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GENERAL RESERVE AND VEGETATION SURVEY  
OF SELECTED SMALLER NATURE RESERVES  
OF THE CENTRAL WHEATBELT, PINGELLY MANAGEMENT DISTRICT

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PART 5

NARROGIN SHIRE

Prepared for:

Reserve Management Officer

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Department of Conservation and Land Management

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NAR

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## 1.0 INTRODUCTION : THE SHIRE OF NARROGIN

### 1.1 Physical Description

The Shire of Narrogin lies in the south-western corner of the central wheatbelt and has an area of ca 1618 square km.

#### a) Climate

The Shire has a fairly typical wheatbelt climate with hot dry summers and mild wet winters. Narrogin townsite has an average yearly rainfall of 505 mm (Bureau of Meteorology 1985). Most of the rain is received in winter from May to September with occasional thunderstorms in late summer and early autumn.

Meteorological data from the Narrogin Post Office is summarized in Table 1.

Winters are mild with the mean temperature of the coldest month exceeding  $10^{\circ}\text{C}$  and summers are hot with the mean temperature of the hottest month exceeding  $25^{\circ}\text{C}$  and absolute maxima above  $40^{\circ}\text{C}$  occurring.

Narrogin has a dry period from October to April, nearly 6 months in length and is classed as Warm Mediterranean. This is less severe than the typical wheatbelt climate which according to Beard (1980) is Dry Warm Mediterranean with a dry season exceeding 6 1/2 months.

Table 1. Summary of Meteorological Data Recorded at the Narrogin Post Office.

(Bureau of Meteorology 1985)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Mean or Total
Mean Rain- fall (mm)	9	17	21	30	66	92	90	69	47	35	16	13	505
No. Rainy days	2	3	4	6	11	14	15	14	11	9	5	3	97
Mean Max Temp °C	30.9	30.1	27.2	22.2	18.2	15.2	14.7	15.0	17.0	21.0	25.0	29.3	22.2
Mean Min Temp °C	14.7	15.0	13.6	10.8	7.9	6.9	5.7	5.3	6.0	8.0	10.5	12.9	9.8
Rel. Humidity % 3 pm	32	36	41	53	60	72	66	63	61	47	38	32	50



## b) Geology and Soils

Beard (1980) describes the geology of the Corrigin and Dumbleyung areas in which the Narrogin Shire is situated. The area is part of the Yilgarn Block a very ancient rigid "Shield" area composed mainly of Archaean granite and gneiss with some altered volcanics and sediments.

The Narrogin Shire is underlain by granite rock, covered by alluvia in the major valleys. The landscape is gently undulating and of low relief except where occasional granite outcrops protrude as rock domes and tors. In the area of the Shire in which the Reserves surveyed are situated the terrain is undulating with ridges, spurs and lateritic mesas and buttes.

The soils of the area have been mapped in Sheet 5 of the Atlas of Australian Soils, Northcote et al (1967).

The main soils on the broad undulating ridges and spurs are both hard and sandy, neutral and acidic yellow mottled soils all containing ironstone gravels with alkaline yellow soils in places. Hard neutral and acidic red soils are dominant in certain areas.

### 1.2 Nature Reserves

There are 28 Nature Reserves within the Narrogin Shire. 25 of these reserves are vested in the National Parks and Nature Conservation Authority and reserves 26669, 29906 and 27644 are unvested. Only reserve 21229 has an 'A' class classification.

The largest Nature Reserve in the Shire is Arthur River Flats, Nature Reserve 26789, with an area of ca 1068.77 ha. Of the remaining Nature Reserves 19 are less than 200 ha in area.

Two reserves were surveyed in the Narrogin Shire. Their purpose and vesting are listed in Table 2.

Table 2. Nature Reserves surveyed in the Narrogin Shire.

Reserve No.	Area (ha)	Purpose	Vesting
27644	34.4909	Flora	-
29906	8.3390	Flora	-

### Vegetation

The vegetation of the Shire has been mapped at a scale of 1:250,000 by Beard (1980). The Shire is situated in the Avon Botanical District. Reserves 27644 and 29906 are both situated within the Narrogin Vegetation System.

The country covered by this system is moderately well dissected with substantial remnants of laterite-crustated plateaux. Beard describes the vegetation of these plateaux which are covered by woodland of Eucalyptus astringens (brown mallet) and E. accedens (powderbark wandoo) with small patches of Dryandra heath. Woodland of E. loxophleba (York Gum) and E. wandoo (wandoo) covers the dissected country below the breakaways. E. rudis (river gum) lines major drainage channels and some teatree and samphire can be found around salt lakes in the south-east of the system. There are few prominent granite outcrops within this system.

## 2.0 Method

The survey was carried out at the end of May and the beginning of June, 1985. Because of time limitations only half to one full day was spent on each reserve. The reserves were examined by vehicle where tracks were available or on foot.

Physical characteristics of the reserves were obtained from lithographs (Department of Lands and Surveys) and observations made in the field.

The vegetation survey was based on the use of aerial photographs. Lands and Survey Department 1:40,000 and 1:50,000 scale black and white. Approximate boundaries of vegetation types were drawn onto the photographs and these areas examined in the field.

Vegetation was classified using Muirs (1977) system which was designed specifically for describing wheatbelt vegetation.

Due to time limitation only the most common plant species were recorded. Where the identity of a species was doubtful a specimen was collected and taken to the W.A. Herbarium for identification. Because of the time of year in which the survey had to be conducted many of the plants were not in flower and therefore identifications were made from foliage alone.

## NATURE RESERVE 27644

### Location

Ca 29 km south-east of Narrogin and shown on lithographs 1:50,000 sheet Piesseville 2331-1.

### Background

Reserve 27644 was originally gazetted on June 4th, 1965 for the purpose of "Conservation of Flora". The original area of the reserve, 34.5652 ha, was amended to 34.4909 on October 21st, 1977. The reserve remains unvested.

### Physical Features

Reserve 27644 is irregular in shape (see Fig. 1) with a total perimeter of 13.75 km and an area of 34.4909 ha. Whin Bin Rock Road runs through the reserve dividing it into two sections.

The middle of the reserve is 350 m Above Sea Level grading to 340 m Above Sea Level at the north-west corner and towards the eastern boundary.

### Adjoining Land

#### Section 1

North : Private farm land, cleared. Fence 5 line ring lock with one plain and one barb wire on wooden posts - some steel posts for reinforcement (condition fair).

South : Gravel road. Whin Bin Rock Road.

East : Private farmland, cleared. Fence 7 line ring lock with one barb wire on wooden posts (condition good).

West : Private farmland, cleared. Fence 5 line ring lock with one plain and one barb wire on wooden posts (condition fair).

## Section 2

North : Gravel road. Whin Bin Rock Road.

South : Private farm land, cleared. Fence 7 line ring lock plus one barb wire on steel posts (condition good).

East : Gravel Road. Halls Road.

West : Private farmland, cleared. Fence 6 line ring lock plus one plain and one barb wire (condition good).

## Human Usage and Damage or Degradation

1. Rubbish dump in the south-west corner of section 2.
2. Extensive gravel pits in both sections one and two of the reserve.

## Weeds

Some weeds, mainly grasses were recorded in open woodland areas and the rubbish dump area. Species recorded were : Aira cupaniana, Ursinia anthemoides, Avena fatua/sativa.

## Firebreaks

Perimeter firebreaks on adjacent cleared farmland, none on the reserve.

## Fire History

No evidence of fire in the last 20-30 years.

## Vegetation

8 vegetation associations are present on the reserve. Details of these associations and species recorded can be found in Appendix 1.

- 1) Brown Mallet Woodland : Eucalyptus astringens Dense Low Forest A. No understorey.
- 2) Blue Mallet Woodland : Eucalyptus gardneri Dense Low Forest A. No understorey.

- 3) Morrel Woodland : Eucalyptus longicornis Forest with scattered Eucalyptus salmonophloia and Eucalyptus wandoo.
- 4) Wandoo Woodland - Type 1 : Eucalyptus wandoo Low Woodland A over Acacia acuminata Open Low Woodland B.
- 5) Wandoo Woodland - Type 2 : Eucalyptus wandoo Low Woodland A over Dryandra cirsioides Heath B.
- 6) Sheoak Woodland : Allocasuarina huegeliana Low Forest A with scattered Eucalyptus wandoo.
- 7) Mallee Area : Eucalyptus anceps, E. flocktoniae Dense Tree Mallee.
- 8) Dryandra Heath : Dryandra cirsioides Dense Heath B with scattered Eucalyptus ? incrassata and Eucalyptus albida in Section 2.

#### Plant Species

39 native plant species were recorded for the reserve. 27 of which are reported by Rye et al. (1980) as exploited by the wildflower trade.

#### Comments and Recommendations

Reserve 27644 has a varied vegetation and is relatively rich in plant species providing a variety of habitat types for fauna. Nest hollows are present and the reserve is of value as a resting and feeding site for transient bird species.

I recommend that the rubbish dump and the gravel pits should be closed, and the areas rehabilitated and that a sign be erected prohibiting the dumping of rubbish on the reserve.

To ensure protection from further interference I recommend that the reserve be vested in the National Parks and Nature Conservation Authority.

# Vegetation of Nature Reserve 27644

## Key to Vegetation Types

Muir (1977)

Vegetation Code

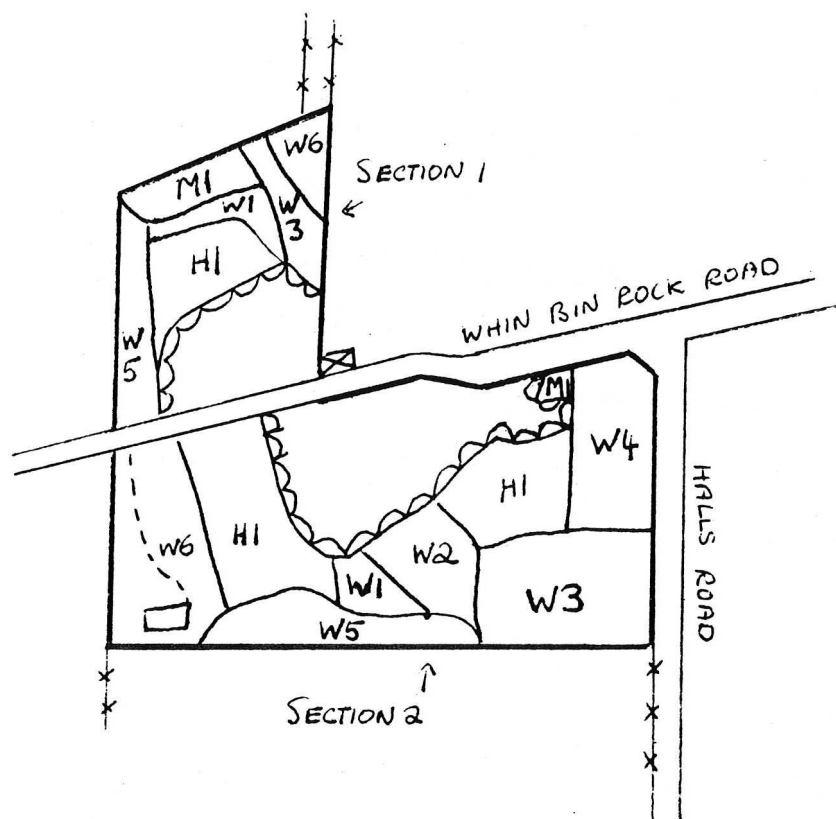
W1	Brown Mallet ( <u>Eucalyptus astringens</u> ) Woodland	LAd
W2	Blue Mallet ( <u>Eucalyptus gardneri</u> ) Woodland	LAd
W3	Morrel ( <u>Eucalyptus longicornis</u> ) Woodland	Mc
W4	Wandoo ( <u>Eucalyptus wandoo</u> ) Woodland - Type 1	LAi.LBr
W5	Wandoo ( <u>Eucalyptus wandoo</u> ) Woodland - Type 2	LAi.SBc
W6	Sheoak ( <u>Allocasuarina huegeliana</u> ) Woodland	LAc
M1	Mallee Area	KTd
H1	<u>Dryandra</u> Heath	SBd

FIGURE 1

NATURE RESERVE 27644

Scale 1 : 10,000

1cm = 100m



- RESERVE BOUNDARY
- == ROAD
- TRACK
- ⊖ GRAVEL PIT
- xx FENCE
- ⊗ GATE ON ADJOINING LAND
- W VEGETATION TYPE
- RUBBISH DUMP



## APPENDIX 1

### 1. Brown Mallet Woodland

Eucalyptus astringens trees, 7-12 m, 70-100% canopy cover. No understorey.

Soil brown sandy loam, ca 80% laterite.

### 2. Blue Mallet Woodland

Eucalyptus gardneri trees, 7-8 m, 70-100% canopy cover. No understorey.

Soil dark brown sandy loam, ca 80% laterite.

### 3. Morrel Woodland

Eucalyptus longicornis 15-20 m, 30-70% canopy cover with scattered

Eucalyptus salmonophloia and E. wandoo. Scattered shrubs are also present.

Other species recorded were:

Acacia erinacea, Borya nitida, Gastrolobium spinosum, Gastrolobium trilobum, Hakea lissocarpha, Loxocarya cinerea, \*Ursinia anthemoides.

Soil light brown sandy clay loam, ca 10% laterite.

There is a transition zone between the Morrel and Wandoo woodland - type 1.

Here Gastrolobium trilobum shrubs 0.5-1.0 m, 10-30% canopy cover were recorded.

### 4. Eucalyptus Wandoo Woodland - Type 1

Eucalyptus wandoo trees, 8-15 m, 10-30% canopy cover with an understorey of

Acacia acuminata trees, 2-4 m, 2-10% canopy cover. Scattered shrubs are also present. Other species recorded were:

Acacia pulchella, Astroloma epacridis, Borya nitida, Dryandra nobilis, Dryandra cirsioides, Gastrolobium trilobum, Hakea lissocarpha, Loxocarya cinerea, Oxylobium sp, Xanthorrhoea reflexa.

Soil light brown sandy loam

In areas of exposed ironstone rock the Acacia acuminata forms a canopy cover of 10-30%. In these areas Allocasuarina huegeliana, Dryandra fraseri, Calothamnus ? quadrifidus and Mesomelaena preissii were also recorded.

5. Eucalyptus wandoo Woodland - Type 2

Eucalyptus wandoo trees, 5-8 m, 10-30% canopy cover with an understorey of Dryandra cirsioides shrubs, 1.0-1.5 m, 30-70% canopy cover. Other species recorded were :

Allocasuarina huegeliana, Caustis dioica, Leptospermum erubescens, Melaleuca uncinata, Xanthorrhoea reflexa.

6. Sheoak Woodland

Allocasuarina huegeliana trees, 5-8 m, 30-70% canopy cover with scattered trees of Eucalyptus wandoo. No understorey is present. Other species recorded were : Acacia acuminata, Borya nitida, \*Ursinia anthemoides, Xanthorrhoea reflexa.

7. Dryandra Heath

Dryandra cirsioides shrubs, 1.0-1.5 m, 70-100% canopy cover. Other species recorded were :

Allocasuarina huegeliana, Banksia sphaerocarpa, Caustis dioica, Dryandra nivea, Dryandra carduacea, Gastrolobium spinosum, Hakea baxteri, Hakea prostrata, Hakea incrassata, Isopogon teretifolius, Melaleuca pungens, Melaleuca ? spathulata, Persoonia quinquenervis, Xanthorrhoea reflexa.

Soil brown sandy clay loam, ca 80% laterite.

In section 2 Eucalyptus ? incrassata and Eucalyptus albidula were recorded forming a canopy of 2-10% in places.

8. Mallee Area

Eucalyptus aniceps, E. flocktoniae tree mallee, 4-6 m, 70-100% canopy cover.

No understorey is present.

Soil orange brown sandy loam, ca 10% laterite.

\* Introduced species

PHOTOGRAPH 1

Brown Mallet (Eucalyptus astringens) Woodland  
at the edge of the gravel pit in Section 2.



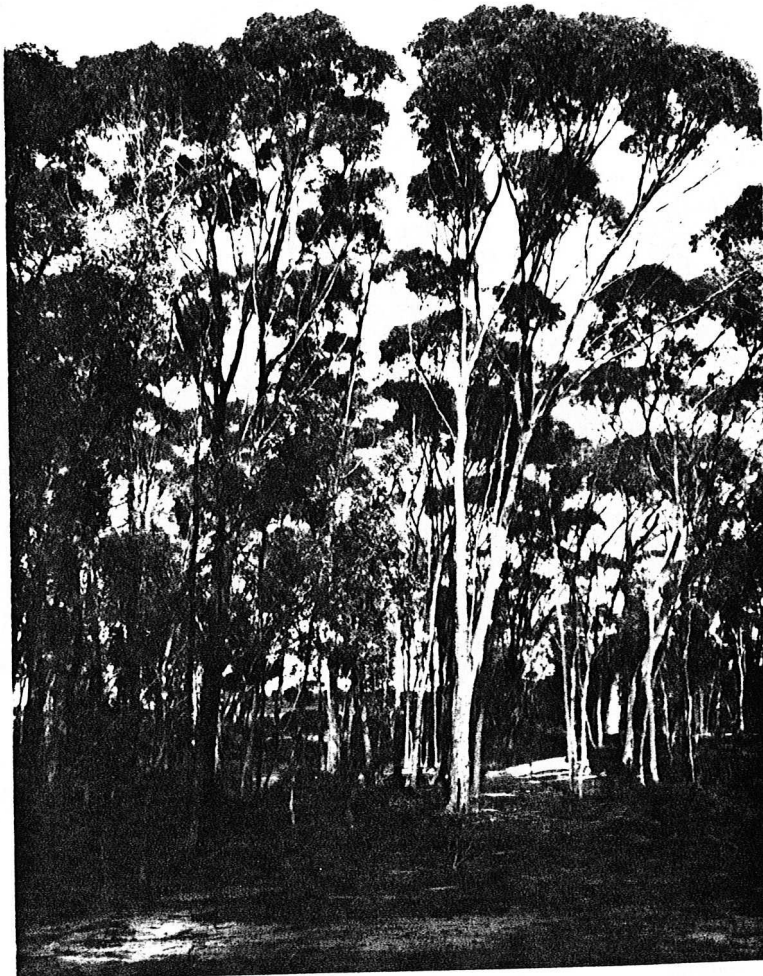
PHOTOGRAPH 2

Blue Mallet (Eucalyptus gardneri) Woodland  
at the edge of the gravel pit in Section 2



PHOTOGRAPH 3

Morrel (Eucalyptus longicornis) Woodland



PHOTOGRAPH 4

Transition area between the Morrel Woodland and the Wandoo Woodland - Type 1. An understorey of Gastrolobium trilobum can be seen.





PHOTOGRAPH 5

Wandoo Woodland - Type 1

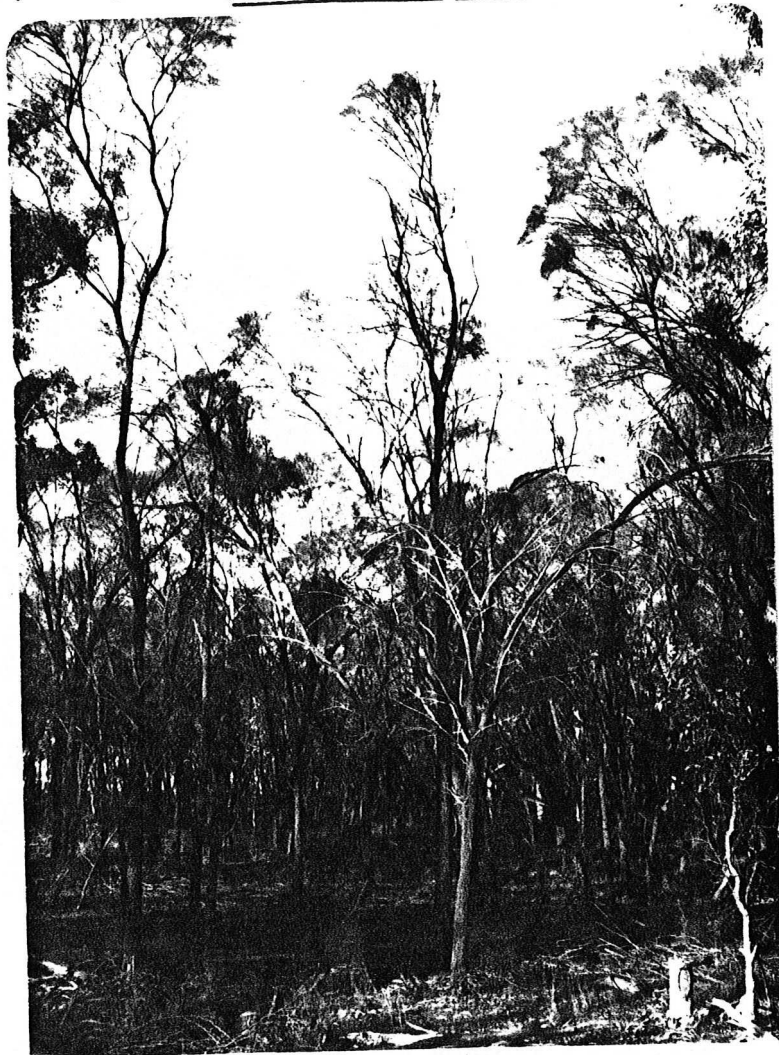


PHOTOGRAPH 6

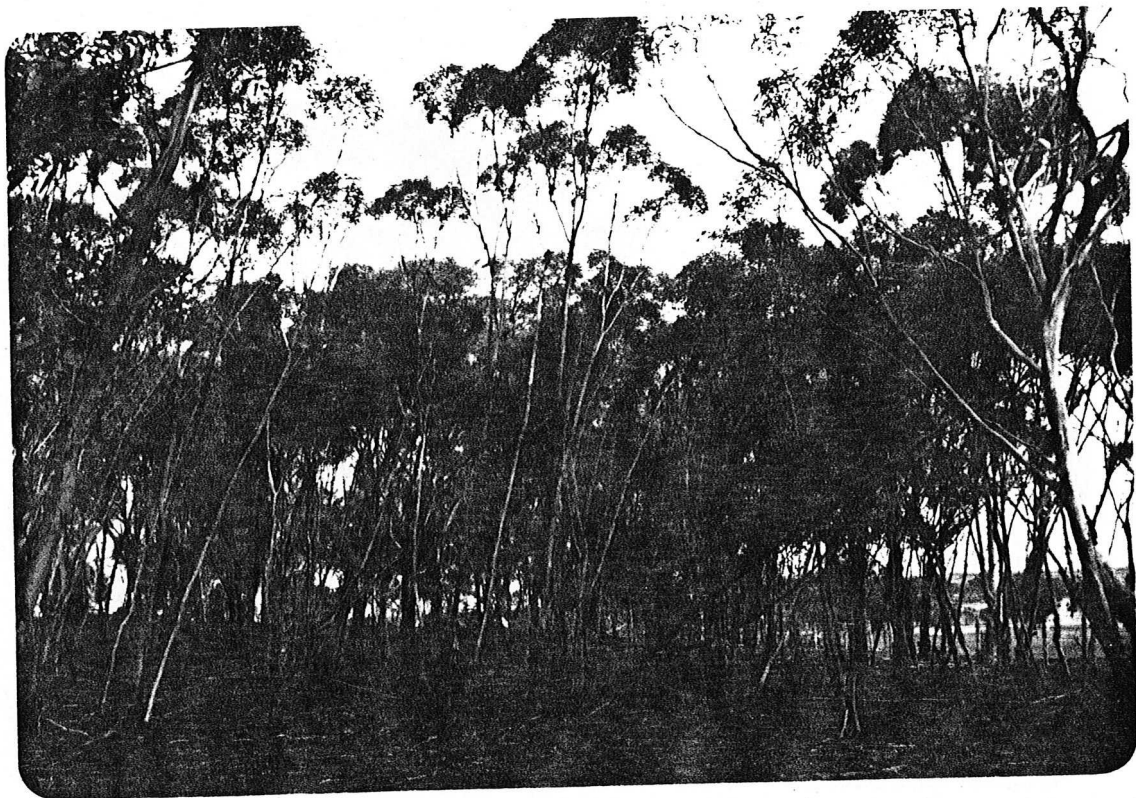
Area of Wandoo Woodland- Type 1 showing vegetation surrounding exposed ironstone rock. Dryandra fraseri and Mesomelaena preissii can be seen in the foreground



PHOTOGRAPH 7 Sheoak (Allocasuarina huegeliana) Woodland



PHOTOGRAPH 8 Mallee Area (Eucalyptus anceps)



PHOTOGRAPH 9

Dryandra cirsioides Heath in Section 1



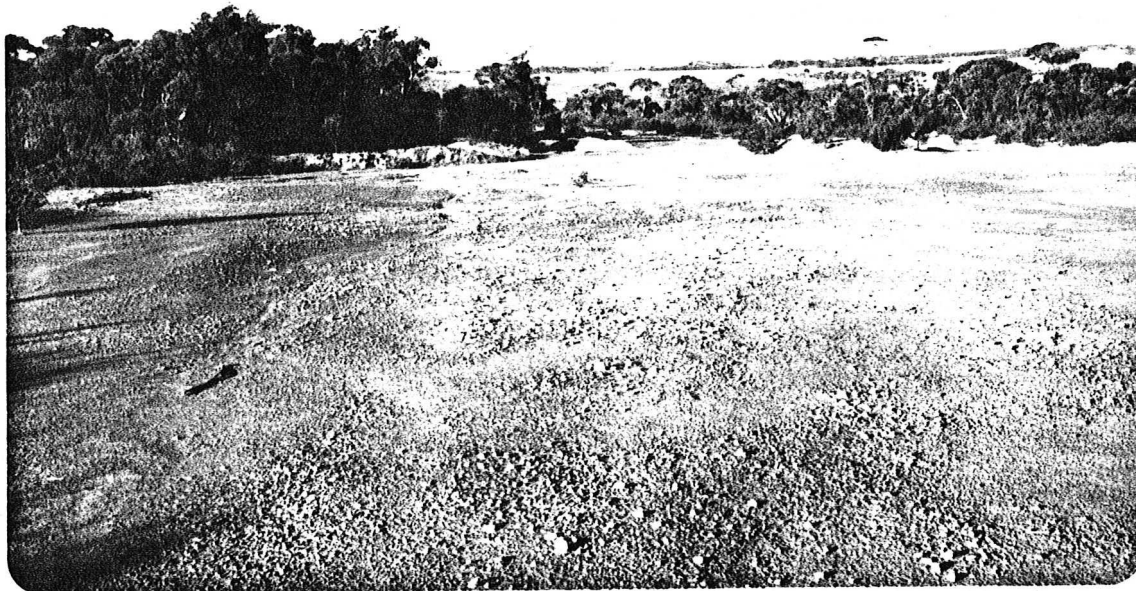
PHOTOGRAPH 10

Dryandra cirsioides Heath in Section 2 with scattered  
scattered Eucalyptus albida and Eucalyptus ? incrassata  
tree mallee.





PHOTOGRAPH 11      Gravel Pit in Section 2 of Reserve 27644



## NATURE RESERVE 29906

### Location

Ca 20.0 km east of Narrogin and shown on lithographs 385B/40E2 and 1:50,000 sheet Yilliminning 2332-11.

### Background

Reserve 29906 was originally gazetted on August 22nd, 1969 for the "Conservation of Flora". The reserve remains unvested.

### Physical Features

Reserve 29906 is roughly triangular in shape with a total perimeter of ca 1.35 km and an area of 8.3391 ha. The highest point on the reserve is towards the north west corner 340 m Above Sea Level grading to 330 m Above Sea Level along the southern boundary.

### Adjoining Land

North : Gravel road. Bird whistle Road.

South : Private farm land, cleared. Fence 7 strands of plain wire on wooden posts (condition fair-good).

East : Gravel road. Pethybridge Road.

### Human Usage and Damange or Degradation

Vegetation is now growing over the old gravel pit in the south-east corner of the reserve but a new gravel pit has been started near the northern boundary.

### Weeds

No weeds were recorded.

### Firebreaks

Perimeter firebreak on adjacent farmland, none on the reserve. Gravel roads to the north and east of the reserve.

### Fire History

No evidence of fire within the last 20-30 years.

### Vegetation

4 vegetation associations are present on the reserve. Details of these associations and species recorded can be found in Appendix 2.

- 1) Wandoo Woodland : Eucalyptus wandoo Low Woodland A over Low Sedges/Herbs.
- 2) Sheoak Woodland : Allocasuarina huegeliana Dense Low Forest B. No understorey.
- 3) Mallee Area : Eucalyptus anceps, E. flocktoniae Tree Mallee. No understorey.
- 4) Dryandra Heath : Dryandra cirsioides Dense Heath B.

### Plant Species

26 native plant species were recorded for the reserve, 21 of which are listed by Rye et al (1980) as exploited by the wildflower trade.

Vegetation of Nature Reserve 29906

Key to Vegetation Types

Muir (1977)

Vegetation Code

W1 Wandoo (Eucalyptus wandoo) Woodland

LAi.VL/Jc

W2 Sheoak (Allocasuarina huegeliana) Woodland

LBd

M1 Mallee Area

KTc

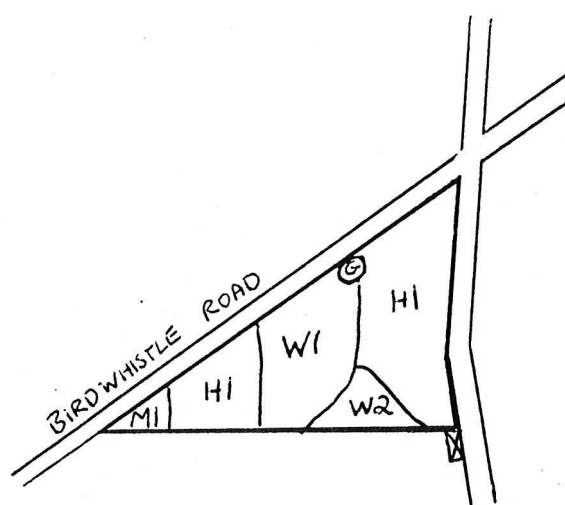
H1 Dryandra Heath

SBd

FIGURE 2. NATURE RESERVE 29906

Scale 1 10,000

1 cm = 100 m



— RESERVE BOUNDARY

== ROAD

⊠ GATE

W VEGETATION TYPE

⊙ SMALL GRAVEL PIT

## APPENDIX 2

### 1. Wandoo Woodland

Eucalyptus wandoo trees, 8-10 m, 10-30% canopy cover with an understorey of Borya nitida and Loxocarya ? pubescens, 10 cm, 30-70% canopy cover. Scattered shrubs are also present. Other species recorded were:

Acacia acuminata, Hakea lissocarpha, Oxylobium sp.

Soil light brown sandy loam.

### 2. Sheoak Woodland

Allocasuarina huegeliana trees, 4-5 m, 70-100% canopy cover with scattered Eucalyptus wandoo. No understorey. Other species recorded were:

Calothamnus ? quadrifidus, Stypandra imbricata.

Soil yellow brown sandy loam, ca 5% laterite.

### 3. Mallee Area

Eucalyptus anceps, E. flocktoniae tree mallee, 3-6 m, 30-70% canopy cover. Scattered shrubs are also present.

Soil orange clay loam, ca 60% laterite.

### 4. Dryandra Heath

Mixed shrubs with Dryandra cirsioides prominent, 1.0-1.5 m, 70-100% canopy cover. Other species recorded were:

Allocasuarina huegeliana, Allocasuarina humilis, Allocasuarina microstachya, Astroloma epacridis, Banksia sphaerocarpa, Calothamnus quadrifidus, Dryandra carduacea, Dryandra nobilis, Dryandra nivea, Eucalyptus albida, Eucalyptus wandoo, Hakea incrassata, Hakea lehmanniana, Hakea lissocarpha, Isopogon teretifolia, Melaleuca scabra, Xanthorrhoea reflexa.

Soil orange brown clay loam, ca 90% laterite.

PHOTOGRAPH 1

Wandoo (Eucalyptus wandoo) Woodland



PHOTOGRAPH 2

Sheoak (Allocasuarina huegeliana) Woodland

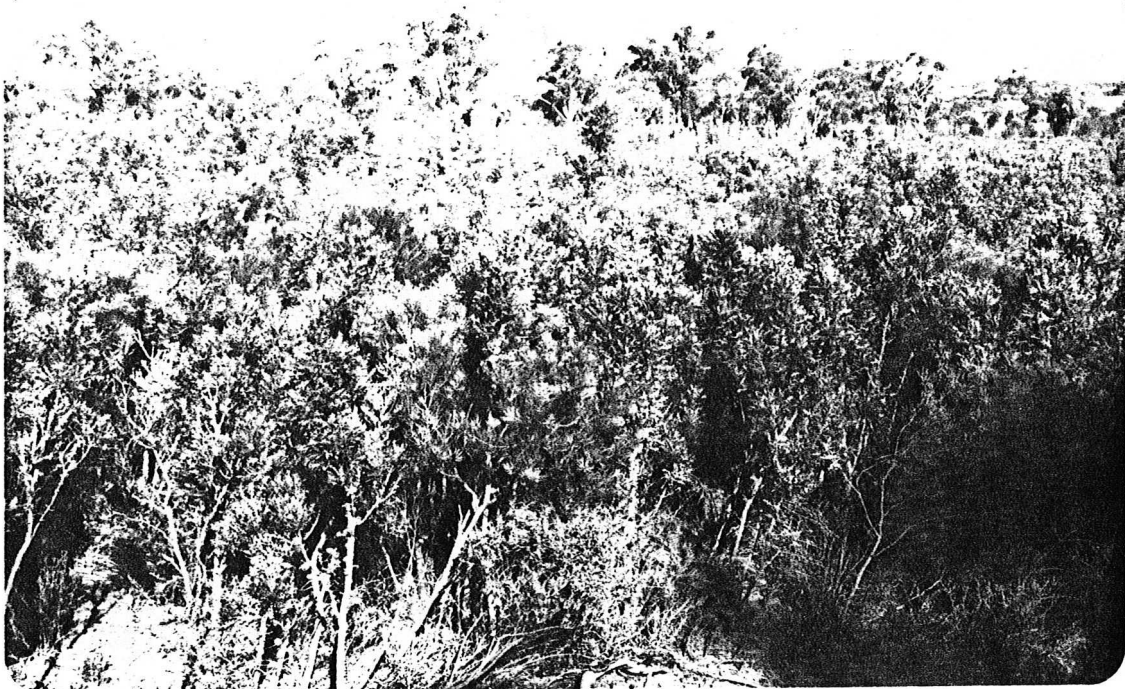




PHOTOGRAPH 3 Mallee Area (Eucalyptus aniceps and Eucalyptus flocktoniae)



PHOTOGRAPH 4 Dryandra cirsioides Heath. Hakea lehmanniana is prominent with blue green foliage.





## REFERENCES

- Beard, J.S. (1980) The Vegetation of the Corrigin Area, W.A. Vegmap Publications, Perth.
- Beard, J.S. (1980) The Vegetation of the Dumbleyung Area, W.A. Vegmap Publications, Perth.
- Muir, B.G. (1977) Vegetation and Habitat of the Bendering Reserve, Part 2 of Biological Survey of West Aust. Wheatbelt Rec. West Aust. Mus. Suppl. No. 3.
- Northcote, K.H., Bettenay, E., McArthur, W.M. and Churchward, J.M. (1967) Dominant Soils of the Perth-Albany-Esperance Area. Atlas of Australian Soils, Sheet 5 C.S.I.R.O. Melbourne.
- Rye, B.L., Hopper, S.D. and Watson, L.E. (1980) Commercially Exploited Vascular Plants Native in W.A. Census, Atlas and Preliminary Assessment of Conservation Status. Report Number 40, Dept. Fisheries and Wildlife, Perth.

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