low rounded granite exposures with some marginal boulders and dense pockets of vegetation that receive runoff from rock. Species recorded were: Acacia lasiocalyx, A. saligna, Borya nitida, Cheilanthes tenuifolia, Cyperaceae sp., Dodonaea attenuata, Gahnia ancistrophylla, Grevillea paniculata, Kunzea pulchella, Lepidosperma angustatum, Leptospermum erubescens, Lomandra effusa, Melaleuca elliptica, M. macronycha, Olearia revoluta, Spartochloa scirpoidea, Stypandra imbricata, Verticordia chrysantha. Soil in cracks or pockets in granite or in marginal areas pinkish grey, loamy sand; well drained but receiving runoff from rock surfaces.

Salt flats

Scattered plants on ridges within salt flat. Arthrocnemum bidens, A. halocnemoides, Daviesia aphylla, Disphyma blackii, Exocarpus aphyllus, Frankenia desertorum, Lycium australe, Melaleuca cymbifolia, M. hamulosa, M. thuyoides, Rhogodia nutans, Selenothamnus squamatus. A deep lake on Roe Location 1480 had Ruppia maritima growing submerged on the lake floor. Lake edges were Melaleuca hamulosa and M. uncinata shrubs 2 m tall, 30-70% cover. Eucalyptus kondininensis stands are present.



Reserve 27639

Uncleared salt

Salt complex with areas of salt shrubland

Salt complex lithic complex

mallee belt

Reserve 27175

Heath Gravel pit

Samp mallee

Salmon Gum woodland with mallee margins

Eucalyptus grandinervis clump

Roe Loc. 1480

Lake

Jam breambush

1 km



Plate 19. Reserve 27639 showing Salmon Gum woodland on SE corner.



Plate 20. Tamma heath with dense Borya nitida ground cover.



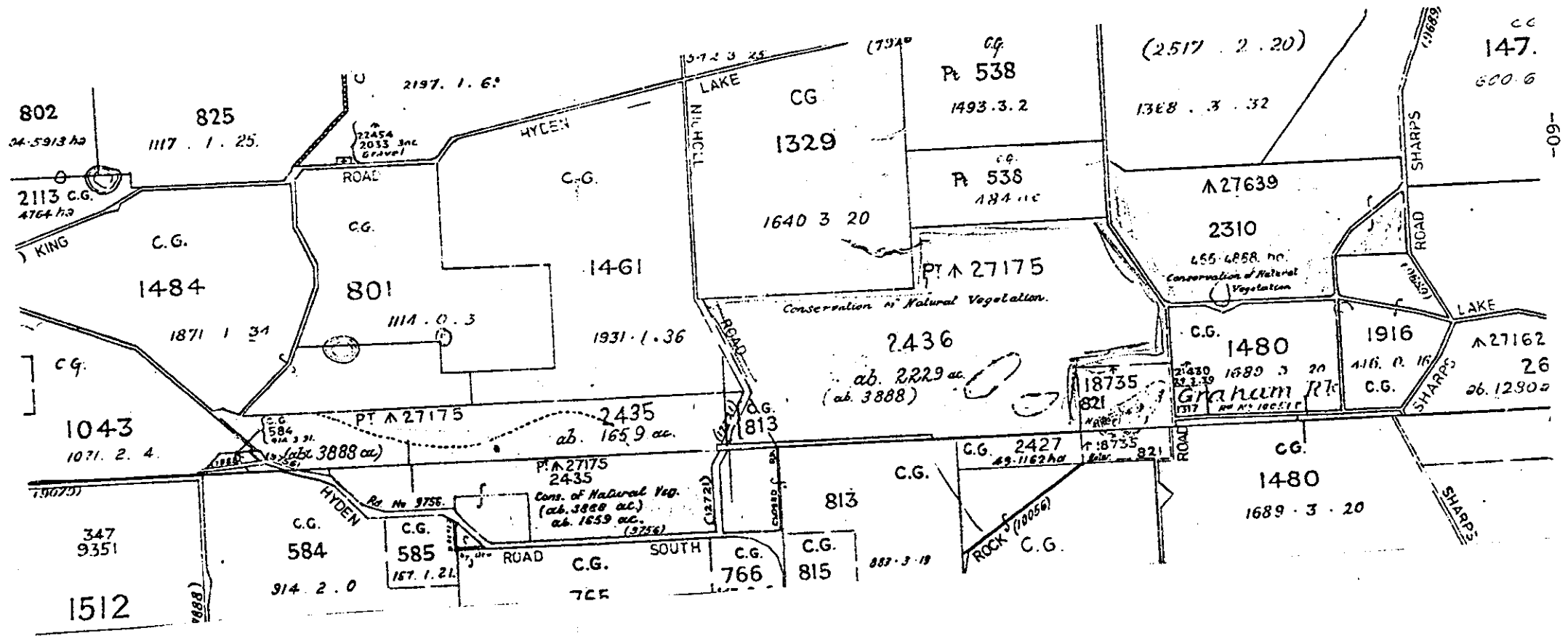
Plate 21. Salt marsh on Reserve 27639.



Plate 22. View across lake on Roe Location 1480. Abundant water fowl use the lake. W edge with Melaleuca thicket, woodland and then granite.



Plate 23. Eucalyptus kondininensis stand with Gahnia ? trifida  
understorey near salt complexes on Reserve 27639 and  
Roe Location 1480.



802

825

2197. 1. 6.

3-7-2 3 25 (7940)

C.G. Pt 538 1493. 3. 2

(2.517 . 2 . 20)

CC 147. 600. 6

24.5913 Ad

1117 . 1 . 25.

22454 2033 3ac Gravel

LAKE JOHN ROAD

CG 1329

C.G. Pt 538 184 ac

1368 . 3 . 32

SHARPS ROAD (19683)

2113 C.G. 4764. 7. 3

ROAD

C.G.

1640 3 20

27639 2310

KING

C.G.

C.G.

1461

PT A 27175

455-4858 no. Conservation of Natural Vegetation

1484

801

1931. 1. 36

2436

C.G. 1480

1916

27162

1871 1 34

1114 . 0 . 3

ab. 2229 ac. (ab. 3888)

2420 1680 3 20 Graham Pt. 1317 no. 100. 5. 1. 1. 1. 1.

116. 0. 16 C.G.

26 26. 12900

C.G.

1043

1071. 2. 4.

C.G. 584 314 3 31. (ab. 3888 ac.)

PT A 27175

2435 ab. 1659 ac.

C.G. 1813

18735 821

C.G. 2427 49. 1162 Ad

C.G. 1480

1689 . 3 . 20

79075)

347 9351

C.G. 584 314 . 2 . 0

C.G. 585 157. 1. 21.

Pt A 27175 2435 Cons. of Natural Veg. (ab. 3888 ac.) (ab. 1659 ac.) (9756)

813

C.G.

ROCK ROAD (10056) C.G.

SOUTH

C.G. 766

C.G. 815

887-3-19

1512

(888)

Reserve 28047

Located ca 54 km due E of Hyden Townsite and shown on lithograph 375/80, Fl.

Background

Originally set aside as a reserve for "Conservation of Flora" on 1 April 1966.

Physical characteristics

Reserve 28047 is irregular rectangular, ca 4.5 km long (E-W axis) by ca 1.2 km broad (N-S axis). It has a total perimeter of ca 12.2 ha and an area of 628.2921 ha. No spot altitudes or contour maps are available but a visual estimate of 100m difference in topographic range was made.

Vegetation

Gimlet woodland (Area 1): Gimlet Dense Low Forest A over Cassia ? nemophylla Dense Low Heath C.

Gimlet woodland (Area 2): Gimlet Low Forest A over Melaleuca Open Scrub.

Type 1 regrowth after clearing Gimlet woodland (Area 2): Jam Open Low Scrub B over Acacia graffiana Dwarf Scrub C.

Type 2 regrowth after clearing Gimlet woodland (Area 2): Scattered Acacia shrubs with an ephemeral cover of weeds and grass.

Jam woodland: Jam Dense Low Forest B with no understorey.

Mallee area: mixed Tree Mallee with no understorey.

Heath type 1: mixed Dense Heath B.

Heath type 2: Acacia assimilis and Jam Dense Heath B over Melaleuca Open Dwarf Scrub C.

Heath type 3 (prior to clearing): Broombush and Casuarina Heath A over Very Open Low Grass (and Sedge)

Heath type 3 (regrowth following clearing): Acacia eremophila Open Dwarf Scrub C over mixed Dwarf Scrub D.

Lithic complex: bare granite outcrop with scattered shrubs or clumps of vegetation in soil pockets.

Salt complex: bare salt flat with some Broombush Dense Thicket and areas of scattered shrubs.



#### Plant species

Ninety-eight plant species were recorded, of which 35 are exploited by the wildflower seed trade. A Cassia, Grevillea and Thryptomene of uncertain affinities were collected.

#### Nest hollows

Numerous in woodland areas.

#### Weeds

Abundant in adjacent paddocks but very few on Reserve except in disturbed areas.

#### Fire history

All the burnt areas on the Reserve (see map) are a result of a fire in 1950 (farmer, pers. comm.).

#### Fauna

Grey Kangaroo (Macropus fuliginosus): footprints on salt flat.

Emu (Dromaius novae-hollandiae): footprints on salt flat and fresh droppings in fire regenerating heath. Dropping consisted mostly of Santalum acuminatum nuts.

Crested Pigeons (Ocyphaps lophotes): several seen in Gimlet woodland and fire regrowth heath.

Port Lincoln Parrot (Platycercus zonarius): 4 feeding on roadway.

Mulga Parrot (Platycercus varius): 2 seen along fence line on S side Reserve.

Cockatoo (Nymphicus hollandicus): 19 seen at dam on S end of Reserve.

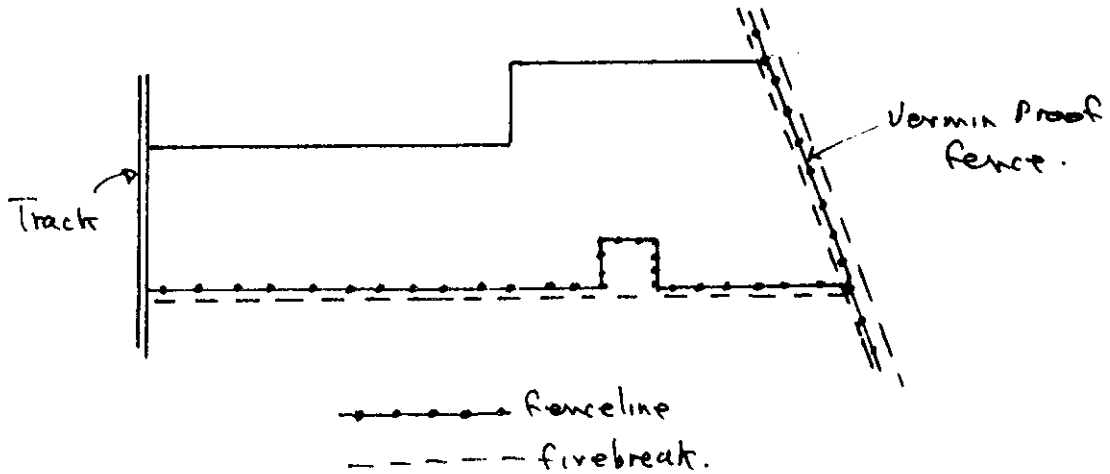
Australian Raven (Corvus coronoides): several seen flying over Reserve and in paddocks.

#### Exotic fauna

Sheep occasionally enter the Reserve, as indicated by tracks.

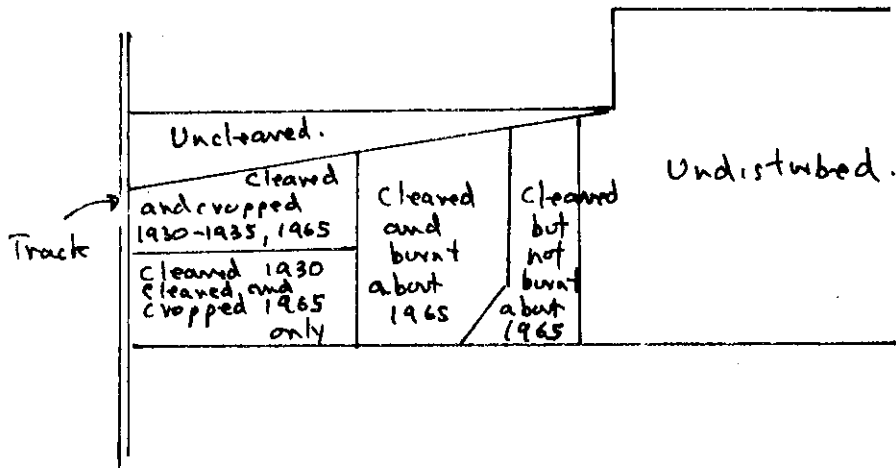
Firebreaks and fences

Firebreaks and fencelines are show below.



Human usage

The W portion of the Reserve has been partially cleared and cropped as shown on the diagram below.



Most of the areas are regenerating (see vegetation section).

There has been a small section of the Reserve fenced off on the S boundary in order to install a dam. This allows the farmer owning the land to the S to have a good dam and yet not lose any of his paddock area. Although the dam is beneficial to the native fauna the placement of it within the Reserve reflects the farmers attitude toward conservation areas.

The Agricultural Protection Board has laid baits for rabbits and dogs on 22 February 1978, 17 May 1978 and 16 March 1979. The last visit was 14 days before this survey.

Adjacent uncleared land

To the N is Reserve 9753 (Emu Rocks) of ca 1900 ha of mostly bushland with some salt complex. To the east is uncleared bushland, the W boundary of which is the Rabbit Proof Fence. This bushland extends eastwards to Norseman.

Opinion and recommendations

Reserve 28047 is in excellent condition and supports a wide variety of associations and plant species. The regrowth areas from clearing, and the fire regeneration heath are providing seral stages not otherwise on the Reserve. There has been little disturbance to the Reserve other than in the cleared areas, mainly because of its isolation.

Some of the area is salt-prone, for example the S portion of Reserve 9753, and much of the nearby farmland is on light, sandy soil. The Reserve is therefore valuable in preventing salt build-up and wind erosion.

I recommend that Reserve 28047 be retained in its present form, and that it be vested in the Western Australian Wildlife Authority.

APPENDIX 8  
Reserve 28047

Gimlet woodland (Area 1)

Eucalyptus salubris trees, 5-7 m tall 70-100% canopy cover over Cassia ? nemophylla\* 1 m tall, 70-100% cover. Occasional E. salmonophloia tree to 24 m tall. Also recorded were Acacia merrallii, E. ovularis and Santalum acuminatum. Soil pink, sandy clay; poorly drained.

Gimlet woodland prior to clearing (Area 2)

E. salubris trees 6-10 , tall, 30-70% cover over Melaleuca acuminata and M. hamulosa shrubs, 1-3 m tall, 2-10% cover. Other species recorded were: Acacia acuminata, A. graffiana, A. merrallii, Cryptandra myriantha, Daviesia preissii, Phebalium tuberculosum, Santalum acuminatum. Soil pink, sandy clay; poorly drained.

Type 1 regrowth after clearing Gimlet woodland (Area 2)

Acacia acuminata shrubs to 1.5 m tall, 2-10% cover over A. graffiana 1 m tall, 10-30% cover. Scattered E. salubris trees and E. ovularis mallee to 5 m tall. Also present were: Acacia erinacea, A. merrallii, Angianthus tomentosus, Cassia nemophylla, Cryptandra myriantha, Eremophila brevifolia and Phebalium tuberculosum, Vitidinia cuneata. Soil as above.

Type 2 regrowth after clearing Gimlet woodland (Area 2)

The Gimlet woodland which was present before clearing in this area was as described above but had the following additional species: Acacia erinacea, Alyxia buxifolia, Amyema miquellii (on Gimlet), Bassia diacantha, Cassia nemophylla, Enchylaena tomentosa, Eremophila decipiens, Olearia muelleri, Scaevola spinescens, Stipa elegantissima.

Regrowth was Acacia graffiana shrubs 1 m tall, and A. merrallii 0.5 m tall as scattered shrubs. The only other plants present were Amphipogon debilis, Angianthus tomentosus, Stipa hemipogon and Vitidinia cuneata. Clumps of Afghan Thistle (Solanum hystrix) were present.

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\* The Cassia nemophylla at this location is a very small leaf variety in which the leaves and upper stems are viscid with a yellow-brown resin. It is presumed to be this species, but further examination may prove otherwise. If not C. nemophylla it is undescribed.

Jam woodland

Acacia acuminata trees, 2-4 m tall, 70-100% canopy cover. No understorey but scattered shrubs of Calothamnus gilesii, Casuarina corniculata, Grevillea excelsior, Hakea subsulcata, Melaleuca laxiflora, Platysace maxwellii, Thryptomene sp.

Mallee area

Eucalyptus calycogona, E. transcontinentalis tree mallee, 3-8 m tall, 30-70% cover, with no understorey. Scattered shrubs of Acacia graffiana, Daviesia preissii, Melaleuca adnata, Olearia muelleri. Soil pinkish grey, sandy clay. Poorly drained.

Heath type 1

Mixed shrubs to 1.5 m tall, 70-100% canopy cover. Species recorded were: Acacia tamminensis, Banksia laevigata fuscolutea, Caustis dioica, Darwinia diosmoides, Eremaea pauciflora, Grevillea hookerana, Hakea corymbosa, Leucopogon blepharolepis, Melaleuca affin. seriata, Mesomeloena uncinata, Olearia muricata, Petrophile ericifolia, Platysace effusa, Verticordia drummondii, Vitidinia cuneata.

Heath type 2 (fire regrowth)

Acacia assimilis and A. acuminata shrubs 1.5 m tall, 70-100% cover over Melaleuca scabra 1 m tall, 2-10% cover. Also present were: Calothamnus gilesii, Casuarina acutivalvis, C. corniculatus, Grevillea excelsior.

Heath type 3 (prior to clearing)

Melaleuca uncinata and Casuarina corniculata shrubs 2 m tall, 30-70% cover over Spartochloa scirpoidea and Lepidosperma effusum grass and sedge 0.5 m tall, 2-10% cover. Other species present were: Acacia acuminata, A. eremophila, Baekkea crispiflora, B. muricata, Beyeria lechenaultii, Callitris verrucosa, Cassytha glabella, Casuarina campestris, Cryptandra miliaris, C. myriantha, Cyperaceae gen l., Grevillea sp 3. Hakea falcata, H. subsulcata, Hibbertia uncinata, Melaleuca laxiflora, Persoonia saundersiana, Phebalium filifolia, P. tuberculata, Platysace effusum, Santalum acuminatum, Waitzia acuminata. Soil light brown, sandy clay; moderately drained.

Heath type 3 (regrowth following clearing)

Acacia eremophila shrubs 1 m tall, 2-10% cover over Bertya cunninghami and several other species of shrubs, 40 cm tall, 10-30% cover. Other species recorded were: Acacia acuminata, Baeckea muricata, Brachysema daviesioides, Callitris verrucosa, Cryptandra miliaris, Hakea subsulcata, Lepidosperma effusum, Leucopogon hamulosus, Melaleuca laxiflora, Platysace effusa, Spartochloa scirpoidea, Westringia cephalantha. Soil as above.

Lithic complex

Mostly on Reserve 9753 but impinges partly on the N side of Reserve 28047.

Areas of bare granite outcrop with soil pockets carrying scattered shrubs and trees. Species recorded were: Acacia acuminata, A. acutata, A. assimilis, A. lasiocalyx, A. microbotrya, A. saligna, A. sessilis, Alyxia buxifolia, Borya nitida, Casuarina huegeliana, Dodonaea attenuata, D. microzyga, Lepidosperma tenue, Leptospermum erubescens, Melaleuca elliptica, Muhlenbeckia adpressa, Santalum acuminatum, Spartochloa scirpoidea, Verticordia plumosa.

Salt complex

Mostly on Reserve 9753 but impinges partly on the N side of Reserve 28047. Part of the complex is manifest as a Melaleuca uncinata thicket, 2-4 m tall, 70-100% canopy cover.

Other species recorded were: Angianthus tomentosus, Arthrocnemum bidens, Carpobrotus edulis, Dysphalea blackii, Eucalyptus spathulata, Halosarcia doleiformis, Melaleuca hamulosa, Rhagodia nutans.

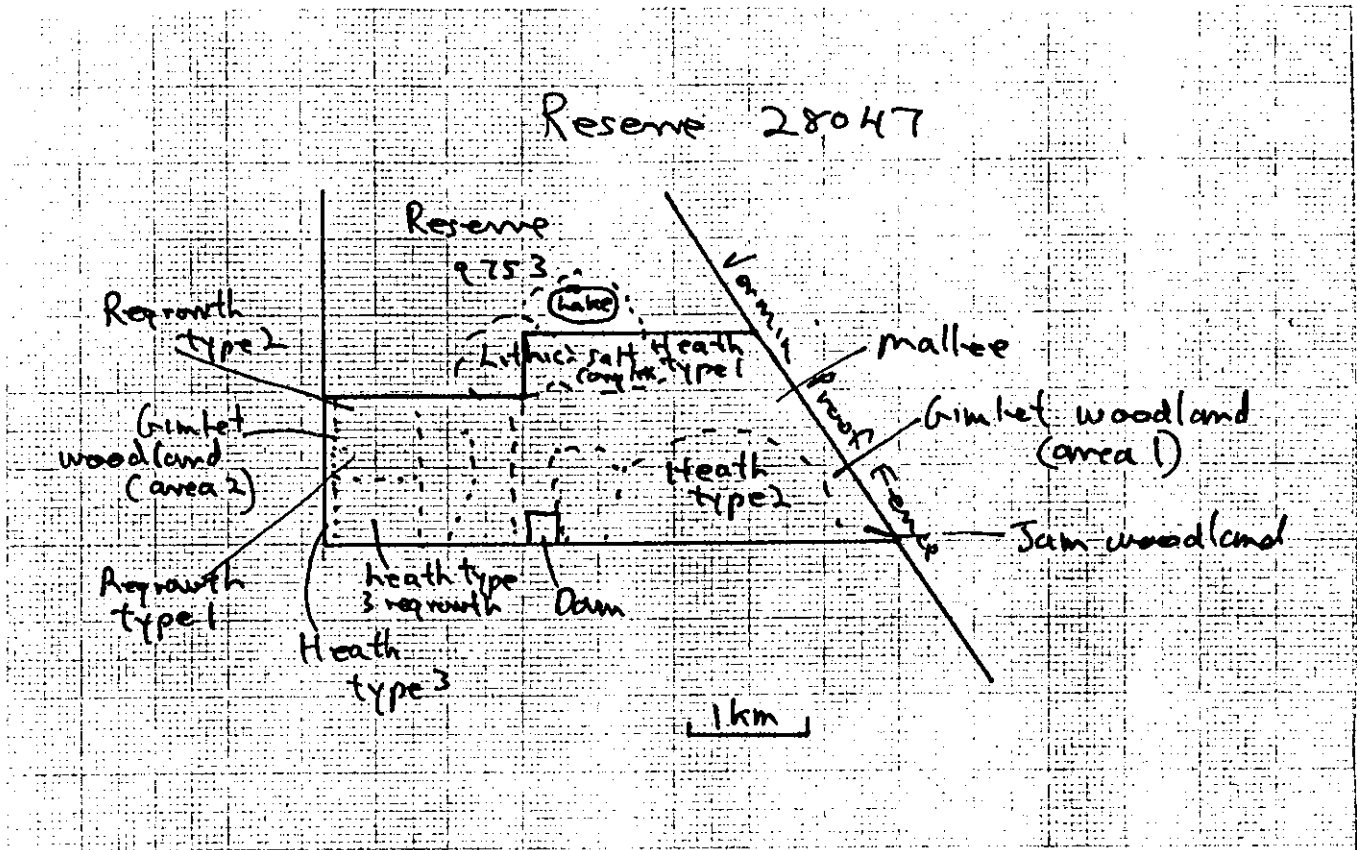




Plate 24. Reserve 28047 showing Gimlet woodland (Area 1). Understorey is predominantly Cassia affin. nemophylla.



Plate 25. Type 2 regrowth after clearing Gimlet woodland (Area 2).





Plate 26. Mallee area on Reserve 28047.



Plate 27. Heath type 2 (fire regrowth).



Plate 28. Heath type 3 (prior to clearing)



Plate 29. Heath type 3 (regrowth following clearing) on Reserve 28047.



Plate 30. Lithic complex near N boundary of Reserve 28047. Salt marsh in the background.



Plate 31. Narrow band of Salmon Gum woodland near the N boundary of the cleared area. This association actually grows on Reserve 9753 but may have originally extended a few metres further S onto Reserve 28047 before clearing.

Reserve 28715

Located ca 19 km due N of Hyden Townsite and shown on lithograph 346/80 A2-3.

Background

Originally set aside 1 September 1967 for "Conservation of Flora".

Physical characteristics

Reserve 28715 is elongate triangular, ca 4.7 km long (E-W axis) by ca 1.5 km broad at its W end. It has a total perimeter of ca 11.1 km and an area of 434.3036 ha. There are no contour maps or spot altitudes available. I visually estimate a topographic range of 100-150 m on the Reserve.

Vegetation

Black Marlock mallee (type 1): Black Marlock Open Shrub Mallee over Melaleuca Dwarf Scrub C.

Black Marlock mallee (type 2): Black Marlock Open Shrub Mallee over Broombush Open Low Scrub B or Melaleuca spicigera Open Dwarf Scrub D.

Eucalyptus eremophila mallee: E. eremophila Dense Shrub Mallee with some clumps of Broombush.

Tamma-Hakea heath: Tamma and Hakea subsulcata Dwarf Scrub C varying up to Low Heath C over mixed Open Dwarf Scrub D.

Tamma heath on granite: Tamma Heath A with no understorey.

Broombush heath: Broombush Dense heath A over Melaleuca Low Heath C.

Mixed heath (type 1): mixed Low Heath D.

Mixed heath (type 2): mixed Dense Low Heath C.

Lithic complex (Area 1): rounded smooth granite, outcrops with very few boulders or soil pockets. Margins have clumps of shrubs of thickets.

Lithic complex (Area 2): bare granite outcrop with a narrow marginal belt of Tamma Dense Thicket over Dense Low Grass.

Plant species

One hundred and ten plant species were recorded of which 41 are exploited by the wildflower seed trade.

Species collected included an Acacia and Baeckea of uncertain affinities, and an undescribed species of Cyperaceae.

#### Nest hollows

None recorded.

#### Weeds

Small ephemerals on damp areas surrounding granite outcrop.  
None recorded elsewhere.

#### Fire history

Some of the W end of the Reserve has been burnt but has regrown almost to the same form as the unburnt portion. Airphotographs taken in 1961 shown fire patterns created probably 5-10 years prior to photography. The burn is probably about 23-28 years old, the remainder much older than 30 years.

#### Fauna

Port Lincoln Parrot (Platycercus zonarius): 2 flying over heath.

Boobook Owl (Ninox novaeseelandiae): heard calling at night.

White-winged Triller (Lalage sueurii): 1 seen feeding in canopy of Eucalyptus redunca mallee stand.

Western Shrike-thrush (Colluricincla harmonica rufiventris): in dense runoff area from granite outcrop.

Willie Wagtail (Rhipidura leucophrys): one in Tamma thicket.

Southern Scrub-robin (Drymodes brunneopygius): a call attributed to this species was recorded from dense Tamma thicket near a mallee stand.

Weebill (Smicrornis brevirostris): common in mallee areas.

White-eared Honeyeater (Meliphaga leucotis): 2 in E. redunca mallee.

Red Wattle-bird (Anthochaera carunculata): 1 in mallee, one in dense Actinostrobos arenarius on N side of Reserve.

Magpie-lark (Grallina cyanoleuca): 4 on roadway on E side.

Pied Butcherbird (Cracticus nigrogularis): 2 perched on dead tree.

Western Magpie (Cracticus tibicen dorsalis): 8 on roadway.

Australian Raven (Corvus coronoides): common on roadways, in paddocks and flying over Reserve

#### Exotic fauna

Rabbit scats and diggings common around granite outcrops.

#### Firebreaks and fences

No firebreaks except roadways and adjacent paddocks. Fenced only adjacent to paddocks that were cleared (refer map).

#### Human usage

None recorded except for 2 tracks and a 15 m wide swath of newly scrub rolled vegetation cutting across the centre of the Reserve. It could not be determined why this was done, or by whom, but it has features suggesting that illegal clearing of the E part of the Reserve is in someones mind.

#### Adjacent uncleared land

About 600 ha or more of uncleared land is contiguous with the Reserve, its position being shown on the vegetation sketch map.

#### Opinion and recommendations

Reserve 28715 is in excellent condition and relatively undisturbed. It supports considerable areas of heath rich in plant species as well as mallee, shrubland and lithic complex. It is also fairly isolated, and so is a valuable rest-site for migratory bird species. Additionally, the sandy nature of the soil and its position on a hill top suggest that erosion will become a problem if the natural bushland is cleared. Evidence of this erosion is already apparent in poorly managed farm paddocks to the N of the Reserve.

I recommend on immediate investigation of the purpose behind the scrub-rolled swath in the Reserve. I also recommend that the Reserve be left in its present form and that it be vested in the Western Australian Wildlife Authority.

APPENDIX 9

Reserve 28715

Black Marlock mallee (type 1)

Eucalyptus redunca shrub mallee, 3-6 m tall, 10-30% cover over Melaleuca spicigera, shrubs 1 m tall, 10-30% cover. Also recorded were: Bertya cunninghami, Billardiera variifolia, Cryptandra tomentosa, Daviesia colletioides, Dianella revoluta, Dodonaea bursariifolia, Gahnia polyphylla, Gastrolobium crassifolium, Hakea adnata, H. subsulcata, Melaleuca scabra, Platysace maxwellii, Westringia figida brachyphylla. Soil is pink, sandy clay; poorly drained.

Black Marlock mallee (type 2)

Eucalyptus redunca shrub mallee 4-6 m tall, 10-30% canopy cover over Melaleuca uncinata shrubs 1.5 m tall or M. spicigera shrubs 0.5 m tall, 2-10% cover. Also recorded were: Acacia filifolia, A. graffiana, Beyeria leschenaultii, Melaleuca acuminata, M. adnata, Phebalium filifolium, P. tuberculosum, Platysace effusa. Soil grey, sandy clay; poorly drained.

Eucalyptus eremophila mallee

E. eremophila shrub mallee 2-3 m tall 70-100% canopy cover. Scattered Acacia sp. and Leptospermum erubescens present. Some cover and scattered Hakea lissocarpha. Soil grey, light clay; poorly drained.

Tamma-Hakea heath

Casuarina campestris and Hakea subsulcata shrubs, 1 m tall, 10-70% cover over mixed shrubs 0.5 m tall, 2-10% cover. Other plant species recorded: Acacia signata, Astroloma serratifolium, Baeckea heteranthera, Banksia laevigata fuscolutea, Calothamnus quadrifidus, Casuarina acutivalvis, C. microstachya, Comesperma scoparia, Cyperaceae sp. 1, Eucalyptus burracoppinensis, Gravillea integrifolia, Lepidosperma angustatum, Leucopogon hamulosus, Melaleuca cordata, Persoonia striata, Petrophile seminuda, Santalum acuminatum, Schoenus globifer, Verticordia chrysantha, Xanthorrhoea nana. Soil yellow brown, sandy clay with ca 80% laterite pebbles; moderately to poorly drained.



Tamma heath or granite

Casuarina campestris shrubs 1.5-2 m tall, 30-70% canopy cover. No understorey but some Leptospermum erubescens and Melaleuca fulgens present. Minimal soil in cracks amongst eroded granite boulders.

Broombush heath

Melaleuca uncinata shrubs 1.5-2 m tall, 70-100% canopy cover over Melaleuca subtrigona shrubs 1 m tall, 30-70% cover. Also present were Eucalyptus loxophleba, E. redunca, Hakea falcata, Lepidosperma pubisquamum, Leucopogon hamulosus, Melaleuca scabra, Platysace maxwellii and Santalum acuminatum. Soil is pinkish grey, loam, fine sandy; poorly drained.

Mixed heath (type 1)

Mixed shrubs, no particular dominant, 0.5 m tall, 30-70% cover with scattered emergent Acacia signata, Casuarina acutivalvis, C. corniculata to 2 m tall. Other species recorded were: Acacia dielsii, Baeckea heteranthera, Banksia laevigata fuscolutea, Beaufortia micrantha, B. orbifolia, Cassytha glabella, Cyperaceae sp. 1, Grevillea didymobotrya, G. hookerana, Hakea falcata, H. subsulcata, Isopogon scabriusculus, Lepidosperma angustatum, Melaleuca subtrigona, Styphelia tenuiflora, Verticordia brownii. The southern portions of this assemblage have Callitris verrucosa, Choretrum glomeratum, C. preissii, Daviesia brevifolia and Gastrolobium spinosum present. Soil yellow brown, clayey sand with ca 80% laterite pebbles. Well drained.

Mixed heath (type 2)

Mixed shrubs, no particular dominant, 1 m tall, 70-100% canopy cover. Plant species recorded were: Adenanthos argyraea, Banksia laevigata fuscolutea, B. sphaerocarpa, Beaufortia micrantha, Casuarina pinaster, Daviesia daphnioides, D. rhombifolia, D. teretifolia, Dryandra cirsioides, D. ferruginea, D. fraseri, D. affin. polycephalus, Eremaea beaufortiioides, Eucalyptus rigidula, Grevillea hookerana, Hakea falcata, Hibbertia exasperata, Isopogon villosus, Leptospermum oligandrum, Melaleuca cordata, M. subtrigona, Persoonia coriacea, Petrophile ericifolia, P. trifida, P. sp., Styphelia tenuiflora, Verticordia plumosa, Xanthorrhoea nana. Soil is yellow sand as a thin

layer of 10 cm deep over hard, indurated laterite. Well drained but probably waterlogged after heavy rain.

Lithic complex (area 1)

Rounded smooth granite outcrop with very few boulders or soil pockets. Most vegetation is in marginal belts. Species recorded were: Acacia lasiocalyx, Borya nitida, Calothamnus quadrifidus, Casuarina campestris, Cheilanthes tenuifolia, Glischrocaryon roei, Hakea multilineata, H. sulcata, Leptospermum erubescens, Melaleuca macronycha, M. radula, Phebalium tuberculosum, Santalum acuminatum, Spartochloa scirpoidea and Thryptomene australis. Skeletal soils of granite grit or mixtures of grit and soils from adjacent associations.

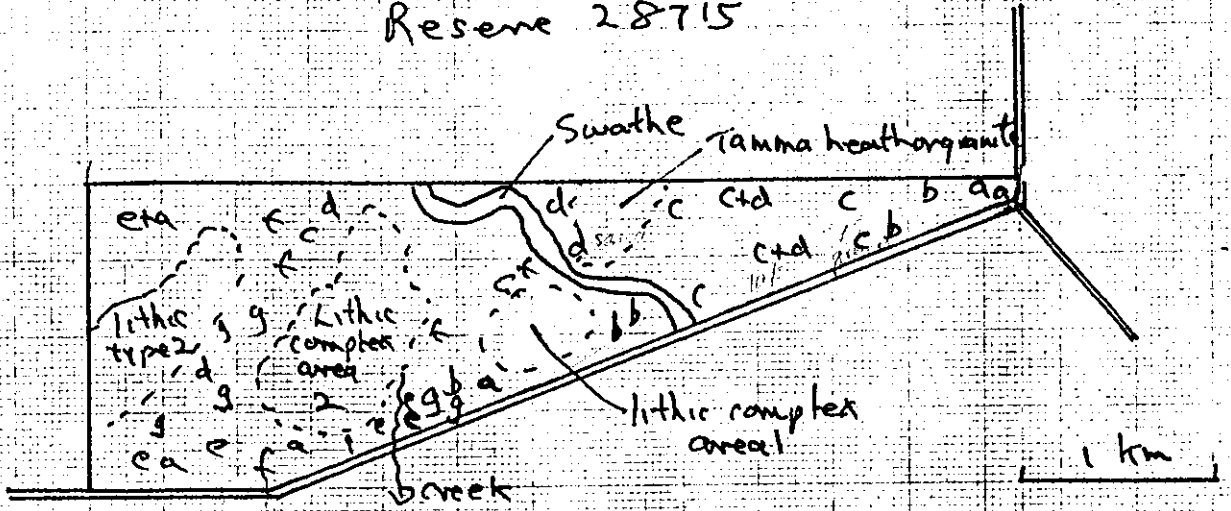
Lithic complex (area 2)

Bare granite outcrop with pockets of Grimmea sp. moss and a narrow marginal belt of Casuarina campestris shrubs 2-5 m tall, 70-100% cover over Spartochloa scirpoidea shrubs 70-100% cover. In the C. campestris association were recorded: Acacia lasiocalyx, Baeckea sp., Boronia capitata clavata, Gastrolobium spinosum, Hibbertia rupicola, Lepidosperma drummondii, Leucopogon cuneifolius, Melaleuca scabra trichophylla, and Sebaea ovata. Soil was skeletal grits.

Regrowth on cleared area near granite outcrop

Included Acacia chrysella, Casuarina huegeliana, Dodonaea attenuata, Gastrolobium spinosum, Hibbertia rupicola, Isopogon divergens, Kunzea pulchella, Lepidosperma drummondii, Leucopogon cuneifolius, Melaleuca scabra trichophylla, and Stypandra imbricata. Soils are skeletal grits.

Resene 28715



- a = Black Marlock mallee (type 1)
- b = Tamma (Hakea) heath
- c = Mixed heath (type 1)
- d = " " (type 2)
- e = Black Marlock mallee (type 2)
- f = Eu. eremophila mallee
- g = Broom bush heath



Plate 32. Reserve 28715 showing Black Marlock mallee (type 2) over Melaleuca shrubs.



Plate 33. Mixed heath (type 2)



Plate 34. Reserve 28715 showing lithic complex (area 2) with marginal Tamma thickets and Spartochloa scirpoidea in wet areas.



Plate 35. Regrowth in cleared swathe. Uncleared adjacent is Eucalyptus redunca and E. eremophila mallee over Melaleuca shrubs.

Reserve 34295

Located ca 21 km ENE of Hyden Townsite and shown on lithograph 346/80, BC3-4.

Background

Originally set aside 1 October 1976 for "Conservation of Flora".

Physical characteristics

Reserve 34295 is irregular rectangular, ca 3.5 km long (N-S axis) by ca 2.5 km broad (E-W axis). It has a total perimeter of ca 13.2 km and an area of 929.0621 ha. No contour maps or spot altitudes are available. I made a visual estimate (probably highly inaccurate) of a topographic variation in the order of 100 m.

Vegetation

Mallee area: mixed Tree Mallee over Broombush Low Scrub B.

Acacia/Casuarina shrubland: Acacia signata and/or Casuarina acutivalvis Scrub over mixed Dwarf Scrub C.

Broombush heath: Broombush Dense Heath B.

Plant species

Fifty-four plant species were recorded of which 18 are exploited by the wildflower seed trade. An Acacia and Scholtzia of uncertain affinities were collected.

Nest hollows

Absent except for a few in the Gimlet woodland.

Weeds

None recorded.

Fire history

The SE corner has been burnt ca 30 years before this survey. The remainder has not been burnt for a much longer period.

Fauna

Common Bronzewing (Phaps chalcoptera): 3 in Broombush heath.

Weebill (Smicrornis brevirostris): common in mallee area.

Chestnut-rumped Thornbill (Acanthiza uropygialis): 6 seen in Acacia/Casuarina shrubland.

Yellow-rumped Thornbill (A. chrysorrhoa): common in mallee area.

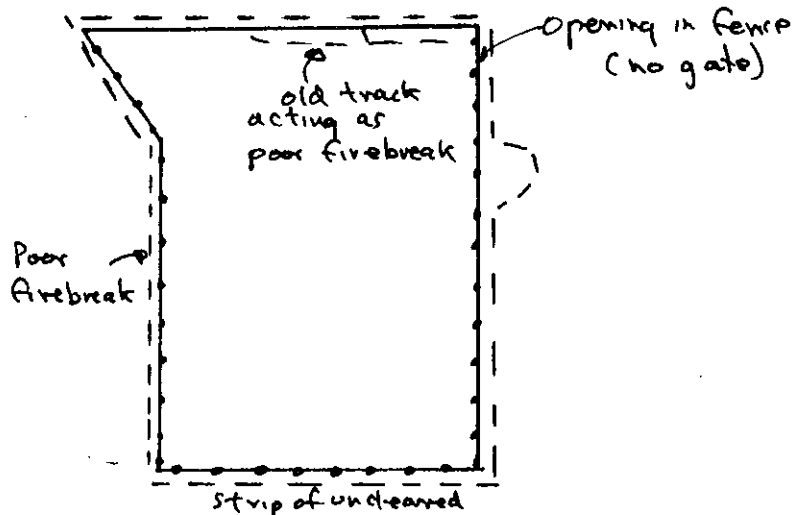
Western Silvereye (Zosterops lateralis gouldii): 2 seen in mallee area.

#### Exotic fauna

Sheep tracks are common in the Reserve, although no sheep were seen. On the NE corner of the Reserve was an open gateway (there is actually no gate) which leads into adjacent farmland on which sheep were grazing at the time of this survey.

#### Firebreaks and fences

As shown on diagram below.



#### Human usage

There is a gravel and a sand pit on the N end of the Reserve. Timber has been removed from the woodland. An access track to farmland on Roe Location 1466 has no gateway, allowing sheep to enter the Reserve at any time.

#### Adjacent uncleared land

Until ca 2 years ago there was extensive bushland to the N of the Reserve. This is now cleared.

Opinion and recommendations

Reserve 34295 supports an excellent representative area of shrubland and heath. It is rich in plant species and probably also rich in fauna which favour these habitats. The Reserve also occupies a hill crest and is of value to prevent soil erosion and as a windbreak for adjacent farmland. Although signs of disruption of the understorey are apparent, sheep browsing is at the moment of minor effect. I recommend that action be taken to ensure that the owner of Roe Location 1466 install a gate on the NE corner of the Reserve, or a stock grid, and that he be warned of illegal browsing of sheep in the Reserve. I also recommend that Reserve 34295 be otherwise left in its present form and that it be vested in the Western Australian Wildlife Authority.



APPENDIX 10  
Reserve 34295

Mallee area

Eucalyptus calycogona and E. sheathiana tree mallee, 4-7 m tall, 30-70% canopy cover over Melaleuca uncinata, M. hamulosa and M. acuminata shrubs, 1.5 m tall, 10-30% cover. Scattered E. salubris to 10 m present. Also recorded were: Acacia graffiana, A. merrallii, Callitris huegelii, Daviesia acanthoclona, Exocarpus aphyllus, Grevillea huegelii, Melaleuca adnata, M. densa, M. laxiflora, M. scabra tuberculata, Olearia muelleri, Westringia rigida brachyphylla. Soil reddish brown, light sandy clay loam; poorly drained.

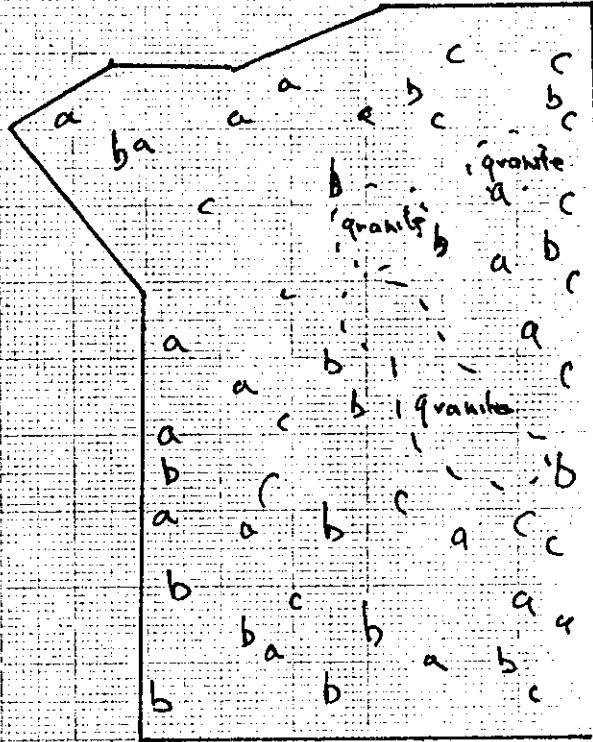
Acacia/Casuarina shrubland.

Mostly Acacia signata and/or Casuarina acutivalvis shrubs, 2-3 m tall, 10-30% cover over mixed shrubs 1 m tall, 10-30% cover. In these areas the following species were recorded: Beaufortia micrantha\*, Brachysema daviesioides, Cryptandra myriantha, Cyperaceae sp. 1, Daviesia cardiophylla, Daviesia cirsioides, Grevillea excelsior\*, Hakea coriacea\*, H. falcata\*, Hibbertia pungens, Melaleuca cordata, Persoonia coriacea\*, Petrophile scabriusculus, Santalum acuminatum\*, ? Scholtzia parviflora. Soil is yellow, loamy sand; well drained. In some areas the C. acutivalvis is entirely dominant and 2-10% cover. Melaleuca cordata is prominent in the understory. Clumps of Acacia signata are present but it is not distributed through most of the association. Species marked \* above are present in the association as well as Calytrix brachyphylla, Cassytha glabella, Goodenia pinifolia, Hakea subsulcata, Isopogon scabriusculus, Jacksonia racemosa, Leptomeria preissiana, Persoonia teretifolia, Platysace maxwellii, Thryptomene australis. Soil in these areas is yellow brown, sandy clay with ca 90% laterite; well to moderately drained.

Broombush heath

Melaleuca uncinata heath, 1-1.5 m tall, 70-100% cover. Other species recorded were: Acacia acuminata, A. sp., Cryptandra miliaris, Dodonaea bursariifolia, Eucalyptus redunca, Grevillea yorkkrakinensis, Lepidosperma gracile, Melaleuca adnata, M. laxiflora, M. subtrigona, Phebalium tuberculatum, Santalum acuminatum, Scholtzia sp. Soil light brown, clay loam; poorly drained.

Recently  
cleared



Reserve 34295

1 km

- a = mallee
- b = Broombush heath
- c = Acacia (Casuarina shrubland)



Plate 36. Reserve 34295 showing dense understorey development in parts of mallee area.



Plate 37. Reserve 34295 showing Acacia/Casuarina shrubland with heath development. Acacia signata is a codominant.



Plate 38. Acacia/Casuarina shrubland on the NE corner of Reserve 34295. Grevillea excelsior is emergent and Acacia signata a minor component.



Plate 39. Broombush heath on Reserve 34295... Area is fire regrowth  
ca 30 years old.