

The vegetation of Mallee Cliffs National Park

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Abstract

Morcom¹, L. and M. Westbrooke² (¹Department of Conservation and Environment, Horsham, Australia, 3400; ²Department of Applied Biology, Ballarat University College, Ballarat, Australia 3350) 1990. *The vegetation of Mallee Cliffs National Park. Cunninghamia* 2(2): 147-166. The vegetation of Mallee Cliffs National Park, in semi-arid south-western New South Wales, was mapped at 1:50 000 using aerial photographs, landsat imagery and extensive ground truthing. The communities were assessed using a quadrat sampling technique. The data from 92 quadrats were analysed via a computer-based numerical sorting and classification procedure to determine the floristic composition of the communities. The most widespread communities are *Eucalyptus gracilis*/*E. dumosa*/*E. socialis* open scrub and *Casuarina cristata* subsp. *pauper* woodland. Small areas of *E. largiflorens* and *Acacia aneura* open-woodlands occur, as well as open-herblands, deduced to be either degraded examples of the above communities or of *Callitris glaucophylla* low woodland, *Maireana pyramidata* low open-shrubland or *M. sedifolia* low open-shrubland.

A total of 215 species including 43 exotics were recorded from 50 families.

Introduction

A comprehensive study of the vegetation of south-western New South Wales was carried out by Beadle (1948) who also produced a vegetation map at 1:1 000 000 (Beadle 1945). Subsequently little systematic vegetation survey has been carried out in the area although the National Herbarium is currently surveying and mapping the vegetation with the aim of producing maps at 1:250 000 (Fox 1983). Other studies in the area have included a multi-variate analysis of the vegetation of a large area of semi-arid south-eastern Australia (Noy-Meir 1971) and a study of the effects of fire in *Eucalyptus* open-scrub to the north and east of Mallee Cliffs National Park (Noble, Smith and Leslie 1980). A preliminary checklist of the flora of the Park has been prepared by the Soil Conservation Service (Semple unpublished).

The aim of this study was to expand the limited knowledge of the vegetation of the Park and to thus provide a basis for future management.

The Study Area

Mallee Cliffs National Park, 30 km east of Wentworth, (Figure 1) covers 57,969 ha. It was established in 1977 on the site of the former Mallee Cliffs Station, to conserve an example of mallee vegetation in south-western New South Wales. South-western New South Wales has been grazed by sheep and cattle for over 100 years and the Park is presently surrounded by pastoral properties. Most of the Park was burnt in the extensive wildfires of 1974/75 (Pickard 1987). Sheep were removed from the Park in 1977 but significant numbers of goats, rabbits and kangaroos maintain high grazing pressure. Past grazing and timber cutting has degraded some sections of the Park, particularly around the 18 earth tanks.

In the years prior to 1977, Mallee Cliffs Station was managed by a Pastoral Company. In the 20 years to 1977, with the lease soon to expire, the station was stocked at maximum capacity (Palmer, R. pers. comm.). This varied according to season from 4000 to 8500 sheep, being within the limits judged by Stanley and Lawrie (1980) as reasonable for the area. The limiting factor to stocking was water rather than feed, resulting in high grazing pressure adjacent to the tanks. The highest stocking rates were in the south around Bulbuc Tank and in the east, adjacent to Gulthal Station (Palmer, R. pers. comm.). The area around Mulga Tank was rarely stocked because of the dense vegetation and lack of water, since Mulga Tank did not hold water. The extensive area of *Eucalyptus* open scrub with *Triodia* understorey, east of Chalky Tank, was not utilised (Ablett, R. pers. comm.).

Climate

The climate is classified as cool semi-arid (Dick 1975). Yearly variation in rainfall is high, Wentworth having a long term average of 289 mm, but over the past 115 years the annual rainfall has ranged from 115 mm to 705 mm (Bureau of Meteorology records 1987). Temperatures range from a mean daily maximum in January of 33.2° C. to a mean daily minimum in July of 4.5° C. Frosts are common in the winter months.

Topography, geology and soils

The area lies in the Murray Basin geological province and consists of Quaternary material with virtually no rock outcropping. Low aeolian dunes and

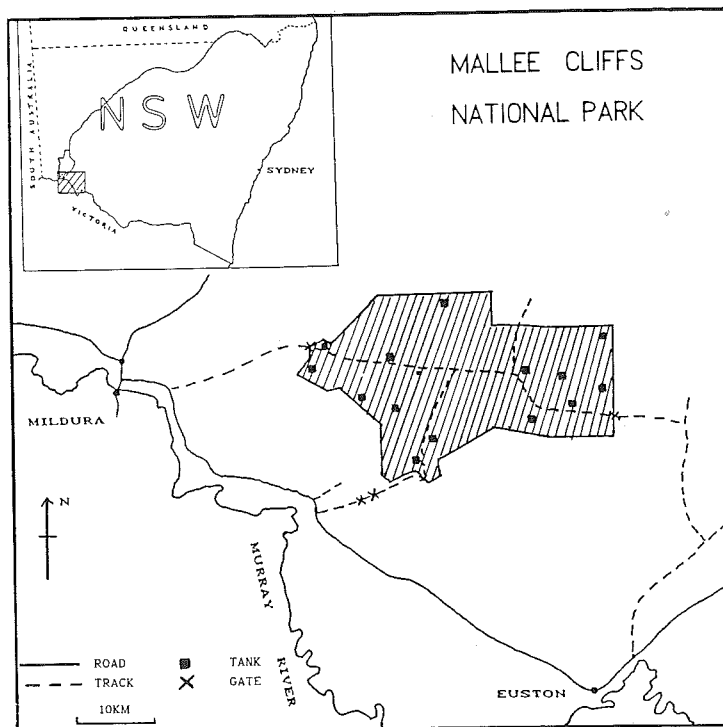


Figure 1. Location and access – Mallee Cliffs National Park

alluvial plains predominate in the landscape. Calcareous plains of loam or sandy loam solonized brown soils, often with limestone nodules at the surface, alternate with an irregular system of low east-west dunes of red earthy sands and sandy solonized brown soils overlying sandy clays (Lawrie and Stanley, 1980).

Methods

During studies in 1983, 1985, 1987 and 1989, ground truthing was undertaken by driven (90 km) and walked transects (270 km). Information from these transects was used in conjunction with study of black and white aerial photographs (Department of Lands Wild Dog and Mildura 1:110 000, flown in 1973, 1974 and 1979) and a Landsat false colour image to produce a vegetation map at 1:50 000. The vegetation communities mapped were defined by floristic and structural characteristics (Specht 1970).

Ninety-two 0.01 ha (10 m x 10 m) quadrats were sampled and all species occurring were recorded, together with a cover abundance value for each species modified from Braun-Blanquet (1928) which corresponded to a visual estimate of its performance in the quadrat. Quadrats were subjectively located following the method of Gullan et al. (1979). This method ensured that all communities were sampled and provided data on floristic variability within the communities. Communities were in general sampled in proportion to the area they covered, however, since quadrats were located along transects wherever community type was observed to change, those with a discontinuous distribution may tend to be over-sampled. The floristic data were analysed using a computer-based numerical classification procedure coupled with a hand sorting procedure of the type outlined in Gullan (1978). The final result of this analysis is a two way table that holds data in a sorted form. Quadrats of similar floristic composition are grouped on the horizontal axis of the table while species that tend to occur together are grouped on the vertical axis (Appendix 1). All vascular plant species recorded over the four visits, both from sampled quadrats and from opportunistic collection, were identified and a species list compiled (Appendix 2). For each quadrat the number of exotic species as a proportion of the total number of species was calculated and used to determine the mean '% weediness' of each community. The mean species richness of quadrats in each community was also calculated.

Vegetation

The vegetation of the Park consists predominantly of *Eucalyptus gracilis*/*E. dumosa*/*E. socialis* open scrub and *Casuarina cristata* subsp. *pauper* woodland, but ten distinct communities were recognised (Figure 2). Several of these communities are, however, of limited occurrence. The communities in the Park are:

Community	% area
1 <i>Eucalyptus gracilis</i> / <i>E. dumosa</i> / <i>E. socialis</i> open-scrub	60
2 <i>Eucalyptus gracilis</i> / <i>E. dumosa</i> / <i>E. socialis</i> open-scrub, (<i>Triodia understorey</i>)	16

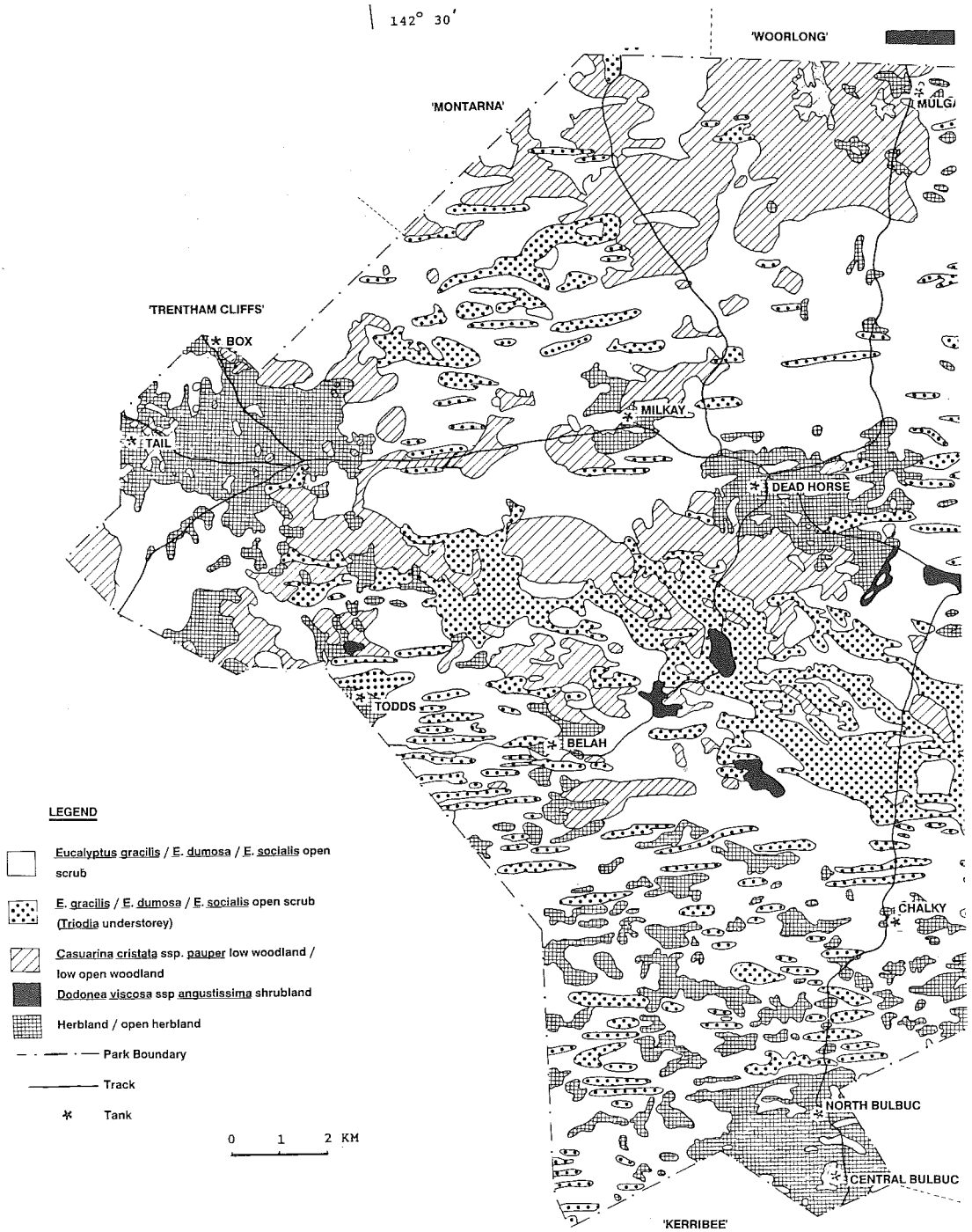
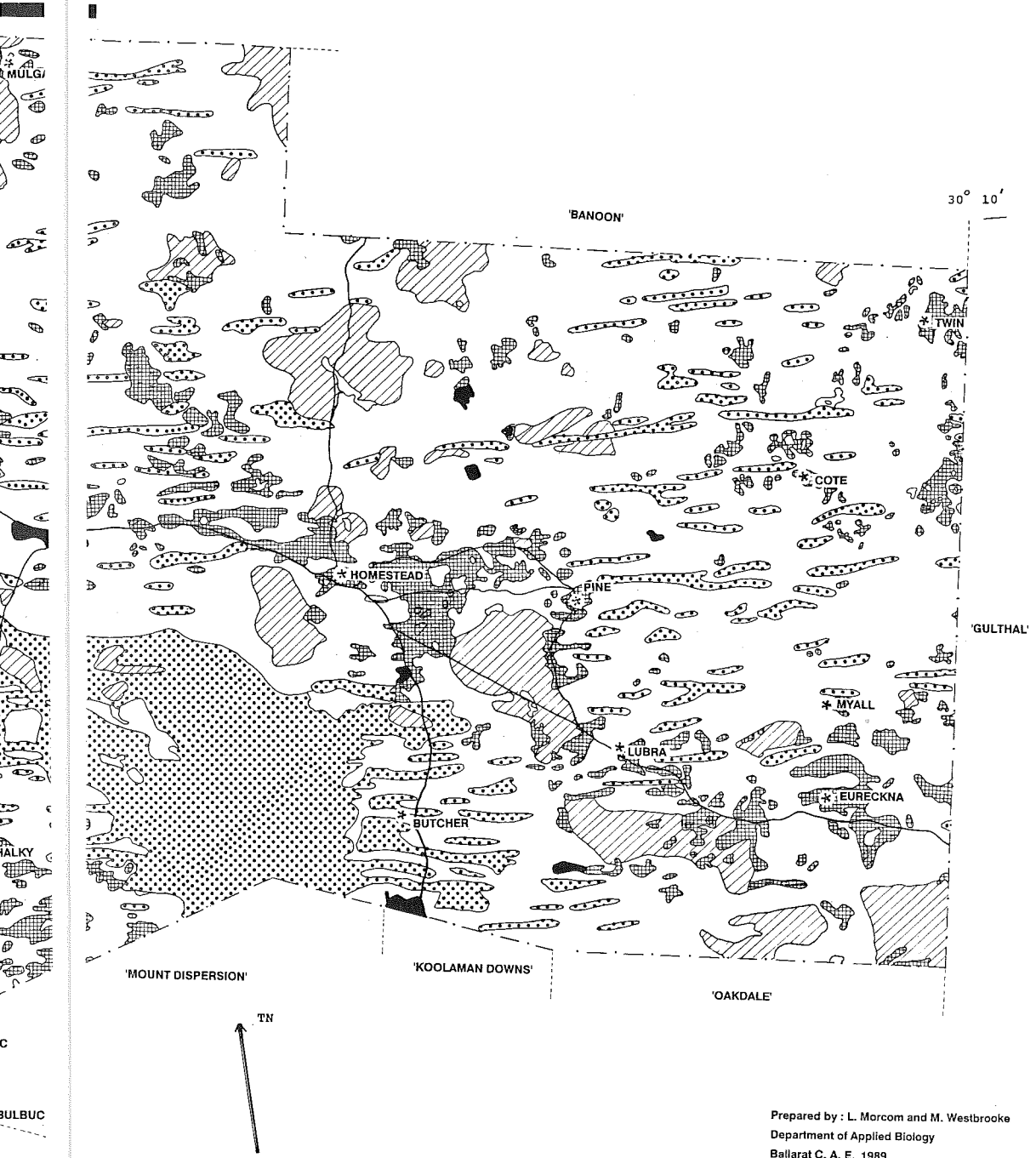


Figure 2. Vegetation of Mallee Cliffs National Park



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3 <i>Casuarina cristata</i> subsp. <i>pauper</i> low woodland/low open-woodland	13
4 <i>Callitris glaucophylla</i> low open-woodland	< 1
5 <i>Eucalyptus largiflorens</i> open-woodland	< 1
6 <i>Acacia aneura</i> open-woodland	< 1
7 <i>Dodonaea viscosa</i> subsp. <i>angustissima</i> shrubland	< 1
8 <i>Maireana sedifolia</i> low open-shrubland	< 1
9 <i>Maireana pyramidata</i> low open-shrubland	< 1
10 Herbland/open-herbland	10

Appendix 1 details the floristic composition of each community. The descriptions below summarise the table and provide additional information concerning less common species.

1. *Eucalyptus gracilis*/*E. dumosa*/*E. socialis* open-scrub (Figure 3)

The most extensive community (60% of the area) within the Park is *Eucalyptus* open-scrub dominated by *E. gracilis*, *E. dumosa* and *E. socialis*, growing to eight metres on interdune plains of sandy-loam solonised soils. *E. leptophylla* and *E. oleosa* occur less frequently. Common shrub associates include *Cassia eremophila*, *Dodonaea viscosa* subsp. *angustissima*, *Zygophyllum* spp., *Westringia rigida*, *Eremophila glabra*, *Chenopodium curvispicatum* and *Grevillea huegelii*. In localised situations other species may also be prominent in the understorey. These include *Lomandra leucocephala* subsp. *robusta*, *Acacia microcarpa* and *Maireana pentatropis*. Exotic species occur infrequently in both this and the *Eucalyptus* open-scrub community described below.

2. *Eucalyptus gracilis*/*E. dumosa*/*E. socialis* open-scrub with *Triodia* understorey (Figure 4)

On low dune ridges where shallow sands overlies sandy clays the eucalypts noted above occur in a community characterised by the presence of *Triodia scariosa* as the most prominent component of the understorey. This community occupies 16% of the Park. Shrub associates include *D. viscosa* subsp. *angustissima*, *E. glabra*, *Myoporum platycarpum* and *C. eremophila*. *Baeckea crassifolia*, *Acacia wilhelmiana*, *A. microcarpa* and *Pittosporum phillyraeoides* may be locally common. Several species are restricted to this community including *Eucalyptus incrassata*, *B. crassifolia* and *Exocarpos sparteus* — the latter two species are recorded only occasionally in New South Wales (Cunningham et al. 1981).

3. *Casuarina cristata* subsp. *pauper* low woodland/low open-woodland (Figure 5)

Casuarina cristata subsp. *pauper* growing to 10–12 metres, occurs as a dominant over 13% of the Park on the brown loamy sands of interdune areas. It is usually associated with *Alectryon oleifolius* subsp. *canescens* although pure dense stands of either species occur. Common understorey associates include *Olearia muelleri*, *Zygophyllum apiculatum*, *Atriplex vesicaria*, *Exocarpos aphyllus* and *Actinobole uliginosum*. On occasions *D. viscosa* subsp. *angustissima*, *Cassia eremophila*, *Myoporum platycarpum*, *Acacia colletioides*

and *Maireana pyramidata* may dominate the understorey.

In the north-east of the Park *Geijera parviflora* is an occasional associate in this community. The low dense canopy of *G. parviflora* provides shelter for a number of species, including *Parietaria debilis*, not previously recorded in the South Far Western Plains (SFWP), (Jacobs and Pickard 1981; Jacobs and Lapinuro 1986).

4. *Callitris glaucophylla* low open-woodland (Figure 6)

Within *Casuarina cristata* subsp. *pauper* woodlands *Callitris glaucophylla* growing to ten metres, occurs as scattered individuals and is the dominant in a few small areas. The presence of senescent specimens of *C. glaucophylla* in the herblands suggests that *C. glaucophylla* may have been more extensive prior to pastoral activity. Existing *C. glaucophylla* woodland carries an open understorey largely consisting of exotic herbs and grasses. The exotic *Psilocaulon tenue* and the natives *Enchylaena tomentosa* and *Dissocarpus paradoxus* are also common in the understorey.

5. *Eucalyptus largiflorens* open woodland (Figure 7)

A small patch of *E. largiflorens* open woodland growing to ten metres occurs on heavy soil in the north-western corner of the Park adjacent to Box Tank. The understorey consists largely of exotic herbs and grasses. Species present include *Carrichtera annua*, *Hordeum leporinum*, *Schismus barbatus* and *Lophochloa pumila*.

6. *Acacia aneura* open woodland (Figure 8)

In the north of the Park adjacent to Mulga Tank is a patch of *A. aneura* open woodland growing to twelve metres. The patch is surrounded by *Casuarina cristata* subsp. *pauper* woodland. The understorey is dominated by species associated with the herblands. Notable in this community was the one record of *Cheilanthes austrotenuifolia* and the occurrence of *Papaver hybridum*, an exotic not previously recorded from the SFWP (Jacobs and Pickard 1981; Jacobs and Lapinuro 1986).

7. *Dodonaea viscosa* subsp. *angustissima* shrubland (Figure 9)

In a number of sites, *D. viscosa* subsp. *angustissima* forms dense stands to approximately two metres. *D. viscosa* subsp. *angustissima* is also found as a common understorey component of the *Eucalyptus* open scrubs. Boomsma and Lewis (1980) note that *Dodonaea* spp. have effective and continuous regeneration from seed. Noble (1984) and Harrington et al. (1984) report an increase of *Dodonaea* spp. in response to grazing and Beadle (1948) reports that the genus is an early coloniser following clearing of mallee for agriculture. It thus seems likely that this community results from past land use, particularly clearing of *Eucalyptus* open scrub.

8. *Maireana sedifolia* low open-shrubland (Figure 10)

Two small areas of low open shrubland dominated by *M. sedifolia* growing to 1.5 metres occur in the Park. Both are on soils with a high clay content and,



Figure 3. *Eucalyptus gracilis*/*E. dumosa*/*E. socialis* open-scrub



Figure 4. *Eucalyptus gracilis*/*E. dumosa*/*E. socialis* open-scrub with *Triodia* understorey



Figure 5. *Casuarina cristata* subsp. *pauper* low woodland/low open-woodland



Figure 6. *Callitris glaucophylla* low open-woodland

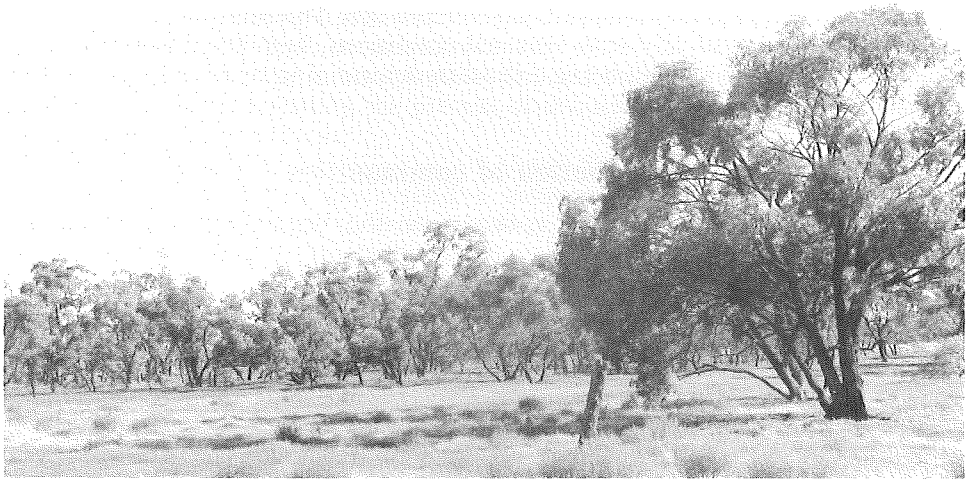


Figure 7. *Eucalyptus largiflorens* open-woodland



Figure 8. *Acacia aneura* open-woodland

following heavy rain, ephemeral pools of water occur on these areas. Associated species are restricted to native and exotic annuals.

9. *Maireana pyramidata* low open-shrubland (Figure 11)

Small areas of low open shrubland dominated by *M. pyramidata* growing to one metre also occur on heavy soils. Associated species are restricted to annual herbs and grasses and a few chenopod species. Both *M. pyramidata* and *M. sedifolia* are palatable to stock (Cunningham et al. 1981) and Noble (1984) notes that *M. sedifolia* decreases in response to grazing. It seems likely that both *Maireana* species were once more common in the Park.

10. Herbland/open-herbland (Figure 12)

Extensive herbland/open herbland growing to 0.8 metres occurs, consisting largely of annual herbs and grasses, many of which are exotic. Common species in this community include *Bromus rubens*, *Psilocaulon tenue*, *Erodium* spp., *Scleroleana obliquicuspis*, *Salvia verbenaca*, *Hordeum leporinum*, *Medicago* spp., *Omphalolappula concava* and *Sisymbrium irio*. The relative dominance of species varies dramatically with seasonal conditions, with the extent and seasonal distribution of rainfall being critical in determining relative species abundance.

Distribution of communities

The distribution of communities is shown on the Vegetation map of Mallee Cliffs National Park (Figure 2).

The species

The species list includes 213 species from 50 families. This number includes 42 exotics, most of which are pasture species or weeds commonly associated with agriculture. The *Eucalyptus* open scrub communities are relatively free of weeds. The 'weediness' and species richness of each community is shown on Table 1.

Table 1. Mean species richness and percentage weediness of plant communities at Mallee Cliffs National Park.

	No. of quadrats	Mean species richness	mean % weediness
<i>Eucalyptus gracilis</i> / <i>E. dumosa</i> / <i>E. socialis</i> open-scrub	43	11	3
<i>E. gracilis</i> / <i>E. dumosa</i> / <i>E. socialis</i> open-scrub (<i>Triodia</i>)	23	11	5
<i>Casuarina cristata</i> subsp. <i>pauper</i> low woodland/low open-woodland	10	15	11
<i>Dodonaea viscosa</i> subsp. <i>angustissima</i> shrubland	2	21	25
<i>Acacia aneura</i> open-woodland	1	16	25
<i>Callitris glaucophylla</i> low open-woodland	1	22	32
<i>E. largiflorens</i> open-woodland	1	31	33
<i>Maireana sedifolia</i> low open-shrubland	2	19	35

	No. of quadrats	Mean species richness	mean % weediness
<i>M. pyramidata</i> low open-shrubland	2	14	50
Herbland/open-herbland	7	11	56

Voucher specimens are held at the Department of Applied Biology, Ballarat C.A.E. Species not previously recorded for the SFWP were forwarded to the National Herbarium, Sydney, for verification.,

Discussion

The distribution and species composition of plant communities within Mallee Cliffs National Park is largely determined by minor changes in topography and associated soil type. *Eucalyptus* open-scrub with a *Troodia scariosa* understorey is associated with sandy soils on the low dunes. *Eucalyptus* open-scrub with a shrub understorey occurs on the sandy loam, solonised brown soils of the calcareous sandplains. *Casuarina cristata* subsp. *pauper* woodlands and *Maireana* spp. shrublands occur on calcareous plains of loamy solonised brown soils. A number of other factors, notably fire and past grazing history, have also played a role in determining the present distribution and floristic composition of the communities present.

Eucalyptus open-scrub communities are highly flammable and most of those in the Park were burnt in the extensive wildfires of 1974/75 (Pickard 1987). However dense stands of *C. cristata* subsp. *pauper* did not burn in this fire (Ablett pers. comm.). Fire leads to an increase in certain species such as *Halgania cyanea*, *Exocarpos sparteus*, *Haloragis odontocarpa* and *Codonocarpus cotonifolius* but these species decline as *Triodia* hummocks redevelop (Noble and Mulham 1980).

The Park is at the stage of post fire succession where fire-promoted species decline.

The pastoral history of Mallee Cliffs Station is reflected in the degraded nature of the *Eucalyptus* open scrub around Bulbuc Tank. Dense stands of *Nitraria billardieri* found around several tanks in the east of the Park may also be an indicator of heavy grazing in the past; an effect noted by Cunningham et al. (1981).

In some of the herblands small patches of *Callitris glaucophylla* low open-woodland occur. It is likely that these woodlands were once more extensive, but fire, harvesting of timber and grazing of seedlings by stock and rabbits have resulted in the decline of this community.

The most obvious effect of past grazing is the existence of herblands. These are generally associated with the 18 earth tanks, sites for which are limited to areas of occluded drainage and associated texture-contrast soils for catchment (Condon 1980). It thus appears likely that the herblands originally carried communities which, within the Park, are associated with heavy soils, i.e. chenopod shrublands or arid woodlands. Rabbits, goats and high kangaroo populations, partially sustained by permanent water in tanks, maintain grazing pressure on the herblands, possibly limiting recovery of the original communities (presumed to include *Maireana* spp. low open-shrublands and arid woodlands).



Figure 9. *Dodenaea viscosa* subsp. *angustissima* shrubland



Figure 10. *Maireana sedifolia* low open-shrubland



Figure 11. *Maireana* low open-shrubland



Figure 12. Herbland/open-herbland

The earth tanks and their associated channels support areas that remain wetter or receive greater run-off than would be the case in an unmodified environment. This factor, together with the disturbance caused by clearing and grazing, has contributed to the relative weediness of the herblands. Exotics recorded in the herbland but not previously recorded for the SFWP are *Arctotheca calendula*, *Echium plantagineum*, *Medicago laciniata*, *Malva parviflora*, *Oxalis pes-caprae* and *Sisymbrium orientale* (Jacobs and Pickard 1981; Jacobs and Lapinpuro 1986). Native species present in the herbland not recorded by the above authors are *Iseotopsis graminifolia*, a common component of the herbland, and *Limosella curdieana* found growing near Cote Tank.

A further three native species not previously recorded from the SFWP (Jacobs and Pickard 1981; Jacobs and Lapinpuro 1986) were found in the Park — *Maireana trichoptera*, *Ptilotus spathulatus* and *Zygophyllum billardieri*.

Conclusion

Mallee Cliffs National Park contains extensive areas of three vegetation communities. Small areas of five other natural communities add diversity. The herblands and the *Dodonaea viscosa* subsp. *angustissima* shrublands are regarded as artificial communities. Many areas of the Park show clear evidence of past grazing pressure in the form of limited understorey and high weediness while those areas that were not heavily grazed remain relatively intact. It seems unlikely that rapid recovery will occur in degraded areas unless continued high grazing pressure from kangaroo populations, rabbits and feral goats is reduced. Closure of earth tanks together with intensive rabbit control are the most appropriate strategies to assist recovery.

Acknowledgements

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Appendix 1

Two-way table presenting data on species and communities at Mallee Cliffs National Park

* denotes exotic species

Appendix 1
TWO-WAY TABLE PRESENTING DATA ON SPECIES AND COMMUNITIES AT MALLEE CLIFFS NATIONAL PARK

Community code	8	9	10	2	1	740	3
Quadrat Numbers	025310225646631243165301356515306	77777777788888888889954201365541212362440	36651507788037624334867090247522	801234567890123456789012323858121791864655349	41	6570092411	
Species							
Eucalyptus largiflorens	2						
*Medicago laciniata	11						2
Malreana sedifolia	21*						
Malreana pyramidata	1**						+ +
*Sisymbrium orientale	112						
Erodium cicutarium	+ 1*						1 +
*Alyssum linifolium	+ 1 1**						
*Carrichtera annua	2						
*Bromus rubens	+ 2+3 113						
*Salvia verbenaca	1**1** 11*						
*Medicago minima	-1 3331 3333						
*Hordeum leporinum	2**213+1 23						
Omphalolappula concava	-1111						
Sclerolaena obliquicuspis	+1** 2**						
*Sisymbrium irio	1						
Triodia scariosa							
Eucalyptus gracilis							
Dodonaea viscosa ssp. ang.							
Eucalyptus dumosa							
Eucalyptus socialis							
Eremophila glabra							
Cassia eremophila							
Chenopodium curvispicatum							
Myoporum platycarpum							
Olearia muelleri							
Zygophyllum apiculatum							
Atriplex vesicaria							
Malreana pentatropis							
Enchylaena tomentosa							
Salsola kali							
Acacia colletioides							
Stipa variabilis							
Westringia rigida							
Actinobole uliginosum							
Grevillea huegelii							
Casuarina cristata ssp. p							
Alectryon oleifolius ssp.							
Exocarpus aphyllus							
Erodium cicutarium							
*Ptilocaulon tenuis							
*Carrhamnus lanatus							
Senecio glossanthus							
*Hypochoeris glabra							
Goodenia pusilliflora							
*Sonchus oleraceus							
Baekea crassifolia							
Acacia wilhelmiana							
Brachycome sp.							
Lomandra leucocephala							
Acacia microcarpa							
Eucalyptus leptophylla							
Tetragonia tetragonioides							
Sclerolaena diacantha							
Einadia nutans							
Dissocarpus paradoxus							
Zygophyllum lodocarpum							
Zygophyllum aurantiacum							
Pittosporum phillyreoides							
Malreana radiata							
Eucalyptus oleosa							
Olearia pimelioides							
Amyena preissii							
Acacia aneura							
Callitris glaucophylla							
Geijera parviflora							

Appendix 2

List of vascular plant species recorded from Mallee Cliffs National Park

Taxonomy according to Forbes and Ross (1988).

* Denotes exotic species.

PTERIDOPHYTA

ADIANTACEAE

Cheilanthes austrotenuifolia

MARSILEACEAE

Marsilea drummondii

GYMNOSPERMAE

CUPRESSACEAE

Callitris glaucophylla

MAGNOLIOPHYTA

LILIOPSIDA

LILIACEAE

- * *Asphodelus fistulosus*
- Hypoxis glabella* var. *glabella*

POACEAE

- * *Bromus rubens*
- Eragrostis* sp.
- * *Hordeum leporinum*
- * *Lophochloa pumila*
- Stipa* spp.
- * *Schismus barbatus*
- Triodia scariosa*

XANTHORRHOEACEAE

Lomandra leucocephala
subsp. *robusta*

MAGNOLIOPSIDA

AIZOACEAE

- Disphyma crassifolium*
- * *Psilocaulon tenue*
- Tetragonia tetragonoides*

AMARANTHACEAE

Alternanthera denticulata
Ptilotus exaltatus
var. *exaltatus*
Ptilotus nobilis
Ptilotus spathulatus

APIACEAE

Daucus glochidiatus

ASCLEPIADACEAE

Leichhardtia australis

ASTERACEAE

- Actinobole uliginosum*
- Angianthus tomentosus*
- * *Arctotheca calendula*
- Brachycome ciliaris*
- Brachycome melanocarpa*
- Brachycome lineariloba*
- Brachycome* sp.
- Calotis hispidula*
- * *Carthamus lanatus*
- Cassinia arcuata*
- * *Centaurea melitensis*
- Centipeda* sp.
- Craspedia pleiocephala*
- Gnaphalium luteo-album*
- Helichrysum bracteatum*
- Helipterum floribundum*
- Helipterum jessenii*
- Helipterum pygmaeum*
- Isoetopsis graminifolia*
- Minuria cunninghamii*
- Olearia lepidophylla*
- Olearia muelleri*
- Olearia pimeleoides*
- * *Onopordum acaulon*
- Podolepis capillaris*
- Senecio cunninghamii*
- Senecio glossanthus*
- Senecio lautus*
subsp. *dissectifolius*
- Senecio runcinifolius*
- Senecio magnificus*
- Senecio quadridentatus*
- * *Sonchus oleraceus*
- Vittadinia cuneata*
- Waitzia acuminata*
- * *Xanthium spinosum*

BORAGINACEAE

- * *Echium plantagineum*
- Halgania cyanea*

- Halgania lavandulacea*
 * *Heliotropium europaeum*
Omphalolappula concava
- BRASSICACEAE
 * *Alyssum linifolium*
Arabidella trisecta
 * *Brassica tournefortii*
 * *Carrichtera annua*
Harmsiodoxa blennodioides
 * *Lepidium africanum*
Lepidium leptopetalum
 * *Sisymbrium erysimoides*
 * *Sisymbrium irio*
 * *Sisymbrium orientale*
- CAESALPINIACEAE
Cassia eremophila var.
coriacea
Cassia eremophila var.
eremophila
Cassia eremophila var.
platypoda
- CAMPANULACEAE
Wahlenbergia communis
- CARYOPHYLLACEAE
 * *Hernaria hirsuta*
 * *Silene apetala*
Spergularia rubra
- CASSYTHACEAE
Cassytha melantha
Rhagodia spinescens
- CASUARINACEAE
Casuarina cristata subsp. *pauper*
- CHENOPODIACEAE
Atriplex holocarpa
Atriplex prostrata
Atriplex spinibractea
Atriplex suberecta
Atriplex vesicaria
 * *Chenopodium album*
 * *Chenopodium curvispicatum*
Chenopodium desertorum
 subsp. *pseudomicrophyllum*
 * *Chenopodium murale*
Chenopodium pumilio
Dissocarpus paradoxus
Einadia nutans
Enchylaena tomentosa
Eriochiton sclerolaenoides
Maireana pentatropis
Maireana pyramidata
Maireana radiata

- Maireana sedifolia*
Maireana trichoptera
Maireana triptera
Maireana turbinata
Osteocarpum acroptera
Rhagodia ulicina
Salsola kali
Scleroblitum atriplicinum
Sclerolaena brachyptera
Sclerolaena diacantha
Sclerolaena divaricata
Sclerolaena obliquicuspis
Sclerolaena patenticuspis
Sclerolaena parviflora
Sclerolaena tricuspis
Sclerolaena ventricosa

- CONVOLVULACEAE
Convolvulus erubescens

- CRASSULACEAE
Crassula colorata

- CUCURBITACEAE
 * *Citrullus lanatus*
 * *Cucumis myriocarpus*
Zehneria micrantha

- EUPHORBIACEAE
Beyeria opaca
Chamaesyce drummondii

- FABACEAE
Aotus ericoides
Bossiaea walkeri
Eutaxia microphylla
 var. *microphylla*
 * *Medicago laciniata*
 * *Medicago minima*
 * *Medicago polymorpha*
Templetonia egena
Templetonia sulcata

- GERANIACEAE
Erodium cicutarium
Erodium crinitum

- GOODENIACEAE
Goodenia pusilliflora
Goodenia sp.
Goodenia varia

- GYROSTEMONACEAE
Codonocarpus cotonifolius

- HALORAGACEAE
Haloragis odontocarpa

- LAMIACEAE
 * *Marrubium vulgare*
 * *Salvia verbenaca*
Teucrium racemosum
- LINACEAE
Linum marginale
- LORANTHACEAE
Amyema miquelii
Amyema preissii
- MALVACEAE
Lavatera plebeia
 * *Malva parviflora*
- MIMOSACEAE
Acacia aneura
Acacia brachybotrya
Acacia colletioides
Acacia hakeoides
Acacia ligulata
Acacia microcarpa
Acacia oswaldii
Acacia rigens
Acacia sclerophylla
Acacia wilhelmiana
- MYOPORACEAE
Eremophila glabra
Eremophila longifolia
Eremophila maculata
Eremophila oppositifolia
Eremophila sturtii
Myoporum platycarpum
- MYRTACEAE
Baeckea crassifolia
Eucalyptus camaldulensis
Eucalyptus dumosa
Eucalyptus gracilis
Eucalyptus incrassata
 * *Eucalyptus kruseana*
Eucalyptus largiflorens
Eucalyptus leptophylla
Eucalyptus oleosa
Eucalyptus porosa
Eucalyptus socialis
 * *Eucalyptus steedmanii*
Melaleuca lanceolata
- OXALIDACEAE
Oxalis corniculata
 * *Oxalis pes-caprae*
- PAPAVERACEAE
 * *Papaver hybridum*
- PITTIOSPORACEAE
Billardiera versicolor
- Pittosporum phillyraeoides*
- PLANTAGINACEAE
Plantago cunninghamii
- POLYGONACEAE
 * *Emex australis*
Rumex sp.
- PORTULACACEAE
Calandrinia eremaea
Portulaca oleracea
- PROTEACEAE
Grevillea huegelii
Hakea leucoptera
- RUTACEAE
Geijera parviflora
- SANTALACEAE
Exocarpos aphyllus
Exocarpos sparteus
Santalum acuminatum
- SAPINDACEAE
Dodonaea viscosa
 subsp. *angustissima*
Alectryon oleifolius
 subsp. *canescens*
- SCROPHULARIACEAE
Limosella curdieana
Morgania floribunda
 * *Verbascum virgatum*
- SOLANACEAE
Lycium australe
 * *Lycium ferocissimum*
 * *Nicotiana glauca*
Nicotiana goodspeedii
Nicotiana sp.
Solanum esuriale
- URTICACEAE
Parietaria debilis
- VERBENACEAE
 * *Verbena supina*
- ZYGOPHYLLACEAE
Nitraria billardieri
Tribulus terrestris
Zygophyllum amphilum
Zygophyllum apiculatum
Zygophyllum aurantiacum
Zygophyllum billardieri
Zygophyllum crenatum
Zygophyllum iodocarpum
Zygophyllum ovatum