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

**PART 14
WESTONIA SHIRE**

B.G. MUIR

1979

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WESTERN AUSTRALIAN MUSEUM

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SOME NATURE RESERVES OF THE WESTONIA SHIRE

B.G. MUIR

Introduction

Westonia Shire lies in the eastern-central wheatbelt and has an area of 3267 square km. There are 10 Nature Reserves within the Shire, totalling 90 square km or ca. 2.8% of the area of the Shire. Of the land set aside for Nature Reserves ca 66 square km or 74% of it is contained in only 2 Reserves, 19210 (Chiddarcooping) and 32864.

None of the Reserves have 'A' classificaiton and only 3 of them are vested, 23339 in the Minister for Works, 19210 in the Western Australian Wildlife Authority and 23338 in the Minister for Water Supply, Sewerage and Drainage. Reserves 23339 and 23338 are classified for "Water, Flora and Fauna", and because of their vestings are susceptible to changes by installation of dams etc.

The current survey took place in March 1979 and consisted of brief examinations of 7 Reserves, 1432, 18199, 26403, 27146, 32864, 32865, and 32993.

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 Reserves.

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 large 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 favourable 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 brought 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.

Opinions 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.

Results and discussion

The features of each Reserve can be summarised as follows:

- Reserve 1432 - ca 806 ha; complex mosaic of granite and shrublands and woodland; rich in fauna; excellent conservation reserve.
- Reserve 18199 - ca 174 ha; Acacia and Casuarina thicket and Wandoo and Salmon Gum - Gimlet woodland; plant species rich; Reserve isolated.
- Reserve 26403 - ca 113 ha; woodland, mallee and shrubland; important for birds which nest in hollow trees.
- Reserve 27146 - ca 116 ha; mostly Gimlet woodland and mallee, some lithic complex, diverse habitats; addition of adjacent uncleared land recommended.
- Reserve 32864 - ca 1742 ha; woodland, mallee, shrubland, lithic complex, rich in fauna and plant species; may be illegally used for browsing cattle; excellent conservation reserve.
- Reserve 32865 - ca 631 ha; Salmon Gum and York Gum woodlands and lithic complex; cattle browsed; should be connected to Reserve 32864 by addition of uncleared land between the two Reserves.
- Reserve 32993 - ca 41 ha; Gimlet woodland, abundant nesting hollows in trees; will be valuable in future as land clearing progresses; recommend addition of uncleared land to enhance its value.

All the Reserves examined contain valuable areas of bushland, rich in plant species and mostly rich in fauna. The position of the Westonia Shire, near the "boundary" between the Avon, Coolgardie and Austin Botanical Districts (Gardner and Bennetts 1956, Grieve and Blackall 1975) allows the influence of these Districts to be felt in the vegetation. For this reason the reserves contained within the Shire are particularly important for botanical studies, both biogeographically and physiologically.

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Reserve 1432
(Sandford Rocks)

Located ca 9 km NE of Westonia Townsite and shown on lithograph 35/80 E 3.

Background

Originally set aside 9 May 1899 as a "Water" reserve of ca 810 ha. Its purpose was changed to "Water and Conservation of Flora and Fauna" on 11 July 1958. Its area was decreased by ca 4 ha on 18 February 1977, to its present size. The local name of the Reserve was originally Yorkrakine Granite Rock but, because of confusion with Yorkrakine Rock (20 km N of Tammin) the name has been changed to Sandford Rocks. Neither name is official.

Physical characteristics

Reserve 1432 is square, with a total perimeter of ca 11.2 km and an area of 805.9391 ha. No contour maps of the area are available and there are no spot altitudes near the Reserve. I made a visual estimate (probably very inaccurate) of ca 40 m topographic difference on altitude.

Vegetation

Much of the Reserve is a complex mosaic of granite outcrop and tumbled boulders with surrounding flat areas carrying woodlands or shrublands. There are also flat areas amongst the granite and which carry shrubland and lithic vegetation types. The major associations are listed below:

Gimlet woodland: Gimlet Low Forest A over mixed Open Dwarf Scrub C.

Wandoo woodland: Wandoo Low Woodland A over scattered shrubs, and an area of Open Woodland over grasses.

York Gum woodland: York Gum Low Woodland A over mixed Open Dwarf Scrub C.

Jam woodland: Jam Low Forest B over Broombush Open Scrub over grasses and ephemeral Asteraceae.

Black Marlock Mallee: Black Marlock Very Open Shrub Mallee over mixed Open Dwarf Scrub D over Borya nitida Open Herbs.

Casuarina acutivalvis shrubland: C. acutivalvis Thicket over mixed Low Scrub A.

Tamma shrubland: Tamma Scrub over Low Sedges.

Tamma-wattle shrubland: Tamma and Acacia stereophylla Dense Thicket over Very Open Low Sedges.

Granite complex: mosaic of bare granite rock and thickets or clumps of various shrubs and sedges.

Plant species

One hundred and seventeen species of plants were recorded of which 37 are exploited by the wildflower trade. Three plants, an Acacia, Baeckea and Schoenus of uncertain affinities were collected. The Juncus collected is similar to J. pallidus but is probably not that species.

Nest hollows

Numerous nest hollows in Wandoo and York Gum woodlands and some in mallee areas. Many young trees, particularly E. wandoo ca 15 cm diameter and E. salubris ca 10 cm diameter.

Weeds

Small ephemeral weeds in granite runoff areas and some in woodlands. Majority of weed invasion was in disturbed areas particularly road verges in heavy soil. Mostly grasses, Arena sativa fatua, A. barbata, Lolium sp. and the broad-leaved weeds Inula graveolens, Osteospermum clandestinum and Salsola kali.

Fire history

The granite areas and much of the woodland has probably never been burnt, or perhaps not for a very long time. The rest has probably not been burnt for at least 20 years.

Fauna

Echidna (Tachyglossus aculeatus): scats near granite overhang Grey Kangaroo

(Macropus fuliginosus): 2 in shrubland.

Stick-nest Rat (Leporillus sp.): very old nest in cleft under granite overhang.

Bats: unidentified species heard squeaking in cleft of granite.

Port Lincoln Parrot (Platycercus zonarius): several calling and seen in York Gum and Wandoo woodland.

Galah (Cacatua roseicapilla): numerous in several parts of Reserve, particularly woodlands.

Crested Bellbird (Oreoica gutturalis): calling in Black Marlock mallee area.

Weebill (Smicrornis brevirostris): common in woodlands.

Chestnut-rumped Thornbill (Acanthiza uropygialis): several seen in flats with lithic complex and in Jam woodland.

Yellow-rumped Thornbill (A. chrysorrhoa): in York Gum woodland, mallee and some lithic areas.

Western Silvereye (Zosterops lateralis gouldii): in eucalypt associations.

Magpie-lark (Grallina cyanoleuca): calling in York Gum area.

Australian Raven (Corvus coronoides): several in many parts of Reserve and flying over.

Amphibolurus ornatus (Ornate Dragon): common on granite outcrop exposures.

Additionally, in April 1967 K.G. Buller and G. Storr visited the Reserve and recorded the following species.

Common Bronzewing (Phaps chaloptera)

Fairy Martin (Hirundo ariel)

Richard's Pipit (Anthus novaeseelandiae)

Brown flycatcher (Microeca leucophaea)

Golden Whistler (Pachycephala caledonica)

Western Shrike-thrush (Colluricincla harmonica rufiventris)

Willie Wagtail (Rhipidura leucophrys)

White-browed Babbler (Pomatostomus superciliosus)

Brown Thornbill (Acanthiza pusilla)

Red-tipped Pardalote (Pardalotus substriatus)

Brown Honeyeater (Lichmera indistincta)

Singing Honeyeater (Meliphaga virescens)

Yellow-plumed Honeyeater (M. ornata)

White-eared Honeyeater (M. leucotis)

Brown-headed Honeyeater (Melithreptus brevirostris)

Spiny-cheeked Honeyeater (Acanthagenys rufogularis)

Red Wattlebird (Anthochaera carunculata)

Grey Butcherbird (Cracticus torquatus)

Western Magpie (C. tibicen dorsalis)

Grey Currawong (Strepera versicolor)

Little Crow (Corvus bennettii)

Gehyra sp.

Lerista muelleri

Helioporus albopunctatus

Pseudophryne occidentalis

Exotic Fauna

Rabbit scats were seen and a fox sighted. Fox is possibly living in a cleft in the granite outcrop, under an overhang.

Firebreaks and fences

Firebreaks in adjacent farmland on N, W and SW sides, roadways on the E and SE sides. The N, W and SW sides are fenced.

Human usage

A small amount of rubbish has been dumped in the woodland areas. There is a gravel pit on the NE corner and a sandpit at the SE corner. Timber has been removed from most of the woodlands. There has been motorbikes used over much of the granite and are causing deep erosion channels in some poorly drained areas. The S end has been used for barbecues and picnics.

Adjacent uncleared land

Some uncleared areas of granite outcrop are contiguous with the N boundary of the Reserve and areas of mallee and woodland.

Opinion and recommendations

Reserve 1432 is large and relatively undisturbed compared to most wheatbelt reserves. It has several formations and associations and is quite rich in plant species. Based on Buller and Storr's bird list, and the mammal observations, the Reserve is probably important for fauna. This Reserve is undoubtedly one of the best in an area rapidly being cleared and will become even more important in the near future. The largest areas of bushland are on the W side of the granite outcrop and it would be advantageous to have a firebreak from the central W side to the granite. The rest of the bushland is protected from fire by granite outcrop or open woodlands in various places. A sign near the entrance to the track at the S end of the Reserve, warning shooters and rubbish dumpers would be advantageous.

The Reserve should be vested in the Western Australian Wildlife Authority.

APPENDIX 1
Reserve 1432

Jam woodland

Acacia acuminata trees, 3.5-5m tall, 30-70% canopy cover over Melaleuca uncinata shrubs, 1.5-2.5 m tall, 2-10% cover over Amphipogon debilis and Waitzia acuminata grasses and herbs, 20 cm tall, 2-10% canopy cover. No other species recorded. Soil pinkish grey, gritty, loam. Moderately well drained.

Gimlet woodland

Eucalyptus salubris trees, 8-11 m tall, 30-70% cover over mixed shrubs, 1 m tall, 2-10% cover. Other species recorded were: Acacia colletioides, A. affin. daviesioides, A. erinacea, A. graffiana, A. ligustrina, A. merrallii, Bassia diacantha, Daviesia nematophylla, Eremophila decipiens, E. drummondii, Eucalyptus salmonophloia, Exocarpus aphyllus, Melaleuca hamulosa, Olearia muelleri, Ptilotus exaltatus, Scaevola spinescens, Stipa elegantissima, Wilsonia humilis. Soil red, sandy clay; poorly drained.

Wandoo woodland

Mature woodlands with Eucalyptus wandoo trees 14-18 m tall, 2-10% cover over grassy annual understory. Scattered Eucalyptus salmonophloia present as well as Acacia microbotrya, Dampiera juncea, Dianella revoluta, Grevillea paniculata, Lomandra effusa and Santalum spicatum. Immature stands 8-12 m tall and 10-30% cover with mean trunk diameter of 15 cm. Scattered shrubs present. Species recorded were: Acacia acuminata, A. graffiana, Baeckea sp., Borya nitida, Dianella revoluta, Enneapogon caerulescens, Eucalyptus loxophleba, Grevillea paniculata, Lepidosperma tenue, Melaleuca laxiflora and Olearia revoluta. There are some marginal clumps of Melaleuca hamulosa and M. ? pauperiflora. Soil pinkish grey, sandy clay loam. Poorly drained.

York Gum woodland

Eucalyptus loxophleba trees and tree mallee, 4-7 m tall, 10-30% cover over mixed shrubs, 1 m tall, 2-10% cover. Also recorded were: Acacia acuminata, A. erinacea, A. graffiana, Alyxia buxifolia, Carpobrotus edulis, Daviesia nematophylla, Dianella revoluta, Dodonaea ineguifolia, Eremophila drummondii, Rhagodia nutans, Santalum spicatum, Scaevola spinescens, Solanum lasiophyllum, S. nummularium. Soil is pinkish grey, sandy clay. Poorly drained. Where the York Gum woodland overlaps with marginal lithic complex Calycopeplus helmsii, Cheilanthes tenuifolia, Isotoma petraea, Keraudrenia hermanniaefolia, Muhlenbeckia adpressa, and Ptilotus exaltatus penetrate into the woodland.

Black Marlock mallee

Eucalyptus redunca shrub mallee, 5-7 m tall, 2-10% cover over Acacia acuminata trees 2-3.5 m tall and Melaleuca acuminata shrubs 2-3.5 m tall, 2-10% cover over annual grasses 70-100% cover. Some areas with Acacia stereophylla penetrating from adjacent shrublands. Soil light reddish brown, loam.

On areas of heavier soil the association was E. redunca shrub mallee 4-5 m tall, 2-10% cover over mixed shrubs 0.5 m tall, 2-10% cover over Borya nitida 10 cm tall, 10-30% cover. Other species recorded were: Acacia graffiana, Amphipogon debilis, Baeckea affin. crispiflora, Bertya cunninghami, Cassytha glabella, Casuarina compestris, Daviesia nematophylla, Dodonaea caespitosa, Ecdeiocolea monostachya, Eucalyptus wandoo, Grevillea paradoxa, G. yorkrakinensis, Hibbertia pungens, Lepidosperma sp. Lomandra glauca collina, Melaleuca laxiflora, M. platycalyx, Santalum acuminatum, Schoenus sp., Spartochloa scirpoidea. Soil pinkish grey, sandy clay, poorly drained.

Tamma shrubland

Casuarina campestris shrubs, 1.5-2.5 m tall, 10-30% canopy cover (overall 2-10% but some clumping) over Ecdeiocolea monostachya sedges 0.5 m tall, 30-70% cover. Also recorded were: Acacia dielsii, A. sessilispica, A. stereophylla, A. sp., Borya nitida, Cryptandra myriantha, Eriostemon tomentellus, Eucalyptus rigidula, Grevillea yorkrakinensis, Hakea falcata, Harperia lateriflora, Melaleuca oldfieldii, Platysa e effusa, Santalum acuminatum.

In some areas Acacia stereophylla is a cod minant and the density increases to 70-100%. Concurrently the understory density dropped to 2-10% cover. In these areas were Acacia bidentata, Amphipogon debilis, Cryptandra myriantha, Eucalyptus redunca, Grevillea apiculoba, G. paradoxa, G. yorkrakinensis, Hibbertia verrucosa, Lepidosperma drummondii, Lyginea barbata, Phebalium tuberculosum, Schoenus sp., Spyridium complicatum. Soil in both areas is reddish yellow, fine sandy loam, well drained and ca 40% laterite in the sparser areas and moderately drained and ca 60% laterite in the denser areas with Acacia.

Acacia stereophylla shrubland

A. stereophylla shrubs, 1.5-3 m tall, 30-70% cover over Baeckea muricata, B. sp. and Thryptomene affin. australis and Calothamnus gilesii shrubs, 1-2 m tall, 30-70% cover. Other species, recorded were: Acacia neurophylla, Amphipogon debilis, Cassytha glabella, Casuarina acutivalvis, Dianella revoluta, Ecdeioidea monostachya, Eucalyptus leptopoda, Grevillea excelsior, Hakea coriacea, Melaleuca oldfieldii, Phebalium tuberculosum, Schoenus affin. globifer. Soil brownish yellow fine sandy clay loam with ca 60% latente. Moderately drained.

Casuarina acutivalvis shrubland

C. acutivalvis shrubs 3-5 m tall, 30-70% cover over understory as for Acacia stereophylla shrubland but 10-30% cover. All species were the same except Dianella revoluta, Ecdeiocolea monostachya and Grevillea excelsior were absent in this association.

Lithic complex

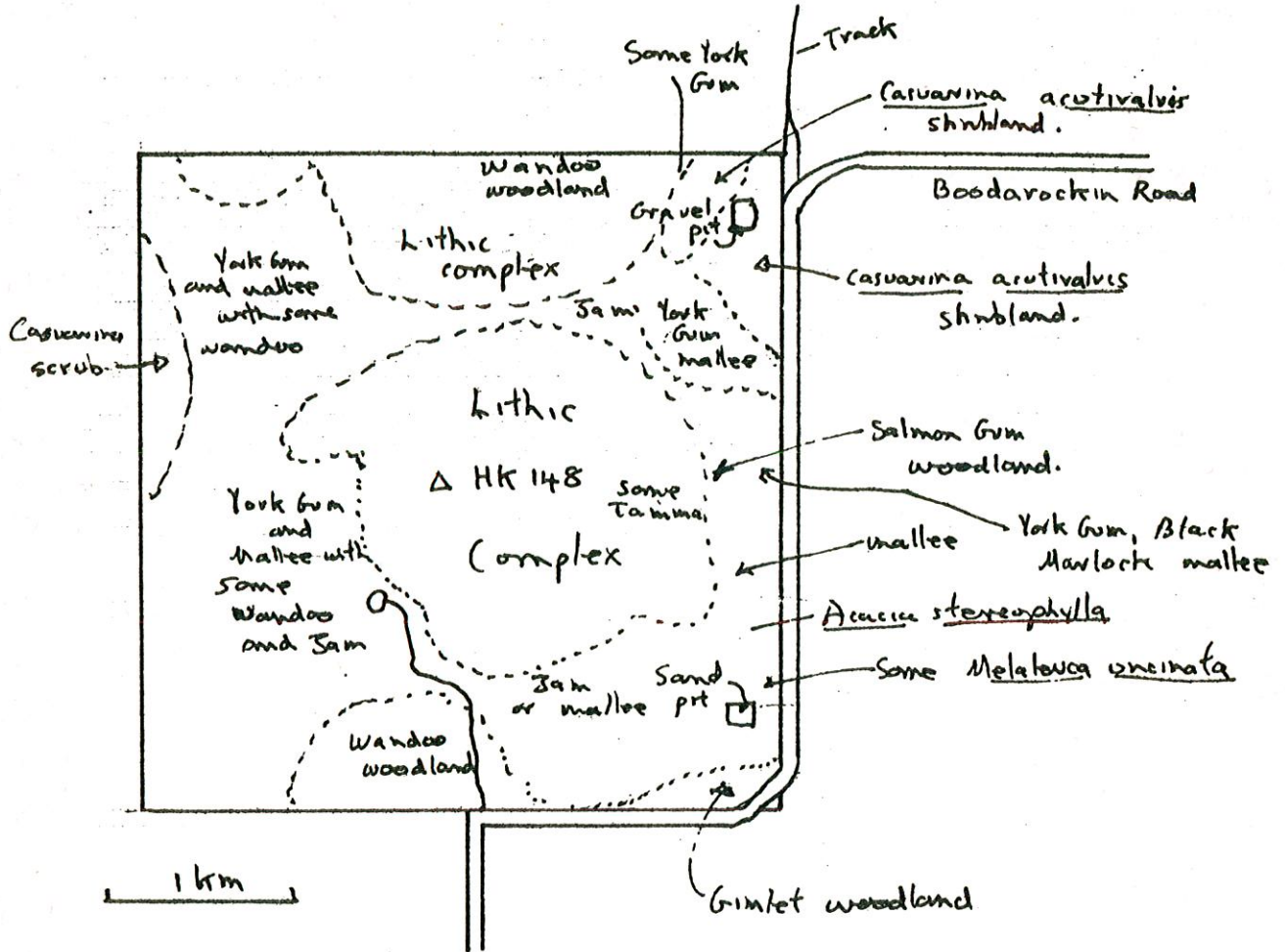
Large pavements and rounded outcrops of granite gneiss with Parmelia and other lichens, and Grimmea moss. Soil pockets of variable depth with heathy or shrubland formations and runoff areas and surrounding flats with shrublands or woodland.

A species list and distribution is set out below.

	Tumbled boulders	Shallow soil pockets	Deep soil pockets	Runoff areas	Marginal flats
<u>Acacia dentifera</u>	X	X			
<u>A. fauntleroyi</u>			X		
<u>A. lasiocalyx</u>			X	X	X
<u>A. sessilispica</u>			X		
<u>Alyxia buxifolia</u>				X	X
<u>Amphipogon cawicinus</u>	X				
<u>A. debilis</u>			X		X
<u>Baeckea</u> sp.			X		
<u>Borya nitida</u>		X	X		
<u>Brachysema daviesioides</u>					X
<u>Calothamnus asper</u>		X	X	X	X
<u>Calycopeplus helmsii</u>	X	X	X	X	X
<u>Casuarina campestris</u>		X	X	X	
<u>C. huegeliana</u>			X	X	X
<u>Chamaexeros fimbriata</u>					X
<u>Cheilanthes tenuifolia</u>	X	X	X	X	
<u>Comesperma scoparia</u>					X
<u>Dodonaea attenuata</u>			X	X	X
<u>D. inequifolia</u>			X		
<u>Eucalyptus kruseana</u>			X		
<u>Grevillea paniculata</u>	X	X	X		
<u>Hakea decurva</u>			x		x
<u>Hibbertia</u> affin. <u>glomerosa</u>		X	X	X	
<u>Isotoma petraea</u>	X	X	X	X	
<u>Juncus</u> affin. <u>pallidus</u>				X	

<u>Keraudrenia integrifolia</u>	X				
<u>Kunzea pulchella</u>		X			
<u>Leptospermum erubescens</u>			X	X	X
<u>Lepidosperma drummondii</u>	X	X	X	X	
<u>L. gracile</u>	X	X		X	
<u>Melaleuca hamulosa</u>				X	X
M. macrophylla			X	X	
<u>Muhlenbeckia adpressa</u>	X			X	
<u>Persoonia striata</u>					X
<u>Pleurosaurus rutifolius</u>	X				
<u>Prostanthera sp. l.</u>					X
<u>Ptilotus obovatus</u>	X				X
<u>Santalum spicatum</u>			X		X
<u>Solanum nummularium</u>	X		X		
<u>Stypandra imbricata</u>	X	X	X	X	
<u>Thryptomene australis</u>			X	X	X

Reserve 1432



- ⋯ Boundary between vegetation types
- Δ Trigonometric point.
- || Roadway.



Plate 1. Gimlet woodland on Reserve 1432



Plate 2. Wandoo woodland showing young trees mostly ca 15 cm diameter.



Plate 3. York Gum (smooth trunked form) on W side of Reserve 1432.
Tree in left foreground is E. wandoo.



Plate 4. Black Marlock mallee area with moderately dense understory



Plate 5. Tamma shrubland with an open area of Ecdeiocolea monostachya in foreground.



Plate 6. Casuarina acutivalvis thicket on Reserve 1432. There is excessive understory development adjacent to the firebreak.



Plate 7. Reserve 1432. View N from S end of granite outcrop showing pavement and areas of soil accumulation. The collapsed cliff area has tumbled boulders and an overhang ca 10 m deep.

Reserve 18199

Located 13 km WSW of Westonia Townsite and shown on lithograph 35/80, D4.

Background

Originally set aside as "Water Reserve" on 19 January 1923. At this time the Reserve had an area of ca 217 ha and was vested in the Metropolitan Water Supply, Sewerage and Drainage Board. The area of the Reserve was decreased to ca 191 ha on 9 October 1925, ca 181 ha on 2 July 1926 and ca 173 ha on 15 February 1957. Also in February 1957 the MWSSDB vesting was revoked and the Reserve was set aside for "Flora and Fauna".

Physical characteristics

Reserve 18199 is almost square, with an extension on the NW corner. It has a perimeter of ca 5.6 km and an area of 173.7012 ha. No contour maps are available but there is a spot altitude of ca 322 m above sea level ca 3 km S of the Reserve. A visual estimate of altitudinal range within the Reserve is ca 30-40 m.

Vegetation

The NE portion of the Reserve is Acacia and Casuarina Thicket or Dense Thicket and the SW portion mostly Wandoo or Salmon Gum-Gimlet Woodland.

Plant species

Thirty-seven species of plants were recorded, of which 11 are exploited by the wildflower seed trade. A Schoenus, Thryptomene and Verticordia of uncertain affinities was collected.

Nest Hollows

Abundant in woodland areas. No young trees present.

Weeds

Cucumis myriocarpus and Inula grave lens were present in the gravel pit.

Fire history

Evidence of old fire scars on the 1952 air-photographs. The vegetation is much older than 30 years but the burns visible on the 1952 photographs are

still visible as heathy areas.

Fauna

White-backed Swallow (Cheramoeca leurosterna): old nest burrows in gravel pit.

Crested Bellbird (Oreocica gutturalis): calling in shrubland.

Exotic fauna

Fox burrow in gravel pit and rabbit droppings in some shrubland areas.

Firebreaks and fences

Firebreaks on both the W and S boundaries in adjacent farmland and roadways on the N and E sides. The W and S boundaries are also fenced.

Human usage

Extensive rubbish dumping in gravel reserve on NE corner and some on a small track on the SE side. Old machinery and farm rubbish have been dumped extensively on the NW corner. Some timber has been removed.

Adjacent uncleared land.

None.

Opinion and recommendations

This Reserve offers fairly large areas of two contrasting habitats, shrubland and woodland. Both are fairly rich in species and offer numerous nesting and feeding sites for birds which require trees or shrubby habitats. The Reserve is also isolated and important as a stepping-stone for transient species. I recommend that a sign be erected near the SE and NE corners of the Reserve, prohibiting further removal of gravel and that Reserve 18199 be vested in the Western Australian Wildlife Authority.

APPENDIX 2

Reserve 18199

Salmon Gum Woodland

Eucalyptus salmonophloia trees, 15-24 m tall and E. salubris trees 6-12 m tall, overall cover 10-30% over Melaleuca cymbifolia shrubs 2-5 m tall, 2-10% cover. Also present were Acacia colletioides, A. erinacea, A. merrallii, E. redunca, Melaleuca hamulosa, Olearia muelleri and Santalum acuminatum. Soil red, clayey sand. Poorly drained.

Acacia shrubland

Acacia stereophylla shrubs, 2-3.5 m tall. In areas of 70-100% density Acacia neurophylla and Casuarina acutivalvis and C. corniculata were co-dominant. In areas of 30-70% density A. sessilispica and C. corniculata were present. Understory in 30-70% areas was scattered shrubs to 1 m tall. Species present were Calothamnus affin. chrysantherus, Eviostemon thryptomenoides, Eucalyptus leptopoda, Grevillea paradoxa, Lepidosperma drummondii, Melaleuca oldfieldii, Persoonia teretifolia, Platysace effusa, Thryptomene sp. and Verticordia sp. In the sparser areas (10-30% cover) dominants remain as for 30-70% areas but a heathy understory to 10-30% develops. Species in these areas are Acacia signata, Beaufortia micrantha, Choretrum preissii, C. pritzellii, Eucalyptus leptopoda (abundant), Grevillea paradoxa, Hakea falcata, Hibbertia uncinata, Melaleuca oldfieldii, Platysace effusa, Schoenus sp. Soil in all situations was yellowish brown sandy clay with ca 90% lateite pebbles.

Variation in drainage controlled the density and species composition, the densest areas being in depressions and probably wetter. The heathy area in drier positions. Drainage by the scale used in this survey was "well drained" in all situations.

Regrowth in gravel pit

Regrowth in the gravel pit included 5 species not recorded elsewhere on the Reserve. These were: Darwinea affin. purpurea, Drummondita hassellii, Hannafordia bissillii, Keraudrenia integrifolia and Wehlia affin. thryptomenoides.

Reserve 18199.

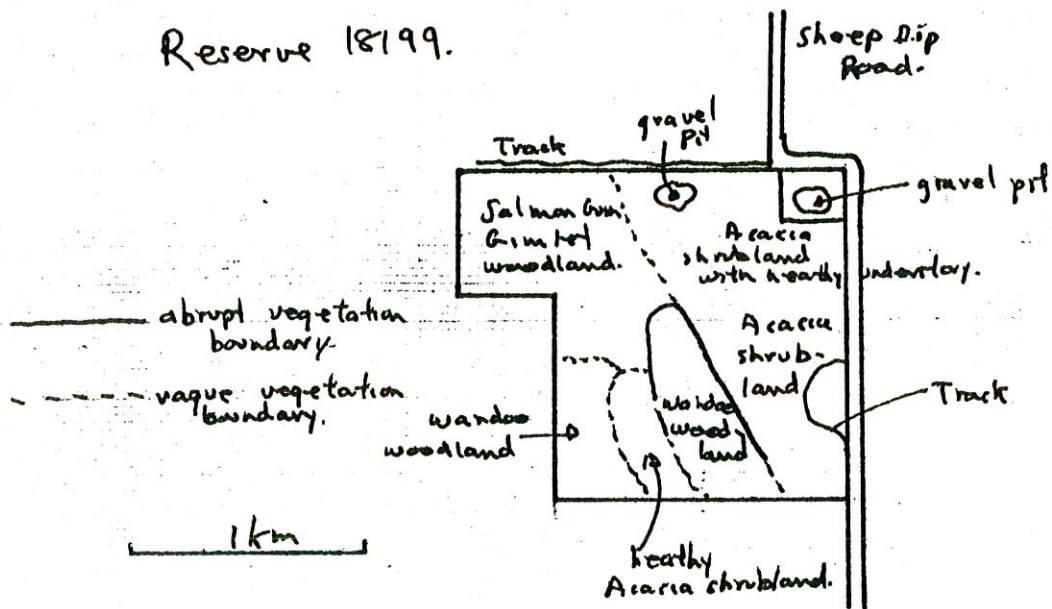




Plate 8. Salmon Gum woodland with Melaleuca cymbifolia understory.
View SE from NW corner of Reserve 18199.



Plate 9. Dense Thicket of Acacia with almost no understory.

Reserve 26403

Located ca 5.5 km NW of Warralakin Siding and ca 35 km ENE of Mukinbudin Townsite and shown on lithograph 54/80 D4.

Background

Originally set aside for "Conservation of Flora" on 27 July 1962.

Physical characteristics

Reserve 26403 is square, with a total perimeter of 2.5 km and an area of 113.3651 ha. No contour maps or spot altitudes are available. A visual estimate suggests a 30-40 m difference between the highest and lowest points on the Reserve.

Vegetation

The main associations are as follows:

1. Gimlet Salmon Gum Open Woodland with no understory.
2. Mixed Very Open Shrub Mallee over mixed Open Dwarf Scrub C.
3. Acacia Scrub over Hakea subsulcata Open Scrub over Eideiocollea Very Open Low Sedge.
4. Broombush Open Scrub.

Plant species

Twenty-nine species of plants were recorded of which 13 are exploited by the wildflower seed trade.

Nest hollows

Abundant in trees and some in mallee. Scattered young trees present.

Weeds

None recorded except small ephemerals in the Broombush shrubland area.

Fire history

Older than 30 years except perhaps the NE corner which may be younger.

Fauna

Common Bronzewing (Phaps chalcoptera): 2 on NW corner.

Yellow-rumped Thornbill (Acanthiza chrysorrhoa): numerous in woodland and mallee.

Singing Honeyeater (Meliphaga virescens): 1 in mallee area.

Yellow-throated Miner (Manorina flavigula): 4 in woodland.

Magpie-lark (Grallina cyanolovia): 2 in woodland.

Australian Raven (Corvus coronoides): several in woodland.

Exotic fauna

Sheep droppings and footprints in the Broombush area.

Firebreaks and fences

Fenced on all sides. Firebreaks in farmland on E and S side; roadway on N side.

Human usage

Scattered small amount of rubbish. Sheep present are probably escapees rather than deliberately grazed on the Reserve.

Adjacent uncleared land

None present.

Opinion and recommendations

This Reserve is fairly rich in associations considering its small size, and supports a fairly rich flora. It is probably used extensively by transient birds and provides many nest hollows. I recommend that Reserve 26403 be retained in its present form, and that it be vested in the Western Australian Wildlife Authority.

APPENDIX 3

Reserve 26403

Gimlet - Salmon Gum woodland

Eucalyptus salubris trees, 6-10 m tall, and E. salmonophloia trees, 8-18 m tall. Mostly 2-10% cover but locally up to 10-30%. Other species present were Acacia colletioides, A. erinacea, Dodonaea inequifolia, Eremophila oppositifolia, Eucalyptus redunca, E. transcontinentalis, Exocarpus aphyllus, E. sparteus, Santalum acuminatum. Soil pinkish grey, light clay. Poorly drained.

Mallee

Eucalyptus ovularis, E. leptopoda and E. redunca shrub mallee, 6-8 m tall, 2-10% cover over mixed shrubs 1 m tall, 2-10% cover. Also present were: Acacia colletioides, A. erinacea, A. graffiana, Amphipogon debilis, Dianella revoluta, Exocarpus aphyllus, E. sparteus, Lepidosperma effusum, Lomandra effusa, Olearia muelleri and Westringia cephalantha. Soil is reddish yellow sand clay. Moderately drained.

Acacia shrubland

Acacia resinomarginea and A. stereophylla shrubs, 3-4 m tall, 10-30% canopy cover over Hakea subsulcata, 2-2.5 m tall, 2-10% cover over Ecdeiocolea monostachya sedges 0.5-2-10% cover. Also present were Acacia enervia, Amphipogon debilis, Baeckea heteranthera, Borya nitida, and Melaleuca uncinata. Soil was yellowish brown sandy clay. Well drained.

Broombush shrubland

Melaleuca uncinata shrubs, 1.5-2.5 m tall, 2-10% cover, with no understory and only scattered shrubs of Acacia colletioides present. Soil pink sandy clay loam; poorly drained.

Reserve 26403

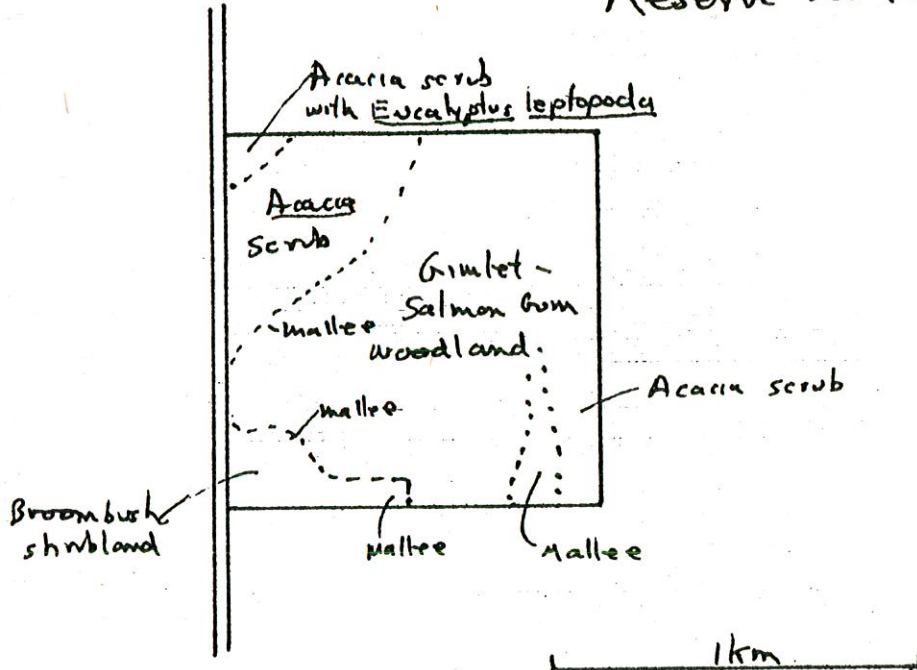




Plate 10. Gimlet - Salmon Gum woodland on Reserve 26403.



Plate 11. Acacia shrubland with Ecdeiocolea sedge understory

Reserve 27146

Located ca 21 km NNE of Westonia Townsite and shown on lithograph 35/80, E1.

Background

Originally set aside on 6 March 1964 for "Conservation of Flora".

Physical characteristics

Reserve 27146 is rectangular with a truncated NW corner. It is approximately 2.2 km long (N - S axis) by ca 0.6 km broad (E - W axis) and has a total perimeter of ca 5.3 km and an area of 115.9956 ha. There are no contour maps or spot altitudes available but I made a visual estimate of 20-30 m difference between the highest and lowest points on the Reserve.

Vegetation

The majority of the Reserve is a mosaic of Gimlet Dense Low Forest A and mixed Open Shrub Mallee. The remainder is lithic complex.

Plant species

Twenty-four species were recorded on the Reserve, of which 7 are exploited by the wildflower seed trade.

Nest hollows

Many scattered in mallee areas, particularly in larger trunks. Young Gimlet trees abundant.

Weeds

None recorded.

Fire history

No evidence of fire for at least 30 years.

Fauna

Only Yellow-throated Miner (Manorina flavigula), Magpie-lark (Grallira cyanoleuca) and Western Magpie (Cracticus tibicen dorsalis) were sighted, all common and all in the mallee and woodland areas. Numerous other species undoubtedly also use the Reserve.

Exotic fauna

Sheep have grazed some of the Reserve, and a few fresh tracks were seen.

Firebreaks and fences

Firebreaks are in adjacent farmland on the E and S sides and there is a roadway on the W side. The E, S and W sides are fenced.

Human usage

Timber has been removed.

Adjacent uncleared land

There is extensive tracts of uncleared land to the N and E of the Reserve.

Opinion and recommendations

Reserve 27146 is in excellent condition and diverse in habitat for such a small area. I strongly recommend that action be taken to obtain some adjacent uncleared land for addition to the Reserve, for example Yilgarn locations 312 and 318, which support similar types of vegetation. Land in the vicinity is being rapidly cleared and Reserve 27146 could become isolated within the next 10 years. Its value will then be much enhanced and would have an advantage if enlarged now. I also recommend the Reserve be vested in the Western Australian Wildlife Authority.

APPENDIX 4

Reserve 27146

Gimlet woodland

Eucalyptus salubris trees, 6-9 m tall, 70-100% cover with only scattered shrubs in the understory. All E. salubris are immature, maximum trunk diameter at breast height 20 cm. Other species recorded were Acacia graffiana, A. merrallii, Daviesia hematophylla, Fremophila drummondii, Exocarpus sparteus, Melaleuca acuminata, M. cymbifolia, M. hamulosa, Olearia muelleri. Soil reddish brown, fine sandy clay loam. Poorly drained.

Mallee area

Eucalyptus cylindriflora, E. loxophleba and E. transcontinentalis occurring as monodominants but constantly varying to make a mosaic association with each species more or less discreet. Shrub mallees, 4-6 m tall, 10-30% cover. Also present were: Acacia colletioides, A. erinacea, Alyxia buxifolia, Bassia diacantha, Dianella revoluta, Exocarpus aphyllus, Melaleuca cymbifolia, M. uncinata, Scaevola spinescens. Soil pinkish grey, fine sandy clay loam. Moderately drained with seasonal pooling.

Lithic shrublands

Granite pavement and outcrop with variable shrublands dominated by Acacia resinomarginea, Casuarina acutivalvis or C. campestris.

Reserve 27146

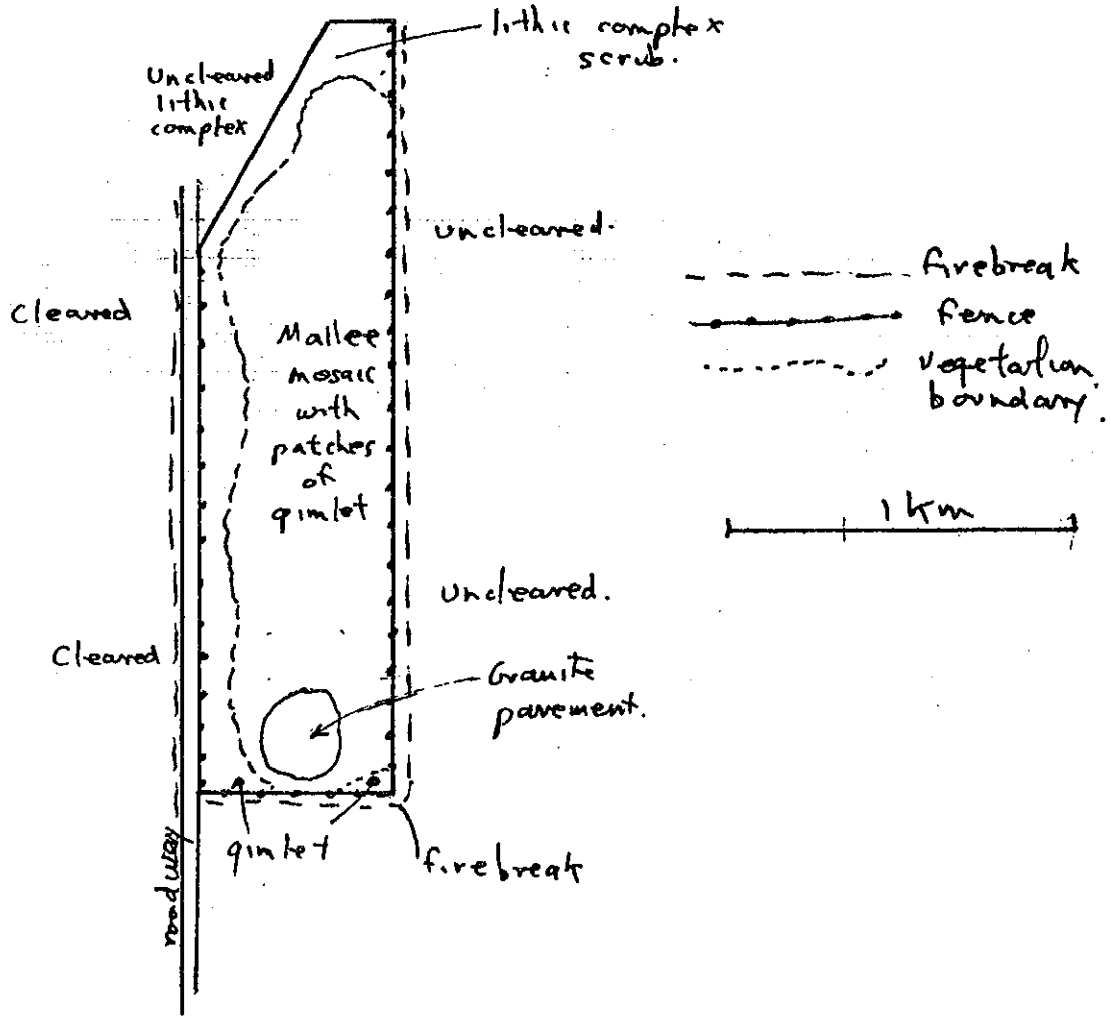




Plate 12. Reserve 27146 showing stand of young Gimlet trees

Reserve 32864

Located ca 26 km due E of Bonnie Rock Siding and shown on lithograph 67/80, CD3.

Background

Originally set aside for "Conservation of Flora" on 20 September 1974.

Physical characteristics

Reserve 32864 is "□" shaped, with a total perimeter of ca 20 km and an area of 1741.5899 ha. No contour maps or spot altitudes are available. Visual estimates on the Reserve suggest up to 10 m variation in the vegetated areas and the granite being a further 15-20 m above the surrounding land. There is probably an overall topographic range of ca 30 m.

Vegetation

1. Salmon Gum Open Woodland over scattered shrubs.
2. Eucalyptus transcontinentalis Very Open Shrub and Tree Mallee over Acacia - Broombush Open Low Scrub A.
3. York Gum Open Tree Mallee over mixed Open Dwarf Scrub D.
4. Mixed Scrub over Baeckea Open Dwarf Scrub D.
5. Lithic complex and numerous small associations of various types are present, increasing the mosaic nature of the Reserve.

Plant species

Forty-eight species were recorded, of which 13 are exploited by the wildflower seed trade.

Nest hollows

Abundant in most of wooded area. Some young trees present.

Weeds

The only weed recorded apart from small ephemerals in the wooded areas were some Afghan Thistle (Solanum hystrix) which penetrates from adjacent farmland onto the firebreaks. It does not penetrate into the natural bushland.

Fire history

No evidence of fire for at least 30 years.

Fauna

Grey Kangaroo (Macropus fuliginosus): 4 seen NE corner.

Emu (Dromaius novaehollandiae): Scats seen.

Wedgetail Eagle (Aquila audax): 2 over Reserve S end.

Crested Pigeon (Ocyphaps lophotes): numerous, mainly on boundaries.

Port Lincoln Parrot (Platyercus zonarius): common.

Galah (Cacatua roseicapilla): common.

Crested Bellbird (Oreoica gutturalis): calling at S end.

Willie Wagtail (Rhipidura leucophrys): 2 on fence line N end.

Weebill (Smicronis brevirostris): common in eucalypts.

Yellow-rumped Thornbill (Acanthiza chrysorrhoa): several seen around granite.

Yellow-throated Miner (Manorina flavigula): 1 seen in Acacia at granite on N. end.

Pied Butcherbird (Cracticus nigrogularis): one in Eucalyptus transcidentalis mallee on NE side of Reserve.

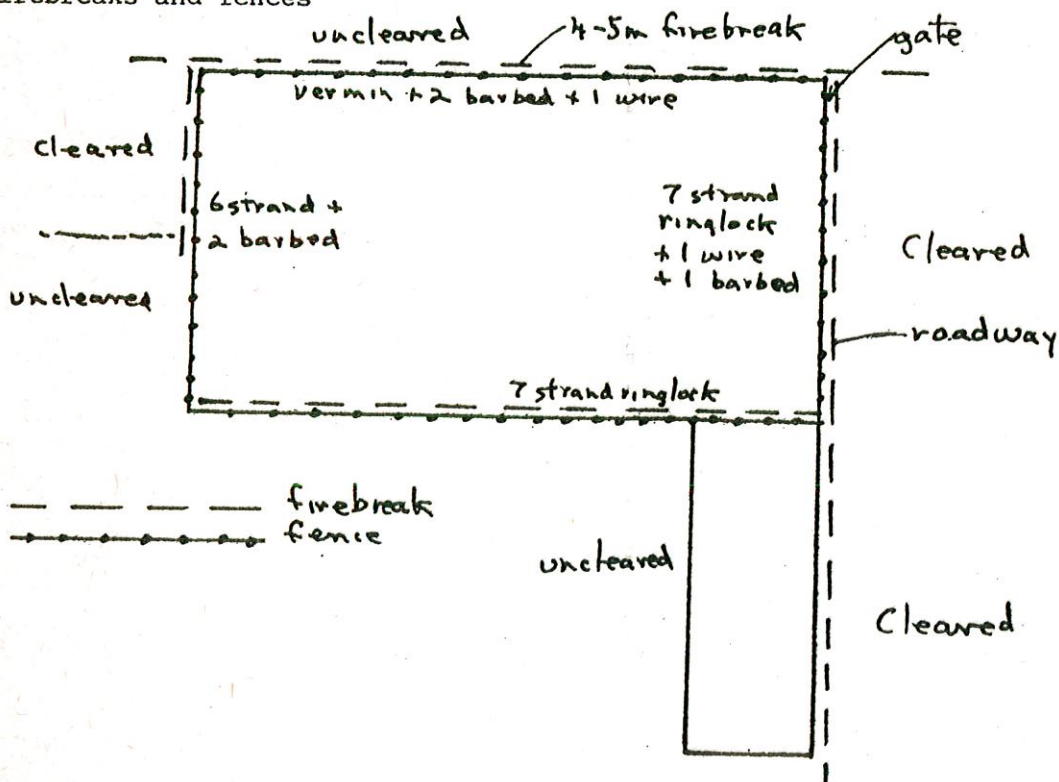
Grey Currawong (Strepera versicolor): one seen on NE corner.

Australian Raven (Corvus coronoides): common.

Exotic fauna

Fox scats and rabbit scats and warrens were seen.

Firebreaks and fences



Human usage

Timber has been removed from the woodlands. There is an old campsite with car bodies etc at the granite area on the N end of the Reserve. It had been recently occupied but there was no sign of permanent habitation.

Cattle footprints and pads are found throughout the northern end of the Reserve, The fence across the N end of the southern portion, and the distribution of footprints strongly suggest the N portion is being used for stock browsing. There is access to the Reserve through a gate on the NE corner and there may also be access on the W side.

Adjacent uncleared land

There is extensive tracts of uncleared land to the N and SW of the Reserve.

Opinion

Reserve 32864 is of large size and supports a variety of formations, associations and plant species. It is probably also rich in fauna. Impressions are that the N portion is being wilfully used for cattle grazing, in view of the fence at the S end of the N portion. All the fences are new and I suspect grazing has only been underway for a short time. As yet there is little visible damage, but some trampling and browsing effects are apparent. I recommend that an investigation be made to determine the extent to which grazing has occurred and that the farmer responsible be approached to remove the cattle and take down the fence at the S end before erosion and vegetation breakdown begins. I also recommend the Reserve be vested in the Western Australian Wildlife Authority.

APPENDIX 5

Reserve 32864

Salmon Gum woodland

Eucalyptus salmonophloia trees, 16-22 m tall, 2-10% cover over Atriplex paludosa and patches of Brachysema aphylla, mostly less than 1% cover but locally reaches 2-10% cover. Other species recorded were: Acacia acuminata, A. colletioides, A. microbotrya, Cassia nemophylla, Eremophila drummondii, Exocarpus sparteus, Hakea decurva, Olearia exiguifolia, O. muelleri, Pittosporum phylliraeoides, Ptilotus obovatus, Westringia cephalantha. Soil red, sandy clay. Poorly drained.

Mallee areas

Eucalyptus transcontinentalis shrub and tree mallee, 7-10 m tall, 2-3% cover over Acacia heteroneura and Melaleuca uncinata shrubs, 1-2 m tall, 2-10% cover. Also present were: Acacia colletioides, Amphipogon debilis, Dianella revoluta, Melaleuca uncinata and Olearia muelleri. Soil pinkish grey, fine sandy clay loam. Poorly drained.

York Gum mallee

Eucalyptus loxophleba tree mallee, 4-8 m tall, 10-30% cover, with scattered E. salubris and E. transcontinentalis, over Atriplex paludosa and mixed shrubs, 0.5 m tall, 2-10% cover. Only other shrubs present were Acacia colletioides, Bassia diacantha, Cassia nemophylla, Eremophila decipiens, E. drummondii, Olearia exiguifolia and O. muelleri. Soil red, light clay. Poorly drained.

Mixed shrubland

Phebalium filifolium, Melaleuca uncinata and Acacia eremophila shrubs, 2-3 m tall, 10-30% cover over Baeckea sp. 0.5 m tall, ca 2% cover. Also present were Eriostemon deserti, Thryptomene australis, Verticordia drummondii, Wehlia affin. thryptomenoides. Yellow, sandy clay. Moderately drained.

Other

Numerous small areas of various shrubland associations occur. These include: Acacia heteroneura 2-3.5 m tall, 70-100% on a washaway area; Callitris verrucosa thickets with Templetonia sulcata and Eucalytus sp. 1; mixed Melaleuca uncinata and Acacia sessilispica shrubland with scattered Baeckea affin.

crispiflora, Grevillea didymobotrya, Hakea minyma, Triodia scariosa.

Lithic complex

Areas of bare granite outcrop with patches and thickets of Acacia lineolata, Callitris heugellii, Dianella revoluta, Dodonaea attenuata, Hakea lehmanniana, Hypocalymma angustifolium, Isotoma petraea, Lepidosperma gracile, Leptospermum erubescens, Rhagodia nutans, Santalum acuminatum.

Reserve 32864

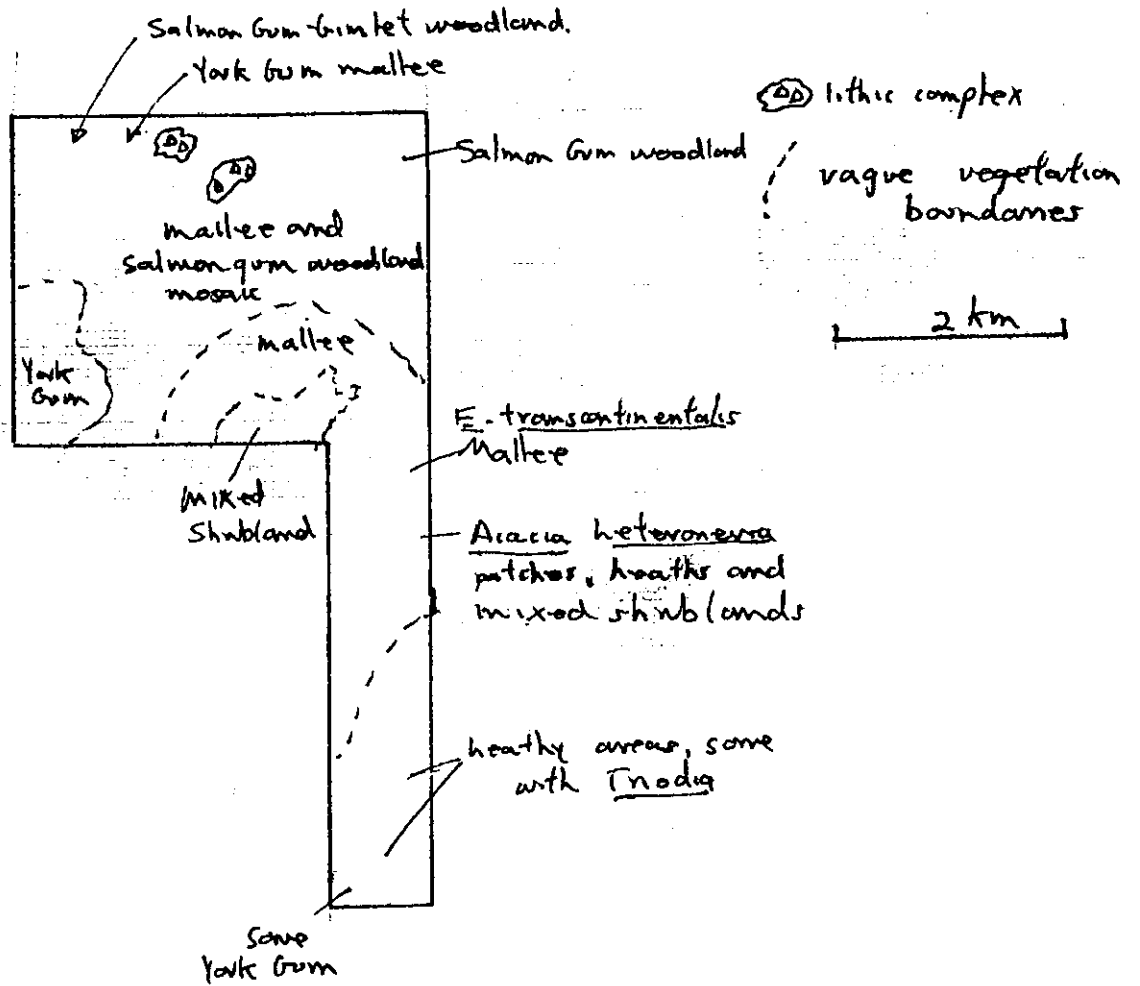




Plate 13. Salmon Gum woodland on Reserve 32864



Plate 14. Mallee area with patchy understory of Acacia and Broombush.



Plate 15. York Gum (smooth trunk form) on Reserve 23864.

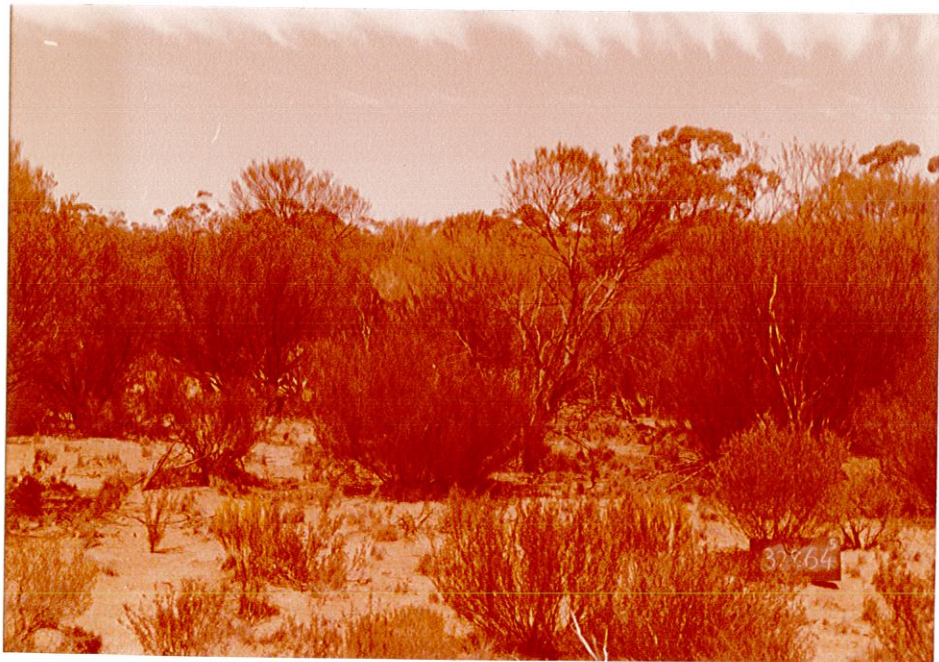


Plate 16. Mixed shrubland of Phebalium filifolium, Broombush and Acacia eremophila.



Plate 17. Area of Lithic complex on N boundary of Reserve 32864.

Reserve 32865

Located ca 19 km ENE of Bonnie Rock Siding and shown on lithograph 67/80, CD3.

Background

Originally set aside 20 September 1974, for Conservation of Flora.

Physical characteristics

Reserve 32865 is approximately rectangular, ca 4.6 km long (N - S axis) by ca 1.2 km broad (E - W axis). It has a total perimeter of ca 11.6 km and an area of 630.8669 ha. No contour maps are available. A visual estimate gives topographic range as being ca 50 m.

Vegetation

Most of the Reserve is a mosaic of Salmon Gum Open Woodland and York Gum Low Forest A. There are also granite outcrops and an area of Casuarina acutivalvis Thicket.

Plant species

Thirty-nine species were recorded, of which 19 are exploited by the wildflower seed trade. Acanthocarpus sp. 1 is an undescribed species widespread in the wheatbelt and western goldfields.

Nest hollows

Common in woodland and mallee areas. Very few young trees present.

Weeds

None recorded.

Fire history

Most of the Reserve has probably not been burnt for at least 30 years. Portions of the S end may be less than 20 years old.

Fauna

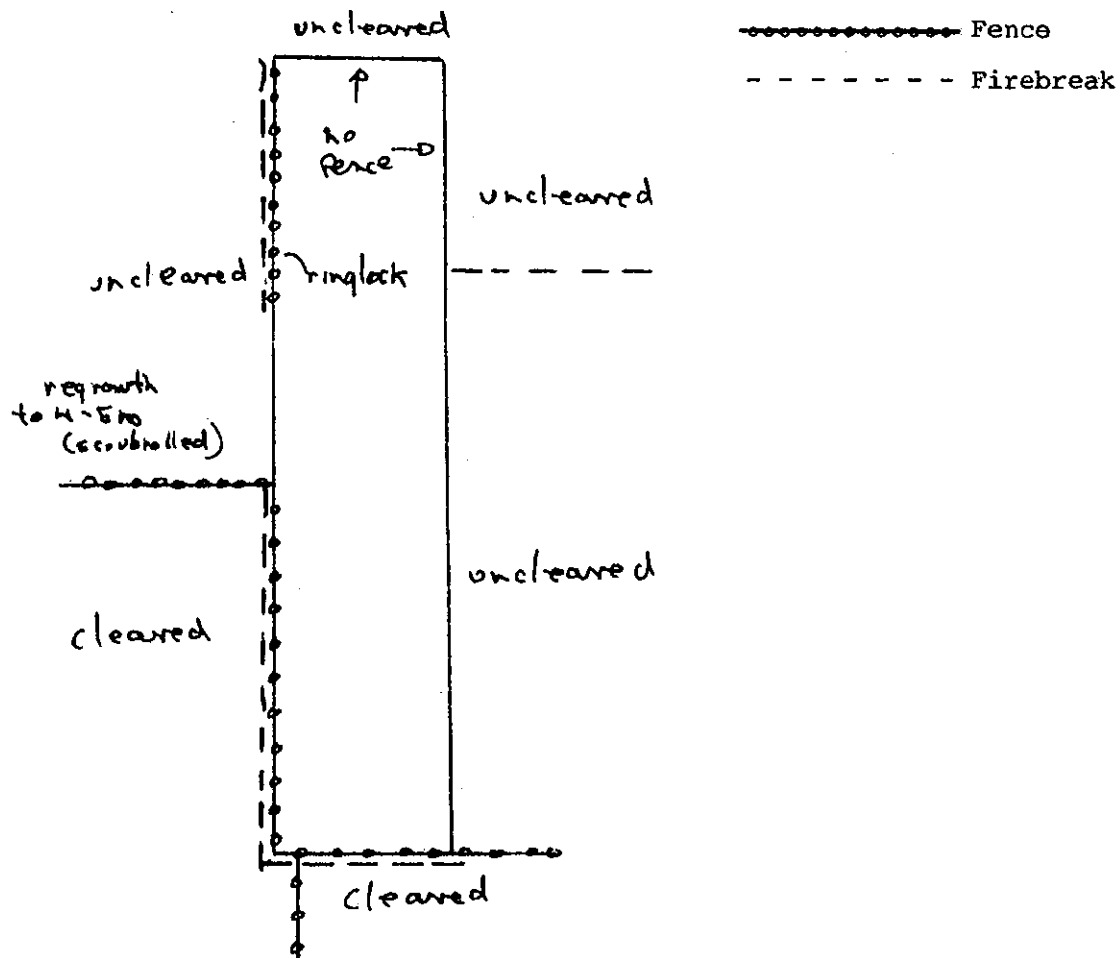
Black-shouldered Kite (Elanus notatus): 1 in woodland near granite area.
 Port Lincoln Parrot (Platycercus zonarius): common, particularly in woodland.
 Western Shrike-thrush (Colluricincla harmonica rufiventris): 1 in York Gum mallee.
 Weebill (Smicrornis brevirostris): common in eucalypts.
 Chestnut-rumped Thornbill (Acanthiza uropygialis): several seen in shrubland.
 Yellow-rumped Thornbill (A. chrysorrhoea): common in York Gum mallee.
 Magpie-lark (Grallina cyanoleuca): 4 on SW corner.

Exotic fauna

Rabbit scats throughout Reserve, Cattle pads and footprints in woodland and mallee area.

Firebreaks and fences

As shown on diagram



Human usage

Timber cut from woodlands. Cattle probably deliberately grazed in Reserve.

Adjacent uncleared land

Extensive uncleared land to E, N and NW of Reserve. Yilgarn Locations 1489, 1469 and 1449 are probably entirely uncleared, but were not examined.

Opinion and recommendations

Reserve 32865 is in good condition despite some cattle browsing. The understory is varied and fairly rich in species. This Reserve and Reserve 32864, ca 4 km further E form, together with the uncleared land between the Reserves, an excellent area of relatively undisturbed bushland ca 3500 ha in area. Such an area would make an excellent Reserve if the adjacent privately held land could be obtained. Although still small (only 3 or 4 large woodland-mallee reserves exist in the wheatbelt) it would prove valuable in the future as land clearing progresses to the east. Within 10 years both Reserve 32865 and 32864 will almost certainly be isolated. I recommend that action be taken to determine the source of cattle which are in the Reserve and to have them removed. I also recommend that Reserve 32865 be vested in the Western Australian Wildlife Authority.

APPENDIX 6

Reserve 32865

Salmon Gum woodland

Eucalyptus salmonophloia trees, 12-20 m tall, ca 2-3% canopy cover over Bassia diacantha and mixed shrubs 0.5 m tall, 2-10% cover. Localised patches of E. loxophleba tree mallee to 30-70% cover. Other species recorded were: Acacia acuaria, A. acuminata, A. colletioides, A. erinacea, A. multispicata, Atriplex paludosa, Cassia nemophila, Eremophila decipiens, E. drummondii, E. oppositifolia, Exocarpus sparteus, Olearia exiguifolia, O. muelleri, Ptilotus exaltatus, P. obovatus, Rhagodia nutans, Santalum acuminatum, S. spicatum, Scaevola spinescens, Solanum lasiophyllum, S. nummularium. Soil reddish brown, sandy clay. Moderately drained.

Casuarina shrubland

Casuarina acutivalvis shrubs, 3-5 m tall, 30-70% cover with no understory. Other species present were Acacia filifolia, Amphipogon debilis, Eriostemon deserti, Micromyrtus drummondii, Olearia pimelioides. Pink, sandy clay, with ca 90% laterite pebbles. Well drained.

Lithic complex

Bare areas of granite with fringing clumps of shrubs or scattered plants on shallow soil. Species present were: Acacia acuaria, Acanthocarpus sp. 1, Borya nitida, Callitris verrucosa, Casuarina campestris, Dodonaea inequifolia, Eremophila decipiens, Leptospermum erubescens, Melaleuca radula, M. uncinata, Spartochloa scirpoidea.

Reserve 32864

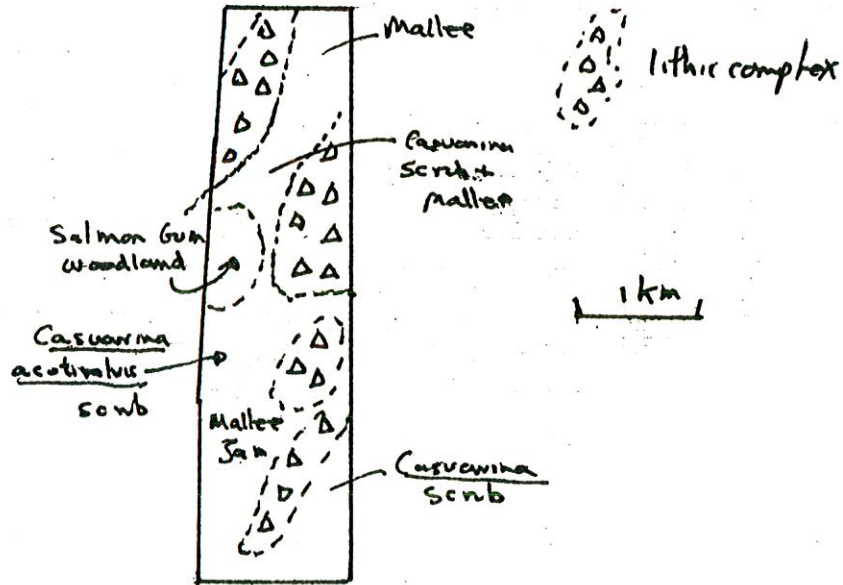




Plate 18. Salmon Gum woodland on Reserve 32865. Patch of E. loxophleba in centre background.



Plate 19. Casuarina acutivalvis shrubland with no understory.



Plate 20. Lithic complex on Reserve 32865. In these areas Borya nitida development is maximal and the majority of large shrubs occupy the fringes.



Plate 21. Where soils are deeper and on lithic fringes stands of Broombush develop.

Reserve 32993

Located 35 km NE Mukinbudin Townsite and shown on lithograph 54/80, Cl.

Background

Originally set aside 6 December 1974 for Conservation of Flora and Fauna.

Physical characteristics

Reserve 32993 is triangular, with a total perimeter of ca 3 km and an area of 40.5597 ha. No contour maps are available and the only spot altitude is ca 354 m above sea level, ca 4 km SW of the Reserve. The Reserve is very flat, probably with less than 2 m difference in its overall altitudinal range.

Vegetation

The entire Reserve is covered with Gimlet Open Low Woodland A over patchy mixed shrubs.

Plant species

A total of 25 plant species were recorded, 13 of which are exploited by the wildflower seed trade.

Nest hollows

Abundant nest hollows but very few young trees.

Weeds

Mostly small ephemerals.

Fire history

Not burnt for at least 30 years. The understory is sparse and may never support fire.

Fauna

Grey Kangaroo (Macropus fuliginosus): footprints and scats seen.

Echidna (Tachyglossus aculeatus): scats in hollow log.

Port Lincoln Parrot (Platycercus zonarius): common.

Mulga Parrot (P. varius): 3 seen along fence line on E side, 1 male and 2 females.

Galah (Cacatua roseicapilla): common.

Weebill (Smicrornis brevirostris): common.

Magpie-lark (Grallina cyanoleuca): several seen and heard.

Western Magpie (Cracticus tibicen dorsalis): several seen.

Exotic fauna

None recorded.

Firebreaks and fences

Fenced on all sides with no gate. Firebreaks provided by road on NW side, track on E side and in farmland on S side.

Human usage

Some timber removed.

Adjacent uncleared land

The E boundary of the Reserve is the rabbit-proof fence. All the area to the E of this fence, in the vicinity of the Reserve, is uncleared. A small Water Reserve (13568) (16 ha) is contiguous with the NE corner of Reserve 32993.

Opinion and recommendations

Although poor in numbers of associations and plant species the Reserve has considerable value as a resting and nesting place for birds. Clearing E of the rabbit-proof fence is very rapid in this area and the Reserve will probably become isolated within the next 10 years. Its value will then be much enhanced. It would be advantageous to add sections of uncleared land (eg Yilgarn loc. 1168) to the Reserve while opportunity exists. I recommend that Reserve 32993 be vested in the Western Australian Wildlife Authority.

APPENDIX 7

Reserve 32993

Gimlet woodland

Eucalyptus salubris trees 6-14 m tall and some E. salmonophloia to 24 m tall, 2-10% cover over patchily distributed mixed shrubs 1 m tall, 2-3% cover. Other species recorded were: Acacia acuminata, A. colletioides, A. erinacea, A. tetragonophylla, Amphipogon debilis, Atriplex paludosa, Bassia diacantha, Daviesia nematophylla, Dianella revoluta, Enchylaena tomentosa, Eremophila oppositifolia, Eucalyptus loxophleba, E. transcontinentalis, Hakea decurva, Hibbertia affin. glomerosa, Olearia muelleri, Ptilotus obovatus, Rhagodia nutans, Santalum acuminatum, S. spicatum, Stipa elegantissima, Zygophyllum glaucescens, Z. idiocarpum. Soil is red, gritty, light clay. Poorly drained.

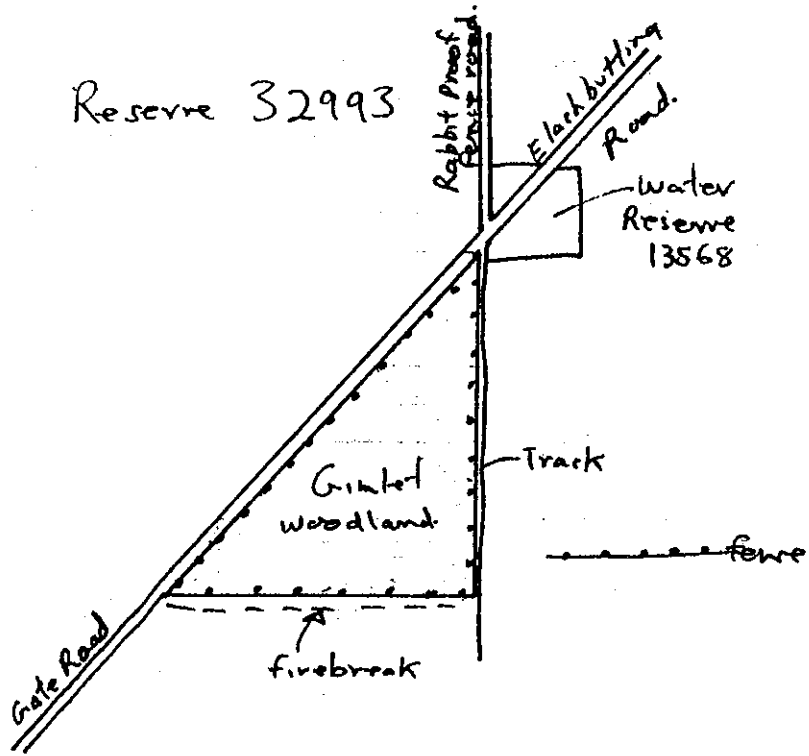




Plate 22. Salmon Gum woodland with some Gimlet on Reserve 32993. Understory sparse and mainly Atriplex.



Plate 23. Greater development of understory, particularly Jam and Acacia microbotrya on SE corner of Reserve. Rabbit proof fence in foreground. The fence is in good condition.

