

## V Discussion

R.A. How, J. Dell, A.V. Milewski & G.J. Keighery

The Duketon-Sir Samuel Study Area has representatives of all the landform types recorded in the Eastern Goldfields, although not all are extensive in area. Some such as Dunefields occur in small and generally isolated expanses adjacent to Salt Lake Features or on Sandplains, while Granite Exposures are rare. The salt Lake Maitland and Lake Darlot and their associated drainages are central to the Study Area, which traverses the boundary between the Austin and Helms Botanical Districts of the Eremaean Botanical Province.

All vegetation surveys and sampling was conducted within the Austin Botanical District which covers over 85% of the Study Area. The eastern part of the Study Area which lies in the Helms Botanical District is characterised by sandsheets more characteristic of the Great Victoria Desert to the east.

The Broad Valleys and Undulating Plains which dominate the Study Area are covered by extensive areas of Mulga (*Acacia aneura*) woodland with an understory of grasses. This vegetation type is the focus for most of the grazing that occurs extensively throughout, and has been badly degraded on several pastoral leases where mulga remains as dead skeletons and numerous apparently unpalatable low shrubs form an understory.

The fauna of the Study Area was shown to be characteristic of the arid inland areas of Western Australia and very few species were at the extremes of their range. The fact that the February 1980 survey occurred soon after heavy rains associated with the passage of remnants of cyclones Dean and Enid permitted sampling to occur when conditions were exceptionally favourable to the activity and breeding of many vertebrate species. It is probable that the majority of species likely to occur in the survey area were recorded, a supposition supported to some extent by Figures 4 and 5.

Landforms not represented by faunal sampling sites were Breakaways, Dunefields, Granite Exposures, Hills, Calcareous Plains and Undulating Plains. However, small areas of Calcareous Plains and Hills (granite) are present in the vicinity of the faunal study sites at Banjawarn and were visited briefly by the faunal survey team. The major landform not sampled in this Study Area therefore appears to be plains with a stony, partly shallow soil developed over basic rocks, i.e. the landform of the 'greenstone belts'. This landform includes some of the most favoured pastoral country and its vegetation characteristically consists of low, open, clumped, degraded succulent steppe (*sensu* Beard 1976).

A landform particularly well covered by the faunal survey is Drainage Lines. The faunal survey team camped in a drainage line with woodland of *Eucalyptus camaldulensis* and studied several variants of the type including bare washes, floodplain and slightly raised levee banks. Drainage Lines occupy only a small area in System 11 and their coverage in this Region is therefore fortunate. They appear to be the habitat of several interesting plant species and communities. A landform of similar interest and importance is Breakaways, which were not adequately sampled in this Region.

**Table 5.** Landforms in the Duketon-Sir Samuel Study Area, showing geological units and vegetation sample sites (Appendix 1) and conservation status (1 = very well conserved, 2 = moderately well conserved, 3 = moderately conserved, 4 = moderately poorly conserved, 6 = threatened). Geological units are those used by Bunting and Chin (1979), and Bunting and Williams (1979).

Landform	Geological Units	Vegetation Sample Site No.	Conservation Status
1. Breakaways (B)	—	1	4
2. Drainage Lines (C)	part of Qpv	2	4
3. Dunefields (D)	part of Qrs, Qps, Qpk	3, 4	4
4. Granite Exposures (G)	part of Qpm, Ag	5	4
5. Hills (i) Basalt (HB)	Ab, Abt, Abu	6	4
(ii) Granite (HG)	Agm, Ag, Agb, Agr, Agl,		
Agx, Aub, Am, Anl	7	4	
(iii) Quartz (HQ)	—	(see text)	4
(iv) BIF (HI)	Aiw, Aic, Aif	—	?
6. Salt Lake Features (L)	(?Ql, Tk) Qra, Qrs, Qrm	8, 9, 10	4
7. Calcareous Plains (P)	Czk	11, 12	5
8. Sandplains (S)	(? Ts), Qps	13	2
9. Undulating Plains (U)	Tl, part of Qc or Qqc,		
	Qqf, Czl	14, 15, 16	5
10. Broad Valleys (V)	Qz or Qq3, part of Qqc, Qpv	17, 18, 19, 20, 21	5

The conservation status of the Study Area may be assessed at the levels of (i) vegetation systems, after Beard (1976), (ii) landforms used in this study (see Table 5), (iii) plant communities and (iv) special features in the landforms of the Region.

According to Beard (1976), three phytogeographic zones can be recognized in this Region. The Wiluna sub-region of the Austin Botanical District occupies the northwestern corner. The Laverton sub-region of the same District occupies the remainder except for the northeastern section which falls within the Helms Botanical District. There are no existing conservation areas in the Study Area with the exception of a small eastern edge of Wanjarri Wildlife Reserve which just extends into the region on the western border. The landforms conserved in this Wildlife Reserve, within the Duketon-Sir Samuel Study Area are very limited areas of Sandplain, Dunefields and Hills of the Wiluna sub-region. The Helms Botanical District has a relatively good conservation status because it is generally unoccupied by pastoral leases and seldom used even by Aboriginal people.

This leaves the Laverton sub-region which has no conservation areas and is entirely occupied by pastoral leases. The conservation status of this vegetation system must be considered poor in view of the widespread degradation of the mulga vegetation here. Within this vegetation system, some landforms and plant communities are particularly threatened owing to the virtual removal of the tree layer. Elevated stony plains, whether on granite (Broad Valleys) or on basic rocks (Undulating Plains), as well as wanderrie

plains (Broad Valleys) are examples. However, owing to the vastness of the area, and the fairly wide habitat tolerance of the species occupying these communities, no plant species is known to be under direct threat of extinction, either in the Region as such or over its entire range. Overgrazing and trampling are seen as major factors to be considered in future conservation policies for the Region.

Consideration should be given to establishing a representative conservation reserve particularly to represent the landforms in the central part of the Study Area. Such a reserve would also provide a large area of ungrazed Mulga woodland which appears to be essential to the movement and breeding of nomadic bird species in the arid zone, and advantageous to ground vertebrates that are adversely affected by heavy grazing pressures.

## VI Acknowledgements

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## Appendix I

### Description of Vegetation Sites

Site descriptions, giving details of vegetation structure, floristic composition, topography and soils. All site descriptions were based on fieldwork by AVM between January 1980 and August 1983. Additional data and voucher specimens for sites DS2, DS9, DS10, DS17, DS18, and DS21 were collected by GJK during October 1987.

### BREAKAWAY (B)

#### LOW WOODLAND

DS1 *Acacia aneura* Low Woodland

LOCATION: near Melrose Station homestead (27°54'S lat., 121°18'E long.)

#### VEGETATION

MUIR: LBr.SDr

Stratum 1: 3-5 m, CC 6%, clumping moderate *Acacia aneura* (narrow-phyllode form, with needle-phyllode form on the steeper slopes directly on basalt) (4), *Acacia quadrimarginea* # (\*), *Grevillea* sp. indet. # (+), *Eremophila oldfieldii* subsp. *angustifolia* # (+), *Amyema preissii* (+), *Acacia stowardii* (+); 2 other spp.

Stratum 2: 1.5-3 m, CC less than 1%, clumping moderate *Acacia tetragonophylla* (+), *Hakea arida* (+), *Acacia craspedocarpa* (+), *Eremophila fraseri* (+); 2 other spp.

Stratum 3: 0.5-1 m, CC less than 1%, clumping moderate *Eremophila latrobei* (+), *Scaevola spinescens* (+), *Sida calyxhymeria* (+); 5 other spp.

Stratum 4: 0.2-0.5 m, CC 6%, clumping moderate *Ptilotus obovatus* # (2), *Ptilotus drummondii* (+), *Solanum lasiophyllum* (+), *Frankenia* sp. indet.\*

Stratum 5: 0-0.2 m, CC up to 5% in season, clumping moderate. Ephemeral species: *Ptilotus exaltatus* (+), *Atriplex lindleyi*\* (+) possibly up to 15 other spp. not identifiable at time of visit.

No. of TAXA: ca. 50.

LAST BURNT: probably never flammable but evidence of intensive mining activity in the past, suggesting that at that time all the trees would have been removed.

#### COMMENTS:

# = species found only on the flatter (laterite soil) side.

\* = species found only on the saline slopes on the lower part of the cliff side (a patch of samphire is found at the base).

#### SOIL

BEDROCK: Basalt

MAIN ORIGIN: *in-situ* weathering

PROFILE THICKNESS: variable

PROFILE ATTRIBUTE: lateritized and saline

SOIL SURFACE

ROCK: Variable

Stone: Variable

Pavement: Variable

Note: Only the actual breakaway edge is laterite, the rest of the area skeletal soil over basalt. The soil is very stony throughout. Salt effloresces locally at the surface, apparently gypsum ( $\text{CaSO}_4$ ), and a crystal of gypsum was found in the colluvium (on an old mine mullock heap).

LITTER: no data

SOIL PROFILE (not augered)

A (on salt side) 2.5YR 3/4 dark reddish brown stony Loam.

B or C probably scree detritus dominated by basalt rocks.

COMMENTS: When dry, topsoil is 2.5Yr 4/6 red.

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#### DRAINAGE LINE (C)

LOW WOODLAND

DS2 *Eucalyptus camaldulensis* Low Woodland (Plates 3 and 4)

LOCATION: Banjarn Station (27°47'S lat., 121°39'E long.)

FAUNA SAMPLED: Yes

VEGETATION

MUIR: LAi.[Ji]

Stratum 1: Trees 10-15 m, CC 10%, clumping moderate *Eucalyptus camaldulensis* (10).

Stratum 2: Shrubs 3-5 m, CC <1%, clumping moderate *Acacia acuminata* (+), *Hakea arida* (+).

Stratum 3: Shrubs 1.5-2.5 m, CC <1%, clumping moderate *Acacia victoriae* (+), *Acacia tetragonophylla* (+).

Stratum 4: Shrubs 0.5-1 m, CC >1%, clumping strong *Enchylaena tomentosa* (+), *Cassia nemophila* (+), *Sida* sp. (+).

Stratum 5: Shrubs 0.2-0.5 m, CC >1%, clumping strong *Cyperus gymnocaulos* (+), *Rhgodia* sp. (+), *Senecio magnificus* (+), *Streptoglossa* sp. (+), *Solanum lasiophyllum* (+), *Scaevola spinescens* (+), *Atriplex vesicaria* (+), *Ptilotus obovatus* (+), *P. symonii* (+), *Sclerolaena* sp. (+).

Stratum 6: 0-0.2 m, CC up to 20% in season, clumping moderate. Ephemerals: *Centipeda thespidioides* (+), *Daucus glochidiatus* (+), *Alternanthera nana* (+), *Marsilea hirsuta* (+) (in bed of ox-bow only).



No. of TAXA: 18 + ephemerals      LAST BURNT: Ridge between ox-bow and creek  
>10 years. Remainder not flammable.

#### LANDFORM

BEDROCK: Unknown

MAIN ORIGIN: Alluvial

PROFILE THICKNESS: Probably more than 3 m judging from depth of creek-banks.

PROFILE ATTRIBUTE: Very heavy texture except for sandy alluvial ridges.

#### SOIL

ROCK: Nil

STONE: Nil

PAVEMENT: Nil

NOTE: Surface finely cracking on ox-bow.

LITTER: Broad leaves almost continuous in ridge; ox-bow bare. A few eucalypt logs.

#### SOIL PROFILE

A 0-80 cm 2.5 yr 3/4 dark reddish brown Clay. Sandy alluvium on ridge bank.

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### DUNEFIELD (D)

#### LOW WOODLAND

DS3 *Eucalyptus gongylocarpa* Low Woodland

LOCATION: Wanjarri Wildlife Reserve (27°24'S lat., 120°42'E long.)

#### VEGETATION

MUIR: LAr.Hi

Stratum 1: 6-10 m, CC 4%, clumping slight *Eucalyptus gongylocarpa* (4).

Stratum 2: 4-5 m, CC less than 1%, clumping slight *Acacia aneura* (+); 2 other spp.

Stratum 3: 1.5-2 m, CC 2%, clumping moderate *Acacia* sp. aff. *A. coolgardiensis* (+),  
*Acacia ligulata* (+); 4 other spp.

Stratum 4: 0.5-1.0 m, CC 2%, clumping moderate *Cassia nemophila* (+), *Eremophila*  
*leucophylla* (+), *Halgania* sp. indet. (+); 4 other spp.

Stratum 5: 0.2-0.4 m, CC 22%, clumping absent *Triodia basedowii* (20), *Solanum*  
*lasiophyllum* (+), *Ptilotus polystachyus* (+); 3 other spp.

Stratum 6: 0-0.2 m, CC up to 1% in season, clumping strong. Ephemerals: *Helichrysum*  
*davenportii* (+), *Waitzia acuminata* (+), *Brunonia australis* (+),  
*Stenopetalum anfractum* (+), *Calandrinia polyandra* (+), *Erodium*  
*cygnorum* (+), *Helipterum maryonii* (+), *Calotis hispidula* (+), *Vittadinia* sp.  
indet. (+); 6 other spp.

No. of TAXA: 37

LAST BURNT: >20 years

COMMENTS: Included in this landform, despite absence of dune slopes, owing to its very deep loose sandy soil.

SOIL

BEDROCK: Granite

MAIN ORIGIN: Aeolian

PROFILE THICKNESS: Probably more than 3 m.

PROFILE ATTRIBUTE: Deep, loose, siliceous.

SOIL SURFACE

ROCK: Nil

STONE: Nil

PAVEMENT: Nil

NOTE: Soil very poor in all nutrients. Soil slightly more compact at depth to auger than topsoil, but profile essentially uniform. Loose mantle of sand 0.5-1 cm deep lies on a crust over loose sand. The hardset surface is exposed over about 5% of the area.

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DS4 *Acacia aneura* Low Woodland

LOCATION: Melrose Station (27°48'S lat., 121°19'E long.)

VEGETATION

MUIR: LAiGTiJr

Stratum 1: 4-5 m, CC 20%, clumping weak *Acacia aneura* (broad-phyllode form) (20), *Amyema preissii* parasite on *A. aneura*.

Stratum 2: 2.5-4 m, CC 4%, clumping moderate *Acacia linophylla* (1), *Santalum spicatum* (+), *Acacia murrayana* (+), *Grevillea sarissa* (+); 2 other spp.

Stratum 3: 1-2 m, CC 1%, clumping moderate *Eremophila leucophylla* (+), *Rhagodia eremaea* (+), *Cassia nemophila* (+); 2 other spp.

Stratum 4: 0.6-1 m, CC 15%, clumping slight *Eriachne helmsii* (8), *Eragrostis eriopoda* (1), *Monocather paradoxa* (+); 4 other spp.

Stratum 5: 0-0.5 m, CC 5% in season, clumping moderate. Ephemeral species: *Ptilotus polystachyus* (2); up to 10 other spp. not identifiable at time of visit.

No. of TAXA: ca. 31

LAST BURNT: >10 years

COMMENTS: *Triodia* absent. The landform is undulating rather than definitely duned, with small-scale, patternless dune-swales of low relief.

SOIL

BEDROCK: Unknown

MAIN ORIGIN: Aeolian

PROFILE THICKNESS: Deep, probably >3 m.

PROFILE ATTRIBUTE: Siliceous sand.

SOIL SURFACE

ROCK: Nil

STONE: Nil

PAVEMENT: Nil

NOTE: No rock material of any kind present.

LITTER: No data

#### SOIL PROFILE

A 0-80 cm 2.5YR 3/4 dark reddish brown Loamy Sand

B Unknown

C Unknown

COMMENTS: Deep loose soil, uniform to depth augered (80 cm).

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#### GRANITE EXPOSURE (G)

#### LOW WOODLAND

DS5 *Acacia aneura* — *Hakea suberea* Low Woodland

LOCATION: Mt Blackburn (27°34'S lat., 121°19'E long.)

VEGETATION MUIR LAr.Sr.SDr.GLr

Stratum 1: 5-7 m, CC 8%, clumping slight *Hakea suberea* (3), *Acacia aneura* (form with narrow, lax, slightly rusty phyllodes) (3), *Amyema preissii* (1); 1 other sp.

Stratum 2: 3-4.5 m, CC 6%, clumping moderate *Acacia tetragonophylla* (2), *Eremophila longifolia* (1), *Acacia victoriae* (1), *Pittosporum phylliraeoides* (+); 4 other spp.

Stratum 3: 1.8-3 m, CC 3%, clumping moderate *Eremophila fraseri* (+), *Leichardtia australis* (+); 3 other spp.

Stratum 4: 0.6-1.5 m, CC 2%, clumping strong *Rhagodia eremaea*; 4 other spp.

Stratum 5: 0.2-0.5 m, CC 8%, clumping strong *Enneapogon caeruleus* (1), *Solanum lasiophyllum* (+), *Ptilotus obovatus* (+), *Senecio magnificus* (+); 7 other spp.

Stratum 6: 0-0.2 m, CC up to 80% in season, clumping moderate. Ephemeral species: *Aristida contorta* (3), *Chenopodium melanocarpum* (3); up to 25 other spp. not identifiable at time of visit.

No. of TAXA: ca. 60

LAST BURNT: Probably not flammable.

COMMENTS: *Amyema* spp. (mistletoes) are noticeably abundant.

#### SOIL

BEDROCK: Granite

MAIN ORIGIN: Colluvial

PROFILE THICKNESS: About 4 m.

PROFILE ATTRIBUTUE: Feldspar-rich, at depth slightly calcareous.

#### SOIL SURFACE

ROCK: Nil

STONE: Nil

PAVEMENT: 1% (quartz and limestone).

NOTE: A drainage channel 1-2 m wide is present, filled with coarse, deep, loose material.

LITTER: No data.

SOIL PROFILE (augered to 80 cm)

A 0-60 cm 5YR 3/6 dark red Loamy Sand grading to

B 60-80 cm 2.5 YR 3/6 dark red very gritty Sandy Loam (below 80 cm probably similar but with some lime).

C weathered bedrock of granite, presumably.

COMMENTS: Possibly the most chemically fertile soil in the Region, with relatively high availability of potassium and moderate amounts of phosphorus and calcium. Uniform to auger to 80 cm but subsoil noticeably grittier, clayier and redder than topsoil. Topsoil has 1% inclusions, subsoil 5% inclusions comprising irregular quartz fragments 2-10 mm. There is no trace of lime in the augered profile but there are surface indications of lime nearby.

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## HILLS (H)

### TALL SHRUBLAND

DS6 *Acacia aneura* Tall Shrubland

LOCATION: Barwidgee Station (27°12'S lat., 120° 58'E long.)

### VEGETATION

MUIR: Sr

Stratum 1: 3-5 m, CC 10%, clumping slight *Acacia aneura* (needle-phyllode form with a small admixture of narrow-phyllode form) (5), *Acacia quadrimarginea* (narrow-phyllode form) (3); 1 other sp.

Stratum 2: 1.8-3 m, CC 3%, clumping slight *Acacia linophylla* (+), *Acacia burkittii* (+), *Acacia tetragonophylla* (+), *Santalum spicatum* (+); 3 other spp.

Stratum 4: 0.6-1.5 m, CC 3%, clumping slight *Cassia desolata* (1), *Sida calyxhymenia* (+), *Dodonaea filifolia* (+), *Cassia sturtii* (+), *Rhagodia eremaea* (+), *Maireana planifolia* (+); 4 other spp.

Stratum 5: 0-0.2 m, CC up to 20% in season, clumping moderate. ephemeral species: None apparent at time of visit.

No. of TAXA: ca. 40

LAST BURNT: Probably not flammable.

COMMENTS: Height of vegetation decreases upslope, being only 3 m at the top of the hill.

## SOIL

BEDROCK: Metabasalt, including some gabbro crystalline, striped.

MAIN ORIGIN: *In-situ* weathering

PROFILE THICKNESS: 0-20 cm

PROFILE ATTRIBUTE: Stony, basic, very shallow soil

## SOIL SURFACE

ROCK: 5%

STONE: 20%

PAVEMENT: 30%

NOTE: Rock fragments are dark and angular

LITTER: No data

## SOIL PROFILE (not augered)

A 0-5 cm Stony to rocky, 2.5YR 3/4 dark reddish brown Loam

B or C Rocky subsoil grading to bedrock

COMMENTS: Stones are about 10 cm diameter, generally smaller and more even-sized than on Hill of Quartz (described in text). No trace of calcrete was visible at the surface although the bedrock under a mantle of shallow soil is possibly capped by a thin skin of CaCO<sub>3</sub> as occurs elsewhere in System 11.

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## HILLS (of granite HG)

### TALL SHRUBLAND

DS7 *Acacia quadrimarginea* Tall Open Shrubland

LOCATION: Mt Blackburn (27°34'S lat., 121°19'E long.)

### VEGETATION

MUIR Si.SCr.GLr.

Stratum 1: 3-4 m, CC less than 1%, clumping slight *Acacia quadrimarginea* (+), *Pittosporum phylliraeoides* (+); 1 other sp.

Stratum 2: 1-2 m, CC less than 1%, clumping slight *Eremophila fraseri* (+), *Acacia tetragonophylla* (+); 1 other sp.

Stratum 3: 0.2-0.8 m, CC 4%, clumping slight *Ptilotus obovatus* (1), *Eragrostis dielsii* (+), *Solanum lasiophyllum* (+), *Sclerolaena convexula* (+), *Podolepis capillaris* (+); 8 other spp.

Stratum 4: 0-0.2 m, CC up to 10% in season, clumping moderate. Ephemeral species: None identifiable at time of visit; possibly up to 20 spp. present.

No. of TAXA: ca. 39

LAST BURNT: Not flammable

COMMENTS: Euros, *Macropus robustus*, were common at the time of the visit and probably exert a significant grazing pressure.

SOIL

BEDROCK: Granite

MAIN ORIGIN: *In-situ* weathering

PROFILE THICKNESS: Maximum 50 cm

PROFILE ATTRIBUTE: Skeletal, acidic

SOIL SURFACE

ROCK: 20%

STONE: 30%

PAVEMENT: 40%

NOTE: Cover of rock, stones and pavement variable owing to uneven nature of the surface, which forms a gentle slope of an extensive outcrop of granite. However, large, even, flat sheets of bedrock are absent.

LITTER: No data

SOIL PROFILE (not augered)

A 0-10 cm 2.5YR 3/4 dark reddish brown Sandy Loam. Soil skeletal over bedrock granite.

COMMENTS: The bedrock here is unusual in being a relatively pure granite, with the potassium oxide content exceeding the sodium oxide content.

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SALT LAKE FEATURE (L)

LOW WOODLAND

DS8 *Acacia aneura* — Low Woodland

LOCATION: Melrose Station (27°48'S lat., 121°19'E long.)

VEGETATION

MUIR LBr.Sci

Stratum 1: 4-6 m, CC 3%, clumping strong *Acacia aneura* (3), *Pittosporum phylliraeoides* (+), 3 other spp.

Stratum 2: 1.5-3 m, CC 3%, clumping strong *Acacia tetragonophylla* (+), *Exocarpos aphyllus* (+), *Santalum acuminatum* (+), *Leichhardtia australis* (+), *Amyema preissii* (+); 5 other spp.

Stratum 3: 0.4-1 m, CC 10%, clumping slight *Cratystylis subspinescens* (+), *Maireana pyramidata* (+), *Rhagodia eremaea* (+), *Ptilotus obovatus* (+), *Eremophila delisseri* (+), *Maireana georgei* (+), *Scaevola spinescens* (+), *Ptilotus lazaridis* (+); 7 other spp.

Stratum 4: 0-0.2 m, CC up to 20% in season, clumping moderate. Ephemeral species: *Eragrostis dielsii* (+); up to 20 other spp. not identifiable at time of visit.

No. of TAXA: ca.53

LAST BURNT: Probably not flammable

SOIL

BEDROCK: Unknown

MAIN ORIGIN: Colluvial

PROFILE THICKNESS: Unknown

PROFILE ATTRIBUTE: Siliceous hardpan

SOIL SURFACE

ROCK: Nil

STONE: Nil (a few quartz stones immediately adjacent)

PAVEMENT: Noticeable granite-like gritty component in general topsoil

NOTE: Occasional film of salt on surface, possibly gypsum (CaSO<sub>4</sub>); elsewhere scattered occurrence of clayier surface, slightly cracking.

LITTER: No data

SOIL PROFILE (augered to 30 cm)

A 0-30 cm 2.5YR 3/4 dark reddish Sandy Loam

B Below 30 cm Siliceous hardpan, essentially consisting of sandy loam which has been compacted to an extreme degree.

C Unknown

COMMENTS: subsoil probably highly sodic.

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LOW SHRUBLAND

DS9 *Halosarcia halocnemoides* Low Shrubland

LOCATION: Banjawarn Station (27°48'S lat., 121°39'E long.)

FAUNA SAMPLED: Yes

VEGETATION

MUIR: SDi

Stratum 1: Shrubs 0.2-0.5 m, CC 20%, clumping absent. *Halosarcia halocnemoides* (16), *Halosarcia doleiformis* (+), *Gunniopsis quadrifida* (+), *Frankenia desertorum* (+), *Maireana* sp. (+), *Podolepis capillaris* (+).

Stratum 2: 0-0.2 m, CC up to 20% in season, clumping moderate. Ephemerals: *Eragrostis dielsii* (+), *Aristida contorta* (+), *Stenopetalum sphaerocarpum* (+), *Eragrostis* sp. (+), *Gunniopsis ?septifraga* (+), *Atriplex spongiosa* (+), *Lepidium* sp. (+), *Angianthus* sp. (+). In 1981 A.V. Milewski recorded *Angianthus cornutus* (5), *Triglochin centrocarpa* (+), *Stenopetalum robustum* (+).

No. of TAXA: ca. 14+ ephemerals

LAST BURNT: Not flammable

## LANDFORM

BEDROCK: Unknown

MAIN ORIGIN: Alluvial

PROFILE ATTRIBUTE: Saline

ROCK: Nil STONE: Nil PAVEMENT: Nil

NOTE: Soil unusually sandy for a samphire area.

LITTER: A few dead *Halosarcia* shrubs.

SOIL PROFILE (augered to 80 cm)

A 0-30 cm 2.5 yr 3/4 dark reddish brown Loamy Sand.

B 30-80 cm 2.5 yr 3/4 dark reddish brown Sandy Clay Loam.

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## HUMMOCK GRASSLAND

DS10 *Triodia plurinervata* Hummock Grassland (Plate 2)

LOCATION: Banjawarn Station (27°47'S lat., 121°39'E long.)

FAUNA SAMPLED: Yes

VEGETATION

MUIR: Hi

- Stratum 1: Trees 5-7 m, CC 1%, clumping slight *Acacia aneura* (1), *Amyema maidenii* (parasite on *A. aneura*) (+).
- Stratum 2: Shrubs 3-4.5 m, CC 1%, clumping moderate *Santalum spicatum* (+), *Hakea arida* (+), *Acacia victoriae* (+), *Acacia tetragonophylla* (+).
- Stratum 3: Shrubs 1.2-2.5 m, CC <1%, clumping moderate *Grevillea sarissa* (+). By 1987 1/3 of area had been recently burnt; the *Rhagodia drummondii* and 3 other unnamed species indicated by A.V. Milewski in 1981 were not present.
- Stratum 4: Shrubs 0.5-1 m, CC 1%, clumping moderate *Cassia nemophila* (+), *Enchylaena tomentosa* (+), *Atriplex vesicaria* (+), *Lycium australe* (+), *Maireana pyramidata* (+). A.V. Milewski in 1981 recorded *Scaevola spinescens* (+) and *Cratystylis subspinescens* (+).
- Stratum 5: Perennial Grasses and shrubs 0.2-0.5 m, CC 25%, clumping slight *Triodia plurinervata* (23), *Senecio magnificus* (+) (in burnt area only), *Solanum plicatile* (+), *Podolepis capillaris* (+), *Frankenia* sp. (+), *Solanum lasiophyllum* (+), *Sclerolaena diacantha* (+), *Gunniopsis quadrifida* (+), *Sclerolaena* sp. (+), *Kippistia suaedifolia* (+).
- Stratum 6: 0-0.2 m, CC <1%, clumping moderate. Ephemerals: *Enneapogon nigricans* (+), *Eriachne helmsii* (+), *Euphorbia drummondii* (+), *Stipa* sp. (+), *Ptilotus* sp. (+), *Ptilotus exaltatus* (+), *Eragrostis eriopoda* (+). In 1981 A.V. Milewski also recorded *Chrysocoryne pusilla* (+), *Eragrostis dielsii* (+), and *Crassula colorata* (+).



No. of TAXA: 25 + ephemerals

LAST BURNT: >10 years; about 1/3 of area <1 year.

LANDFORM

BEDROCK: Unknown

MAIN ORIGIN: Aeolian

PROFILE THICKNESS: Probably greater than 2 m

PROFILE ATTRIBUTE: Siliceous, nutrient-poor

SOIL

ROCK: Nil STONE: Nil PAVEMENT: 1%, patchy

NOTE: Pavement consists of irregular fragments of calcrete. Hardsetting

LITTER: Nil except for a few leaves under shrubs.

SOIL PROFILE

A 0-50 cm 2.5 YR 3/4 dark reddish brown Sandy Loam.

B below 50 cm impenetrable calcrete.

COMMENTS: Area immediately adjacent and at a slightly lower level has vegetation of only *Halosarcia* and *Frankenia*.

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### CALCAREOUS PLAIN (P)

#### LOW WOODLAND

DS11 *Casuarina cristata* — Low Woodland

LOCATION: Croft Well near Darda (between Wonganoo and Melrose) at (27°39'S lat., 121°22'E long.)

VEGETATION

MUIR LAr.SBr

Stratum 1: 8-12 m, CC 7%, clumping moderate *Casuarina cristata* (6), *Eucalyptus oleosa* (1); no other spp.

Stratum 2: 4-7 m, CC 2%, clumping moderate *Acacia aneura* (2); 1 other sp.

Stratum 3: 1.5-3m, CC 1%, clumping moderate *Acacia victoriae* (+), *Acacia tetragonophylla* (+), *Grevillea nematophylla* (+); 3 other spp.

Stratum 4: 0.8-1.3 m, CC 10%, clumping strong *Cassia nemophila* (9), *Rhagodia eremaea* (+), *Enchylaena tomentosa* (+); 3 other spp.

Stratum 5: 0.2-0.5 m, CC 5%, clumping moderate *Eragrostis eriopoda* (+), *Solanum lasiophyllum* (+), *Enneapogon caeruleus* (+), *Sclerolaena spinosa* (+), *Solanum nummularium* (+); 5 other spp.

Stratum 6: 0-0.2 m, CC up to 15% in season, clumping moderate. Possibly up to 17 spp. not identifiable at time of visit.

No. of TAXA: ca. 43

LAST BURNT: >20 years

#### SOIL

BEDROCK: Unknown although a nearby quarry shows kaolinized granite

MAIN ORIGIN: Colluvial

PROFILE THICKNESS: Unknown

PROFILE ATTRIBUTE: Weakly calcareous and stony; this is not the usual "calcrete valley fill" and its origin and nature are puzzling.

#### SOIL SURFACE

ROCK: Nil

STONE: Occasional, calcrete, cover less than 1%

PAVEMENT: 10-40%, irregular fragments of calcium carbonate 2-10 mm

NOTE: Surface slightly undulating. Hardsetting.

LITTER: No data

#### SOIL PROFILE

A 0-25 cm 5YR 4/4 reddish brown\* stony Loam

B 25-50 cm Kaolinitic stony Sandy Loam

C >50 cm Apparently weathered granitic rock for at least part of the area

COMMENTS: \*Soil is naturally semi-dry. When artificially moistened, it is 5YR 3/4 dark reddish brown.

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#### TALL SHRUBLAND

DS12 *Acacia grasbyi* Tall Shrubland

LOCATION: Cave Well near Darda (27°39'S lat., 121°25'E long.)

#### VEGETATION

MUIR Sr

Stratum 1: 4.5-6 m, CC 10%, clumping slight *Acacia grasbyi* (8), *Santalum acuminatum* (+), *Amyema preissii* (+); 2 other spp.

Stratum 2: 1.5-3 m, CC 1%, clumping slight *Acacia tetragonophylla* (+), *Acacia burkittii* (+), *Leichhardtia australis* (+), *Exocarpos aphyllus* (+), *Acacia victoriae* (+); 2 other spp.

Stratum 3: 0.6-1.3 m, CC 4%, clumping moderate *Melaleuca uncinata* (+), *Cassia artemisioides* (+), *Rhagodia drummondii* (+), *Cassia nemophila* (+), *Rhagodia eremaea* (+), *Eremophila margarethae* (+); 4 other spp.

Stratum 4: 0.2-0.5 m, CC 4%, clumping moderate *Ptilotus obovatus* (+), *Solanum lasiophyllum* (+), *Enneapogon caerulescens* (+); 7 other spp.

Stratum 5: 0-0.2 m, CC up to 15% in season, clumping moderate. Ephemeral species: *Zygophyllum* sp. indet. (+), *Ptilotus exaltatus* (+); up to 15 other spp. not identifiable at time of visit.

No. of TAXA: ca. 49

LAST BURNT: >20 years

#### SOIL

BEDROCK: Unknown

MAIN ORIGIN: Colluvial

PROFILE THICKNESS: Unknown

PROFILE ATTRIBUTE: Calcareous and stony

#### SOIL SURFACE

ROCK: Nil STONE: 5-10% PAVEMENT: 40-60%

NOTE: Slight dips present with slightly cracked surface. Surface soil noticeably pinkish.

LITTER: No data

#### SOIL PROFILE

A 0-15 cm 2.5YR 3/5 dark reddish brown to dark red stony Loam

B below 15 cm (presumably rubble of calcrete and opaline siliceous materials ) impenetrable hardpan.

COMMENTS: Well-drained with moderate nutrient status. First 8 cm of soil friable, with 10% inclusions of gravel size. Soil 8-15 cm firm, auger grinding up a gravelly calcareous flour.

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### SANDPLAIN (S)

#### LOW WOODLAND

DS13 *Hakea suberea* — Low Woodland

LOCATION: Wonganoo Station (27°02'S lat., 121°10'E long.)

#### VEGETATION

MUIR LBr.Hi

Stratum 1: 3.5-5 m, CC 2%, clumping slight *Hakea suberea* (2).

Stratum 2: 0.8-3 m, CC less than 1%, clumping absent *Grevillea juncifolia* (+).

Stratum 3: 0.2-0.5 m, CC 17%, clumping absent *Triodia basedowii* (17); 3 other spp.

Stratum 4: 0-0.2 m, CC less than 1%, clumping slight. Up to 6 spp. not identifiable at time of visit.

No. of TAXA: ca. 11

LAST BURNT: 5-10 years

SOIL

BEDROCK: Presumably granite

MAIN ORIGIN: Colluvial

PROFILE THICKNESS: Probably >2 m

PROFILE ATTRIBUTE: Siliceous and nutrient-poor

SOIL SURFACE

ROCK: Nil

STONE: Nil

PAVEMENT: Nil

NOTE: Surface perfectly flat, with a very poorly developed crust

LITTER: No data

SOIL PROFILE (augered to 80 cm)

A1 0-10 cm 2.5YR 3/4 dark reddish brown Loamy Sand

A2 10-80 cm 2.5YR 3/4 dark reddish brown Sandy Loam

B Unknown

COMMENTS: Subsoil might alternatively be described as a very coarse sandy clay loam, heavier than is usually associated with Sandplains.

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UNDULATING PLAIN (U)

LOW WOODLAND

DS14 *Acacia grasbyi* — *Acacia aneura* Low Woodland

LOCATION: Melrose Station (27°53'S lat., 121°20'E long.)

VEGETATION

MUIR LBr

Stratum 1: 4-6 m, CC 7%, clumping slight *Acacia grasbyi* (3), *Acacia aneura* (3); 4 other spp.

Stratum 2: 1.8-3 m, CC 2%, clumping moderate *Eremophila oldfieldii* subsp. *angustifolia* (1), *Hakea preissii* (+), *Eremophila scoparia* (+), *Acacia burkittii* (+), *Acacia tetragonophylla* (+); 5 other spp.

Stratum 3: 0.6-1.5 m, CC less than 1%, clumping moderate *Cassia nemophila* (+), *Scaevola spinescens* (+), *Eremophila* sp. aff. *granitica* (+), *Sida calyxhymenia* (+), *Eremophila fraseri* (+); 6 other spp.

Stratum 4: 0.2-0.5 m, CC 10%, clumping moderate *Enneapogon caerulescens* (2), *Sclerolaena patenticuspis* (1), *Solanum lasiophyllum* (+), *Ptilotus obovatus* (+), *Aristida contorta* (+), *Cheilanthes tenuifolia* (+); 4 other spp.

Stratum 5: 0-0.2 m, CC up to 30% in season, clumping moderate. Ephemeral species: *Zygophyllum* sp. indet. (1), *Ptilotus exaltatus* (+), *Salsola kali* (+); up to 16 other spp. not identifiable at time of visit.

No. of TAXA: ca. 56

LAST BURNT: Probably not flammable

SOIL

BEDROCK: Basalt

MAIN ORIGIN: *In-situ* weathering

PROFILE THICKNESS: Up to 1 m  
Calcareous

PROFILE ATTRIBUTE:

SOIL SURFACE

ROCK: Nil (only occasional exposures of the calcrete hardpan itself)

STONE: 10-30%

PAVEMENT: 20-50% (partly quartz or calcrete but mainly varnished dark stones)

NOTE: Surface is a "small gibber" of gravel, pebbles and some stones. Slope angle slight, variable. Discrete, but subtle, drainage lines at intervals of about 50 m. Soil slightly stonier on upper slopes. Occasional raised areas of about 10 x 10 m of calcareous soil with angled sinkholes exposing a calcrete hardpan.

LITTER: no data

SOIL PROFILE (soil cannot be augered)

A 0-20 cm, variable 5YR 4/8 yellowish red stony Loam

B 20-100 cm, variable calcareous hardpan

C weathering bedrock grading to bedrock

COMMENTS: Being calcareous the soil is naturally only semi-moist. When artificially moistened the colour of the topsoil is 5YR 3/6 dark reddish brown

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DS15 *Acacia aneura* Low Woodland

LOCATION: Melrose Station (27°54'S lat., 121°17'E long.)

VEGETATION

MUIR: LAr.SDr.Jc

Stratum 1: 4-6 m, CC 3%, clumping strong *Acacia aneura* (needle-and narrow-phyllode forms) (3); no other spp.

Stratum 2: 1.5-3 m, CC 1%, clumping moderate *Eremophila pantonii* (+), *Hakea arida* (+), *Eremophila oldfieldii* subsp. *angustifolia* (+), *Acacia grasbyi* (+), *Acacia tetragonophylla* (+), *Cassia sturtii* (+), *Acacia oswaldii* (+); 4 other spp.

Stratum 3: 0.6-1.3 m, CC less than 1%, clumping moderate *Atriplex bunburyana* (+), *Maireana pyramidata* (+), *Cratystylis subspinescens* (+), *Zygophyllum* sp. indet. (+), *Rhagodia gaudichaudiana* (+), *Enchylaena tomentosa* (+), *Scaevola spinescens* (+), *Sida calyxhymenia* (+), *Rhagodia drummondii* (+); 4 other spp.

Stratum 4: 0.2-0.5 m, CC 7%, clumping moderate *Maireana triptera* (+), *Sclerolaena eriacantha* (+), *Sclerolaena uniflora* (+), *Solanum lasiophyllum* (+), *Sclerolaena cuneata* (+), *Maireana georgei* (+), *Enneapogon caeruleus* (+); 5 other spp.

Stratum 5: 0-0.2 m, CC up to 20% in season, clumping moderate. Ephemeral species: *Atriplex inflata* (+), *Ptilotus exaltatus* (+), *Maireana carnosus* (+); up to 21 other spp. not identifiable at time of visit.

No. of TAXA: ca. 61

LAST BURNT: Probably not flammable

#### SOIL

BEDROCK: Probably basalt

MAIN ORIGIN: Colluvial

PROFILE THICKNESS: Unknown

PROFILE ATTRIBUTE: Calcareous at depth only. Occasional gilgai.

#### SOIL SURFACE

ROCK: Nil (no hardpan visible)

STONE: 5-15%

PAVEMENT: 70-90% (mainly dark with a few quartz pebbles)

NOTE: Small patches of white powder salt (probably gypsum,  $\text{CaSO}_4$ ) visible on surface in low-lying spots). Pavement has a coating of desert varnish.

LITTER: No data

SOIL PROFILE (augered to 80 cm)

A 0-50 cm Variable 2.5YR 3/4 dark reddish brown stony Loam

B 50-80 cm Probably calcareous material

C Probably weathering bedrock

COMMENTS: When dry, soil colour 5YR 4/6 yellowish red

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#### TALL SHRUBLAND

DS16 *Acacia aneura* Tall Shrubland

LOCATION: Barwidgee Station (27°06'S lat., 121°28'E long.)

#### VEGETATION

MUIR Sr

Stratum 1: 6-9 m, CC 1%, clumping absent *Acacia pruinocarpa* (+), *Amyema preissii* (+).

Stratum 2: 3-5 m, CC 6%, clumping moderate *Acacia aneura* (needle — and narrow-phyllode forms) (3), *Acacia quadrimarginea* (1), *Acacia tetragonophylla* (+); 2 other spp.

Stratum 3: 1.5-2.5 m, CC less than 1%, clumping moderate *Cassiasturtii* (+), *Eremophila platycalyx* (+); 3 other spp.

Stratum 4: 0.6-1.3 m, CC less than 1%, clumping moderate *Sida calyxhymenia* (+), *Rhagodia eremaea* (+), *Dodonaea* sp. indet. (+), *Cassia desolata* (+); 3 other spp.

Stratum 5: 0.2-0.5 m, CC 1%, clumping slight *Ptilotus drummondii* (+), *Eriachne mucronata* (+), *Solanum lasiophyllum* (+); 4 other spp.

Stratum 6: 0-0.2 m, CC up to 8% in season, clumping moderate. Ephemeral species: *Stenopetalum anfractum* (+); up to 5 other spp. not identifiable at time of visit.

No. of TAXA: ca. 32

LAST BURNT: Probably not flammable

#### SOIL

BEDROCK: Sub-outcrop, in places, of schist, roots of *Acacia pruinocarpa* displace massive ferricrete, indicating laterite over Metasediments.

MAIN ORIGIN: *In-situ* weathering

PROFILE THICKNESS: 10-20 cm

PROFILE ATTRIBUTE: Shallow

#### SOIL SURFACE

ROCK: Trace

PAVEMENT 60%

STONE: 10% (gibber of stones and pebbles including stone quartz)

NOTE: Rock fragments of various sizes cover 80% of surface

LITTER: No data

#### SOIL PROFILE

A 0-10 cm 2.5YR 3/5 dark reddish brown to dark red (very stony) Loam

B Impenetrable hardpan (presumably laterite), rough to auger blade

COMMENTS: This site is on the upper part of the gently undulating landscape. Inclusions comprise 20% of the topsoil, consisting of irregular fragments (5-15 mm) i.e. smaller than those lying on the surface. Topsoil surprisingly friable.

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### BROAD VALLEY (V)

#### LOW WOODLAND

DS17 *Eucalyptus oleosa* Low Woodland

LOCATION: Banjarn Station (27°47'S lat., 121°41'E long.)

FAUNA SAMPLED: Yes

VEGETATION

MUIR: LAr.Hi

- Stratum 1: Trees 5-7 m, CC 5%, clumping slight *Eucalyptus oleosa* (4), *Eucalyptus* sp. (1).
- Stratum 2: Shrubs 2.5-4 m, CC 1%, clumping moderate *Acacia aneura* (0.5), *Grevillea juncifolia* (+), *Acacia ligulata* (+), *Acacia tetragonophylla* (+), *Amyema maidenii* (+). *Acacia burkittii* (+) was previously recorded by A. V. Milewski.
- Stratum 3: Shrubs 1-2 m, CC <1%, clumping slight *Cassia nemophila* (+), *Exocarpos aphyllus* (+).
- Stratum 4: Shrubs 0.5-1 m, CC <1%, clumping moderate *Eremophila exotrachys* (+), *Olearia subspicata* (+), *Eremophila* aff. *glabra* (+), *Enchylaena tomentosa* (+), *Rhagodia eremaea* (+).
- Stratum 5: Perennial grasses and shrubs 0.2-0.5 m, CC 25% clumping slight *Triodia basedowii* (25), *Eriachne helmsii* (+), *Ptilotus polystachysus* (+), *Halgania* sp. (+), *Monachather paradoxa* (+), *Sida corrugata* (+), *Solanum lasiophyllum* (+).
- Stratum 6: 0-0.2 m, CC <1%, clumping strong. Annuals: *Calandrinia polyandra* (+), *Daucus glochidiatus* (+), *Lobelia gibbosa* (+). A. V. Milewski indicated eight unidentifiable annuals.

No. of TAXA: 24 (+ 12 in burnt area)

LAST BURNT: >10 years; portion of site <3 years

LANDFORM

BEDROCK: Presumably granite

MAIN ORIGIN: Colluvial

PROFILE ATTRIBUTE: Siliceous and nutrient-poor

SOIL

ROCK: Nil

STONE: Nil

PAVEMENT: Nil

NOTE: Surface weakly crusted

LITTER: clumped 2-4 cm deep, 10-15 m apart; some branches.

SOIL PROFILE (augered to 80 cm)

A 0-80 cm Dark reddish brown Loamy Sand.

COMMENTS

(A) Texture earthy, not loose. Hard termitaria present.

(b) By October 1987 part of the site had been burnt and a number of species were regenerating but not recorded in unburnt portion. These were <0.5 m tall and included *Eremophila exotrachys* (10), *Hibiscus* sp. (1), *Aristida contorta* (+), *Acacia* sp. (+), *Eriachne helmsii* (+), *Newcastelia* sp. (+), *Olearia* sp. (+), *Podolepis capillaris* (+), *Ptilotus*



*obovatus* (+), *Scaevola oxyclona* (+), *Solanum plicatile* (+). Annuals were *Calandrinia* sp. (+) and *Lobelia winfridae* (+). There were also *Triodia basedowii* seedlings.

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DS18 *Acacia aneura* Low Woodland (Plate1)

LOCATION: Banjarn Station (27°48'S lat., 121°40'E long.)

FAUNA SAMPLED: Yes

VEGETATION

MUIR: LAr.Hi[Ji]

Stratum 1: Trees 4.5-7 m, CC 5%, clumping absent. *Acacia aneura* (needle and narrow phyllode forms) (2), *Eucalyptus oleosa* (2), *Acacia* sp. (+).

Stratum 2: Shrubs 2-4 m, CC 1%, clumping slight, *Acacia ligulata* (0.5), *Grevillea sarissa* (+), *Santalum acuminatum*(+), *Exocarpos aphyllus* (+), *Acacia tetragonophylla* (+).

Stratum 3: Shrubs 0.5-1.5 m, CC 1%, clumping moderate, *Eremophila glabra* (+), *Enchylaena tomentosa* (+), *Eremophila* sp. (+), *Cassia nemophila* (+), *Lycium australe* (+), *Solanum lasiophyllum* (+), *Rhagodia eremaea* (+).

Stratum 4: Perennial grasses and shrubs 0.2-0.5 m, CC 25%, clumping absent, *Triodia basedowii* (25), *Eremophila exotrachys* (+), *Eragrostis eriopoda* (+), *Eriachne helmsii* (+), *Aristida contorta* (+).

Stratum 5: 0-0.2 m, CC up to 10% in season, clumping strong. Ephemerals: *Ptilotus polystachyus* (+), *Actinobole uliginosum* (+), *Zygophyllum eremaeum* (+), *Ptilotus exaltatus* (+).

No. of TAXA: 20 + ephemerals

LAST BURNT: >20 years

SOIL

ROCK: Nil

STONE: Nil

PAVEMENT: Nil

NOTE: Surface not particularly sandy for mulga plain, despite the presence of *Triodia*.

LITTER: Broad and terete leaves clumped under mallee and mulga trees; >20 m apart, <3 cm deep. A few logs and branches.

SOIL PROFILE: Loose Sand

A 0-75 cm Dark reddish brown Sandy Clay Loam. Grades to Medium Clay after 80 cm then calcrete aggregation hardpan.

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DS19 *Acacia aneura* Low Woodland

LOCATION: Between Wonganoo and Melrose Stations (27°22'S lat., 121°25'E long.)

VEGETATION

MUIR LBr.Jc

Stratum 1: 4-6 m, CC 10%, clumping slight *Acacia aneura* (narrow — and needle-phyllode forms, and reddish sickle-phyllode form) (9), *Acacia aneura* (distinctive needle-phyllode form) (1); 1 other sp.

Stratum 2: 1.8-3 m, CC 3%, clumping moderate *Acacia tetragonophylla* (2), *Eremophila fraseri* (+), *Santalum lanceolatum* (+), *Rhagodia eremaea* (+); 3 other spp.

Stratum 3: 0.6-1.5 m, CC 1%, clumping moderate *Spartothamnella teucriflora* (+); 4 other spp.

Stratum 4: 0.2-0.5 m, CC less than 1%, clumping moderate *Ptilotus obovatus* (+), *Solanum lasiophyllum* (+); 8 other spp.

Stratum 5: 0-0.2 m, CC 5%, clumping slight. Ephemeral species: *Helipierum charsleyae* (2)), *Gnephosis foliata* (1), *Centipeda thespidioides* (+); up to 18 other spp. not identifiable at time of visit.

No. of TAXA: ca . 46

LAST BURNT: >20 years

SOIL

BEDROCK: Unknown

MAIN ORIGIN: Alluvial

PROFILE THICKNESS: Probably more than 4 m including possible hardpan

PROFILE ATTRIBUTE: Clay-rich but not calcareous

SOIL SURFACE

ROCK: Nil

STONE: Nil

PAVEMENT: Nil

NOTE: Surface flat, no gilgai. No rock material of any kind apparent

LITTER: No data

SOIL PROFILE (augered to 80 cm)

A 0-30 cm 2.5YR 3/6 dark red Sandy Loam grading to

B 30-80 cm 2.5YR 3/6 dark red Sandy Clay

C more than 80 cm possible siliceous hardpan. *In-situ* moisture status: saturated at time of visit (June 1982).

COMMENTS: Clay content increases with depth. The topsoil may be described as a coarse loam with a clay component, grading to a sandy clay loam with a similar gritty component, and approaching gritty clay at 80 cm. Soil a noticeably dark rich reddish ("chocolate") colour, uniform throughout.

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DS20 *Acacia aneura* Low Woodland

LOCATION: Cave Well near Darda (27°39'S lat., 121°25'E long.)

VEGETATION

MUIR LAr.SAr

Stratum 1: 5-7 m, CC 6%, clumping slight *Acacia aneura* (mainly form with fairly narrow, sickle phyllodes, also form with very narrow reddish phyllodes) (6), *Amyema preissii* (+); 1 other sp.

Stratum 2: 2.8-4 m, CC 3%, clumping moderate *Acacia* hybrid between *craspedocarpa* and *aneura* (2); no other sp.

Stratum 3: 1.5-2.5 m, CC 7%, clumping slight *Acacia linophylla* (2), *Melaleuca uncinata* (1), *Acacia tetragonophylla* (+), *Santalum lanceolatum* (+), *Leichhardtia australis* (+), *Acacia burkittii* (+); 2 other spp.

Stratum 4: 0.5-1 m, CC 2%, clumping moderate *Enchylaena tomentosa* (+), *Eriachne helmsii* (+), *Rhagodia eremaea* (+); 4 other spp.

Stratum 5: 0.2-0.5 m, CC 4%, clumping moderate *Eragrostis eriopoda* (+), *Enneapogon caerulescens* (+), *Ptilotus obovatus* (+); 6 other spp.

Stratum 6: 0-0.2 m, CC up to 20% in season, clumping moderate. Ephemeral species: up to 23 spp. not identifiable at time of visit.

No. of TAXA: ca. 51

LAST BURNT: >20 years

COMMENTS: Located at edge of Calcareous Plains and probably influenced by that landform through run-on and windborne detritus.

#### SOIL

BEDROCK: Unknown

MAIN ORIGIN: Colluvial

PROFILE THICKNESS: Unknown

PROFILE ATTRIBUTE: No lime apparent even at depth

#### SOIL SURFACE

ROCK: Nil

STONE: Nil

PAVEMENT: Nil

NOTE: Site flat, surface slightly cracked in places

LITTER: No data

#### SOIL PROFILE (AUGERED TO 80 CM)

A 0-10 cm 2.5YR 3/4 dark reddish brown Loam

B 10-45 cm 2.5YR 3/4 dark reddish brown Sandy Clay Loam

C 45-80 cm 2.5YR 3/4 dark reddish brown, compact (compactness and grit content increasing with depth) Sandy Clay Loam (augered sample at 80 cm very gritty and therefore lacks cohesion)

COMMENTS: Rather more clayey or compact than a typical mulga soil. Profile texture is gradational with discontinuities. Subsoil was noticeably moist at time of visit (June 1982).

DS21 *Acacia aneura* Low Woodland

LOCATION: Banjawarn Station (27°48'S lat., 121°41'E long.)

FAUNA SAMPLED: Yes

VEGETATION

MUIR: LAr.GLi

Stratum 1: Trees 5-7 m, CC 8%, clumping slight *Acacia aneura* broad and terete leaf forms (3), *Amyema* (terete) (+) on *A. aneura* (terete leaf form).

Stratum 2: Shrubs 3-5 m, CC <1%, clumping none *Grevillea* (white flowers)(+), *Acacia tetragonophylla* (+).

Stratum 3: Shrubs 1-2 m, CC 0.5%, clumping moderate *Cassia nemophila* (0.2), *Grevillea sarissa* (+), *Eremophila leucophylla* (+), *Rhagodia eremaea* (+).

Stratum 4: Shrubs 0.5-1 m, CC 5%, clumping moderate *Eremophila* aff. *glabra* (4), *Canthium* sp. (0.5), *Muehlenbeckia cunninghamii* (0.5).

Stratum 5: Perennial grasses and shrubs 0.2-0.5 m, CC 16%, clumping none *Eragrostis eriopoda* (15), *Aristida contorta* (+), *Monachather paradoxa* (+), *Triodia basedowii* (+), *Podolepis capillaris* (+), *Ptilotus obovatus* (+), *Sclerolaena diacantha* (+), *Solanum lasiophyllum* (+).

Stratum 6: Misc. plants <0.2 m, CC 4%, clumping slight. Annuals: *Angianthus tomentosus/tennellus* (+), *Chthonocephalus tomentellus* (+), *Euphorbia drummondii* (+), *Gnephosis arachnoidea* (+), *Ptilotus gaudichaudii* (+), *Ptilotus* sp. (+), *Tribulus astrocarpus* (+).

No. of TAXA: 26

LAST BURNT: >20 years

MODIFICATION: Grazing

SOIL

MAIN ORIGIN: Mixed colluvial and alluvial

DRAINAGE: Good on surface

MAIN ATTRIBUTE: Siliceous

SURFACE: Loose

ROCK: Nil

STONE: Nil

LITTER: Broad and terete leaves under trees, <3 cm deep, 20 m between clumps; terete leaves under shrubs, <2 cm deep, 80 m apart; numerous mulga logs and dead trees.

SOIL PROFILE

A 0-60 cm Red brown Loamy Sand very hard when dry.

B >60 cm Abrupt change to hardpan of red brown Clay Sand, ca. 40% Clay, 60% Sand.

COMMENTS: Small areas of grassland occurred where *Acacia* and understory species were absent. The grasses *Eragrostis eriopoda* (25) and *Eriachne helmsii* (25) were abundant and interdigitated with *Triodia basedowii* (20). These areas were probably result of frequent fires.