

Monitoring undertaken by Friends of Aranda Bushland

Location Aranda Snow Gums

Vegetation Type Snow Gum Woodland

Vegetation structure Grassy woodland

Management St John’s Wort and other weed control; Kangaroo grazing levels are very high. Rabbit control is undertaken regularly.

Aim: To monitor change in vegetation and habitat condition following cessation of domestic grazing and undertaking invasive species control.

Condition Attribute	Condition, trend	Interpretation
Overall condition	↔	Introduced annual cover increase coincides with high soil moisture availability (refer to photomonitoring)
Native species richness	↔	Slight decrease after first year of monitoring
Native floristic score	↓	Decrease from moderate to poor condition
Native groundcover	?	Not calculated*
Proportion of native groundcover	?	Not calculated*
Introduced species richness	↕	Variable
Introduced floristic score	↑	IFS decreased over time; condition improved.
Introduced annual groundcover	?	Not calculated*
Intr. perennial groundcover	?	Not calculated*
Benchmark condition score	60%	Lacks mature trees and regeneration
Habitat diversity score	48%	Lacks rocks, mature trees, mid-storey and regeneration
St John’s Wort		St John’s Wort decreased from 2013 to 2016: none in 2016

*In three of the surveys introduced annual and perennial groundcover species growth form were incorrectly identified, so no groundcover analyses were assessed (see data in the figure below).



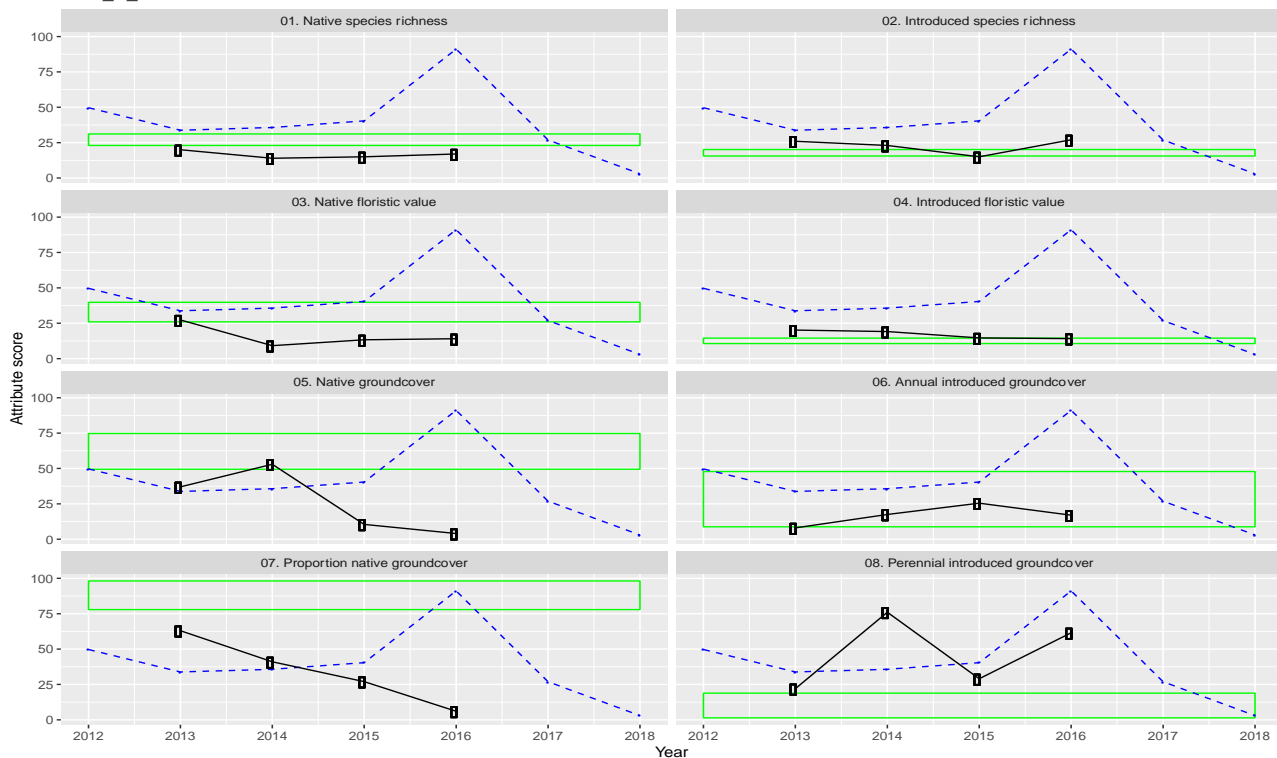
29/11/13

24/10/14

27/10/15

28/10/2016

ASG_V_1



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, ASG_1

Year	2013	2014	2015	2016
Native species richness	20	14	15	17
Indicator species richness	8	3	3	4
Introduced species richness	26	23	15	27
Invasive species richness	2	2	2	1
Cryptogam cover (%)	0	0	0	5
Bare ground cover (%)	5	15	10	7
Rock cover (%)	0	0	0	0
Litter cover (%)	40	74	41	38
Annual introduced cover (%)*	8	18	26	17
Perennial intr. gr'cover (%)*	22	76	29	62
Native grass cover(%)	31	51	9	4
Native sub-shrub cover (%)	1	0	0	0
Other native groundcover (%)	5	2	2	0
Total native groundcover (%)	37	53	11	4
Native overstorey cover (%)	25	25	25	25
Native midstorey cover (%)	11	11	11	11
Exotic overstorey cover (%)	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0
No. species regenerating	1	1	1	2
No. age classes	5	5	5	5
Length of fallen timber	28	28	28	34
No trees with hollows	0	0	0	0
Proportion of tree species regenerating (%)	100	100	100	100

*it is likely species have been misidentified as annual or perennial.

Species list

Species	2013	2014	2015	2016
Native species				
<i>Acaena ovina</i>		O	O	O
<i>Carex breviculmis</i>	C			
<i>Cassinia longifolia</i>	R	R	R	O
<i>Cassinia quinquefaria</i>				R
<i>Chrysocephalum apiculatum</i>				R
<i>Convolvulus angustissimus</i>	O		O	
<i>Cynoglossum australe</i>	O		O	R
<i>Desmodium varians</i>	O			
<i>Erodium crinitum</i>	R	O	O	O
<i>Eucalyptus pauciflora</i>	O	A	O	O
<i>Euchiton sp.</i>	O	O	O	
<i>Geranium solanderi</i>	O	O	O	R
<i>Glycine tabacina</i>	O			
<i>Hackelia suaveolens</i>				O
<i>Lomandra filiformis coriacea</i>	O			
<i>Lomandra multiflora</i>	O	R	R	R
<i>Microlaena stipoides</i>	A	C	C	C
<i>Oxalis perennans</i>	O	O	O	O
<i>Panicum effusum</i>				R
<i>Plantago varia</i>	C	C	O	O
<i>Poa sieberiana</i>	R			
<i>Rubus parvifolius</i>	O	R	O	O
<i>Rumex sp. native</i>		R		R
<i>Senecio sp.</i>		C		
<i>Solenogyne dominii</i>	R		O	
<i>Tricoryne elatior</i>	R			
<i>Vittadinia cuneata</i>	R	R	R	O
Introduced species				
<i>Aira sp.</i>	O	O	O	O
<i>Arctotheca calendula</i>	O			
<i>Briza minor</i>	C		C	
<i>Bromus hordeaceus</i>	O		O	O
<i>Capsella bursa-pastoris</i>			O	O
<i>Carthamus lanatus</i>	R	O	R	

Species	2013	2014	2015	2016
<i>Chondrilla juncea</i>	R			
<i>Echium plantagineum</i>	O	R		R
<i>Echium vulgare</i>	C			R
<i>Erodium cicutarium</i>				R
<i>Galium aparine</i>				O
<i>Hirschfeldia incana</i>	O	C	O	O
<i>Hordeum sp.</i>				R
<i>Hypericum perforatum</i>	O	O	O	
<i>Hypochaeris glabra</i>	O	C		R
<i>Hypochaeris radicata</i>		C		R
<i>Lactuca serriola</i>	R			O
<i>Onopordum acanthium</i>	R	R	R	
<i>Orobanche minor</i>		C		
<i>Paronychia brasiliiana</i>	O	C		
<i>Petrorhagia nanteuillii</i>	O	C		
<i>Phalaris aquatica</i>	C	C	C	C
<i>Plantago lanceolata</i>	C	C	C	C
<i>Rosa rubiginosa</i>	R			
<i>Rumex acetosella</i>	O	O	O	O
<i>Salvia verbenaca</i>	C		A	C
<i>Silene gallica</i>	R	O		O
<i>Silybum marianum</i>				R
<i>Sonchus oleraceus</i>	O		O	O
<i>Stellaria media</i>				O
<i>Taraxacum sect. Taraxacum</i>	R		R	O
<i>Tolpis barbata</i>		R		
<i>Trifolium arvense</i>	O			C
<i>Trifolium campestre</i>				C
<i>Trifolium dubium</i>				O
<i>Trifolium glomeratum</i>		O		C
<i>Trifolium sp.</i>	O			5
<i>Trifolium subterraneum</i>	O	C	O	
<i>Unknown introduced</i>		C		
<i>Vulpia sp.</i>	C	C		C

Blue: indicator species

Red: invasive species

Monitoring undertaken by Friends of Black Mountain

Location: Eastern side of Black Mountain, accessed from Frith Road, along Little Black Mountain Track

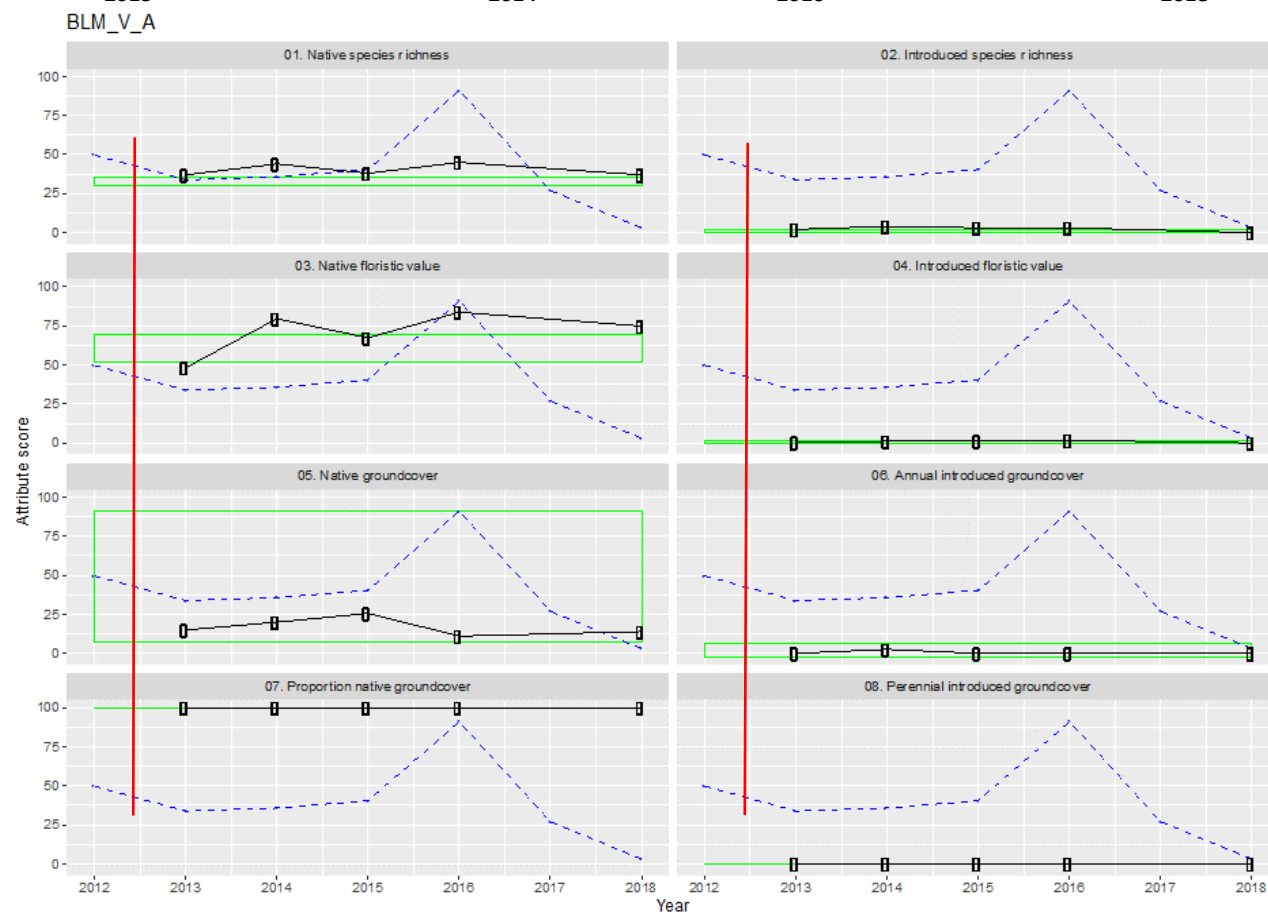
Vegetation Type Red Stringybark - Scribbly Gum Dry Forest

Vegetation structure Forest

Management Fire mitigation burn in autumn 2012, prior to the commencement of monitoring

Aim: To monitor change in vegetation and habitat condition following the burn.

Condition Indicators	Condition, trend	Interpretation
Overall condition	↑	Improving following the burn. Regeneration of shrubs was high following the burn; senescence occurred over time. Changes in vegetation condition attributes did not reflect variations in soil moisture availability.
Native species richness	↑	Increase in NSR gradual over time.
Native floristic richness	↑	Strong increase after the first year after the burn.
Native groundcover	↑	
Proportion native groundcover	↔	100% native groundcover
Introduced species richness	↔	
Introduced floristic value	↔	
Introduced annual groundcover	↔	Very low annual groundcover
Intr. perennial groundcover	↔	No perennial introduced species
Benchmark condition score	98%	
Habitat diversity score	79%	



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, BLM_NEA

	2013	2014	2015	2016	2018
Native species richness	37	44	38	45	37
Indicator species richness	23	27	21	27	25
Introduced species richness	2	4	3	3	0
Invasive species richness	0	0	0	0	0
Cryptogam cover (%)	1	0	0	1	0
Bare ground cover (%)	5	14	4	8	10
Rock cover (%)	3	1	3	3	1
Litter cover (%)	78	83	80	77	82
Annual introduced cover (%)	0	3	0	0	0
Perennial intr. gr' cover (%)	0	0	0	0	0
Native grass cover (%)	15	5	7	5	9
Native sub-shrub cover (%)	0	4	7	5	3
Other native groundcover (%)	0	12	12	1	2
Total native groundcover (%)	15	20	26	11	14
Native overstorey cover (%)	30	30	30	30	28
Native midstorey cover (%)	0	0	0	0	5
Exotic overstorey cover (%)	0	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0	0
No. species regenerating	4	4	4	4	4
No. age classes	6	6	6	6	6
Length of fallen timber	111	111	111	111	111
No trees with hollows	4	4	4	4	4
Proportion of tree species regenerating (%)	100	100	100	100	100

Species list

Species	2013	2014	2015	2016	2018
Native species					
<i>Acacia buxifolia</i>	R	O	O	O	O
<i>Acacia genistifolia</i>	R	O	R	R	O
<i>Acacia implexa</i>	R	O			R
<i>Billardiera scandens</i>	R	O	O	O	O
<i>Brachyloma daphnoides</i>	R	R	O	O	O
<i>Cassinia longifolia</i>	O	R	R	R	R
<i>Cassinia quinquefaria</i>		R	R	R	R
<i>Cassytha pubescens</i>		R	R	O	R
<i>Cheilanthes sieberi</i>			R	R	R
<i>Chrysocephalum apiculatum</i>		R			R
<i>Coronidium oxylepis</i>	R	O	O	O	O
<i>Daviesia mimosoides</i>	R	O	C	C	O
<i>Dianella revoluta</i>	O	O	O	O	O
<i>Dichelachne sieberiana</i>			O	O	
<i>Dichelachne sp.</i>	R				
<i>Dillwynia phyllicoides</i>	R	R			
<i>Diuris nigromontana</i>	R			O	
<i>Diuris sulphurea</i>		R		R	
<i>Eucalyptus macrorhyncha</i>	O	O	C	C	C
<i>Eucalyptus mannifera</i>	O	R	C	C	C
<i>Eucalyptus melliodora</i>	R	R	R	R	R
<i>Eucalyptus rossii</i>	C	C	C	C	C
<i>Euchiton sp.</i>	R	R			
<i>Glossodia major</i>		R			
<i>Gonocarpus tetragynus</i>	O	O	C	C	O
<i>Goodenia hederacea</i>	O	O	C	O	O
<i>Grevillea alpina</i>	R	O	O	O	O
<i>Hardenbergia violacea</i>	R	O	O	O	O
<i>Hibbertia obtusifolia</i>	R	R	R	R	
<i>Hovea heterophylla</i>	R				
<i>Hydrocotyle laxiflora</i>	R	O	O	C	R
<i>Hypericum gramineum</i>	R	O	R	O	R
<i>Lepidosperma laterale</i>	O	O	O	C	O
<i>Leucopogon fletcheri</i>		O	O	O	O
<i>Leucopogon microphyllus</i>	R			R	
<i>Lomandra filiformis filiformis</i>	R	O	C	A	O
<i>Orchid sp.</i>		R			

Species	2013	2014	2015	2016	2018
Native species					
<i>Oxalis perennans</i>		R	R	R	
<i>Petalochilus fuscatus</i>				R	
<i>Phyllanthus hirtellus</i>	O	O	O	C	O
<i>Pimelea curviflora</i>	R	R		O	O
<i>Poa meionectes</i>				O	
<i>Poa sieberiana</i>	C	C	C	C	O
<i>Paranthera microphylla</i>	R	O	O	C	
<i>Pultenaea procumbens</i>	R	O	R	O	R
<i>Rytidosperma pallidum</i>	O	C	C	C	O
<i>Senecio phelleus</i>		R	R	O	
<i>Senecio quadridentatus</i>				O	
<i>Stackhousia monogyna</i>	O	O	C	C	O
<i>Stylidium graminifolium</i>					O
<i>Stypandra glauca</i>					O
<i>Thysanotus patersonii</i>		O		R	R
<i>Veronica perfoliata</i>	O	O	O	O	O
<i>Xerochrysum viscosum</i>		R	R	R	R
Introduced species					
<i>Aira sp.</i>	R	O		O	
<i>Gamochaeta sp.</i>		R	R		
<i>Hypochaeris glabra</i>			R	O	
<i>Hypochaeris radicata</i>		R	O	O	
<i>Unknown introduced</i>			R		
<i>Unknown introduced</i>	R				
<i>Vulpia sp.</i>		R			

Blue: indicator species

Monitoring undertaken by Friends of Black Mountain

Location: eastern slope of Black Mountain, accessed from Frith Road near the Powerline Trail

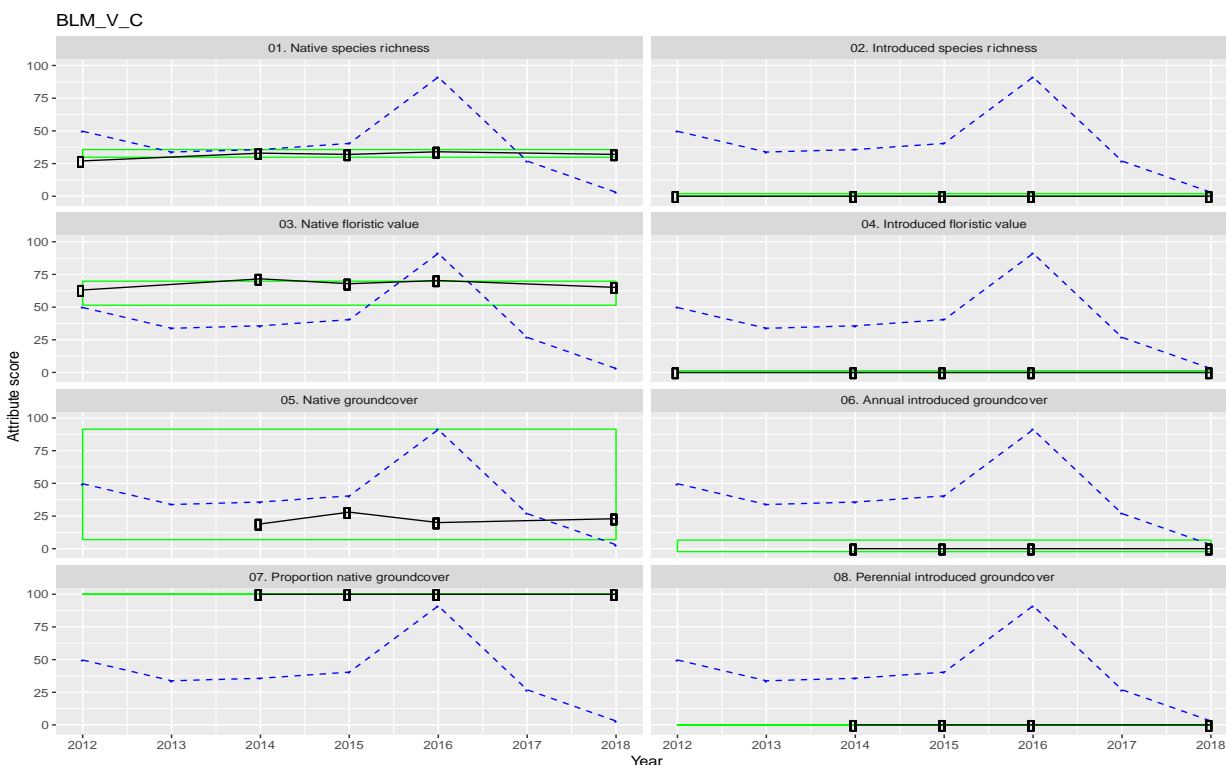
Vegetation Type Red Stringybark - Scribbly Gum Dry Forest

Vegetation structure Forest

Management: the area was last burnt in 1991

Aim: To monitor change in vegetation and habitat condition in comparison to burnt areas (Black Mountain NR Plots NEA and SE)

Condition indicators	Condition, trend	Interpretation
Overall condition	↔	The variability of values of attributes are lower than in the two burnt plots. Changes in condition scores do not reflect variations in soil moisture availability.
Native species richness	↔	
Native floristic score	↔	
Native groundcover	↔	Sparse
Proportion native groundcover	↔	100%
Introduced species richness	↔	No introduced species recorded
Introduced floristic value	↔	
Introduced annual groundcover	↔	0%
Intr. perennial groundcover	↔	0%
Benchmark condition score	94%	
Habitat diversity score	82%	Structural complexity increased



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, BLM_NEC

	2012	2014	2015	2016	2018
Native species richness	27	33	32	34	32
Indicator species richness	17	21	21	20	20
Introduced species richness	0	0	0	0	0
Invasive species richness	0	0	0	0	0
Cryptogam cover (%)		0	2	1	1
Bare ground cover (%)		8	1	3	4
Rock cover (%)		5	2	6	4
Litter cover (%)		90	89	83	88
Annual introduced cover (%)		0	0	0	0
Perennial intr. gr'cover (%)		0	0	0	0
Native grass cover(%)		6	20	16	18
Native sub-shrub cover (%)		3	6	3	4
Other native groundcover (%)		10	2	1	1
Total native groundcover (%)		19	28	20	23
Native overstorey cover (%)	34	34	34	34	40
Native midstorey cover (%)	20	20	20	20	25
Exotic overstorey cover (%)	0	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0	0
No. species regenerating	3	3	3	3	3
No. age classes	5	5	5	5	5
Length of fallen timber	84	84	84	84	84
No trees with hollows	1	1	1	1	1
Proportion of tree species regenerating (%)	100	100	100	100	100

Species richness

	2012	2014	2015	2016	2018
<i>Acacia buxifolia</i>	O	O	O	O	O
<i>Acacia genitifolia</i>		R	R	R	R
<i>Acacia gunnii</i>	O	O			R
<i>Acacia implexa</i>	O	R	R	R	R
<i>Billardiera scandens</i>	O	O	O	O	O
<i>Brachyloma daphnoides</i>	O	O	O	C	O
<i>Cassinia longifolia</i>	O			R	
<i>Cassinia quinquefaria</i>		R	R	R	
<i>Cassytha sp.</i>	O	R	O	O	O
<i>Coronidium oxylepis</i>	O	O	O	O	O
<i>Daviesia mimosoides</i>	O	O	O	O	O
<i>Dianella revoluta</i>	O	O	O	C	O
<i>Dichelachne sp</i>			O		
<i>Dillwynia phlylicoides</i>	O	O	O	O	O
<i>Eucalyptus macrorhyncha</i>	C	O	O	O	C
<i>Eucalyptus mannifera</i>				O	O
<i>Eucalyptus rossii</i>	C	O	O	O	C
<i>Exocarpos cupressiformis</i>	O	R	R	R	R
<i>Glossodia major</i>		O			
<i>Gonocarpus tetragynus</i>	C	O	O	C	O
<i>Goodenia hederacea</i>	O	O	O	C	O
<i>Grevillea alpina</i>	O	O	O	O	O
<i>Hakea microcarpa</i>	O				
<i>Hardenbergia violacea</i>	O	O	O	O	O
<i>Hibbertia calycina</i>	O	O	O	O	O
<i>Hibbertia obtusifolia</i>	O	O	O	C	O
<i>Hovea heterophylla</i>			R		R
<i>Hydrocotyle laxiflora</i>				C	
<i>Leucopogon fletcheri</i>			R	O	R
<i>Leucopogon microphyllus</i>	O	R			
<i>Lomandra filiformis filiformis</i>	O	O	O	C	O
<i>Monotoca scoparia</i>					R
<i>Phyllanthus hirtellus</i>		O	O	C	O
<i>Poa sieberiana</i>	O	O	O	C	O
<i>Poranthera microphylla</i>		O	O	C	
<i>Pultenaea procumbens</i>	O	O	O	O	O
<i>Rhytidosporum procumbens</i>		O	O	O	O
<i>Rytidosperma pallidum</i>	C	C	C	C	C
<i>Senecio phelleus</i>				O	
<i>Stylidium graminifolium</i>	O	R	R	R	
<i>Stypandra glauca</i>	O	O	O	C	O
<i>Wahlenbergia spp.</i>		O			R

Blue: indicator species

Monitoring undertaken by Friends of Black Mountain

Location: The plot is on south facing slope on northside and about 20m above the first creek crossing, accessed from the Botanic Gardens Track.

Vegetation Type Red Stringybark - Scribbly Gum Dry Forest

Vegetation structure Forest

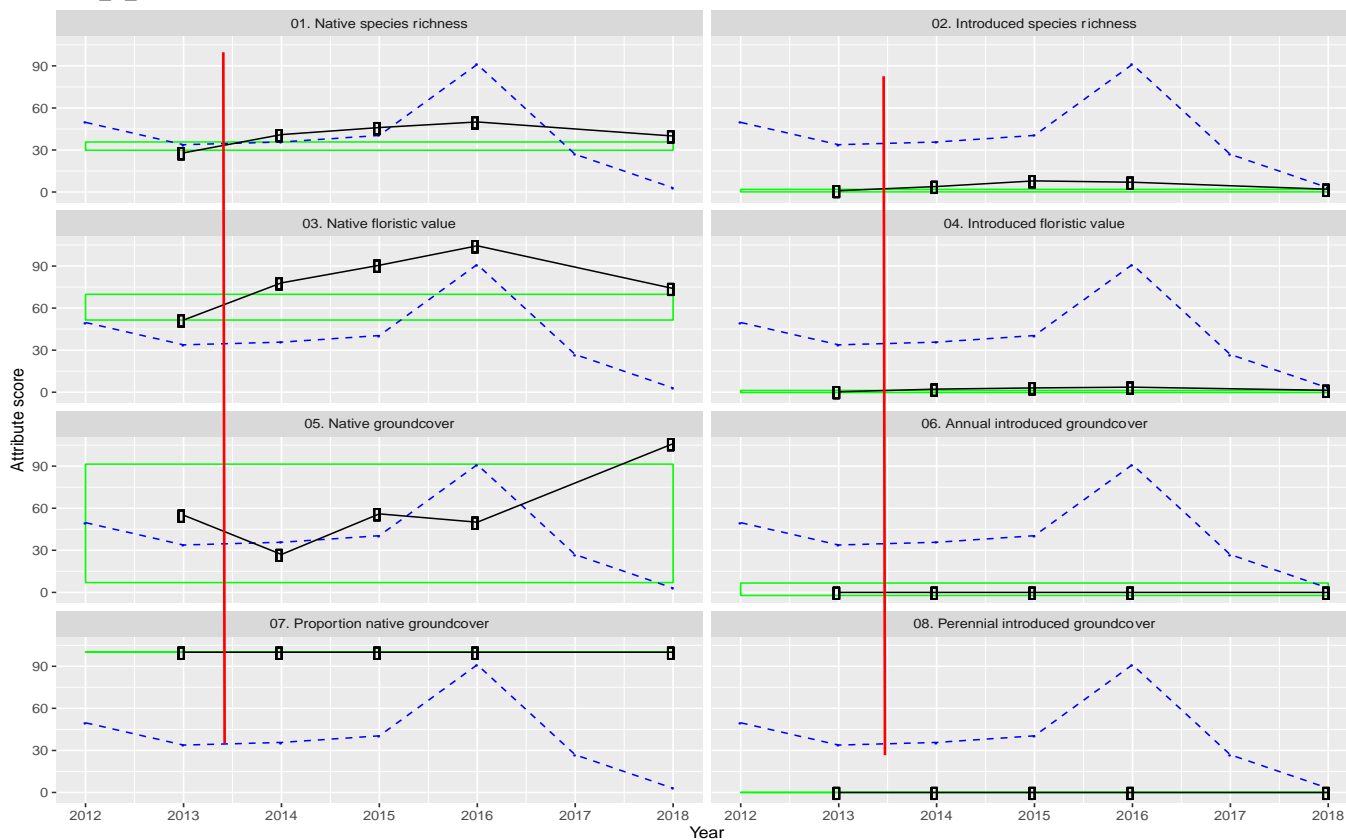
Management: burnt for fire mitigation in autumn 2014.

Aim: To monitor change in vegetation and habitat condition following the burn.

Condition indicators	Condition, trend	Interpretation
Overall condition	↑	Increase in condition following the burn; changes in vegetation attributes did not reflect variations in soil moisture availability.
Native species richness	↑	Increase post burn
Native floristic score	↑	Increase post burn
Native groundcover	↑	Reduction then increase post burn
Proportion native groundcover	↔	100% native groundcover
Introduced species richness	↔	Slight increase post burn
Introduced floristic value	↔	Slight increase post burn
Introduced annual groundcover	↔	Extremely low introduced species cover
Intr. perennial groundcover	↔	No introduced perennial species
Benchmark condition score	94%	
Habitat diversity score	79%	



BLM_V_S



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, BLM_SE

	2013	2014	2015	2016	2018
Native species richness	28	41	46	50	40
Indicator species richness	19	25	28	31	24
Introduced species richness	1	4	8	7	2
Invasive species richness	0	0	0	0	0
Cryptogam cover (%)	9	2	6	13	5
Bare ground cover (%)	1	45	23	8	29
Rock cover (%)	3	8	7	11	29
Litter cover (%)	63	52	57	55	130
Annual introduced cover (%)	0	0	0	0	0
Perennial intr. gr'cover (%)	0	0	0	0	0
Native grass cover(%)	55	20	37	40	82
Native sub-shrub cover (%)	0	0	2	1	4
Other native groundcover (%)	0	7	17	9	20
Total native groundcover (%)	55	27	56	50	106
Native overstorey cover (%)	20	20	20	20	20
Native midstorey cover (%)	0	0	0	0	0
Exotic overstorey cover (%)	0	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0	0
No. species regenerating	4	4	4	4	4
No. age classes	4	4	4	4	4
Length of fallen timber	142	142	142	142	142
No trees with hollows	3	3	3	3	3
Proportion of tree species regenerating (%)	100	100	100	100	100

Species richness

Species	2013	2014	2015	2016	2018
Native species					
<i>Acacia buxifolia</i>	O	O	O	O	O
<i>Acacia gunnii</i>	R	O	O	O	O
<i>Acacia implexa</i>			R	R	R
<i>Acacia melanoxylon</i>	R	R	O	O	O
<i>Acacia sp.</i>		O	R		
<i>Acianthus exertus</i>				O	
<i>Astrotriche ledifolia</i>		R	O	O	
<i>Billardiera scandens</i>		R	O	O	O
<i>Brachyloma daphnoides</i>	R	O		R	R
<i>Caladenia moschata</i>		O		O	
<i>Cassinia longifolia</i>		R	O	O	O
<i>Cassinia quinquefaria</i>				R	
<i>Cassytha sp.</i>			R	R	
<i>Chiloglottis trilabra</i>			C	O	
<i>Coronidium oxylepis</i>			R	R	R
<i>Daviesia mimosoides</i>	O	O	C	O	O
<i>Dianella revoluta</i>	O	O	O	O	O
<i>Dichelachne sieberiana</i>			O	O	
<i>Dillwynia phyllicoides</i>		O	O	O	O
<i>Dodonaea viscosa</i>	O	O	O	O	O
<i>Drosera peltata</i>		O	O	O	
<i>Eucalyptus dives</i>	R	R	R	O	R
<i>Eucalyptus macrorhyncha</i>	C	O	R	O	O
<i>Eucalyptus mannifera</i>	O	O	O	O	O
<i>Eucalyptus rossii</i>	R	R	R	R	R
<i>Euchiton sp.</i>		R	R		
<i>Exocarpos cupressiformis</i>				R	R
<i>Glossodia major</i>		R			
<i>Gonocarpus tetragynus</i>	O	C	A	O	O
<i>Hardenbergia violacea</i>		O	O	O	O
<i>Hibbertia calycina</i>	R	R	O	O	O
<i>Hibbertia obtusifolia</i>	O	O	O	O	O
<i>Lomandra filiformis filiformis</i>	O	O	O	O	O
<i>Lomandra longifolia</i>	O	O	C	C	C
<i>Lomandra multiflora</i>			R	O	R
<i>Luzula sp.</i>		O	O	O	R
<i>Melichrus urceolatus</i>	R		R	R	R
<i>Monotoca scoparia</i>	O	O	C	O	O
<i>Persoonia rigida</i>	O	R	O	O	O
<i>Phyllanthus hirtellus</i>	O	R	O	O	
<i>Pimelea linifolia</i>	R	O	O	O	O
<i>Poa sieberiana</i>	O	C	C	O	C
<i>Pomax umbellata</i>	R		O	O	O
<i>Poranthera microphylla</i>		C	O	O	R
<i>Pterostylis nutans</i>		O	R	O	
<i>Pultenaea procumbens</i>	R	O	O	O	O
<i>Rhytidosporum procumbens</i>	O	O	O	O	O
<i>Rytidosperma pallidum</i>	A	C	A	C	C
<i>Senecio phelleus</i>		O	O	O	O
<i>Stylidium graminifolium</i>	R	O	O	O	O
<i>Veronica perfoliata</i>	O		R	R	R
<i>Wahlenbergia spp.</i>		O	O	O	O
Introduced species					
<i>Aira sp.</i>			R	O	
<i>Billardiera heterophylla</i>			R	R	R
<i>Celtis australis</i>			R	O	
<i>Cerastium glomeratum</i>			R	O	
<i>Erigeron sp.</i>		O	O	R	
<i>Hypochaeris glabra</i>			R	O	
<i>Hypochaeris radicata</i>	R	O	O	O	O
<i>Sonchus oleraceus</i>		R			
<i>Stellaria media</i>		R			
<i>Thistle sp.</i>			R		
<i>Unknown introduced</i>		O			
<i>Unknown introduced</i>			R	R	

Blue: indicator species

Monitoring undertaken by Sarah Sharp

Location: Block 2, Section 128 in Yarralumla, between Alexandrina Drive and Forster Crescent and adjoining Stirling Ridge. The plot is more or less parallel and north of the powerlines.

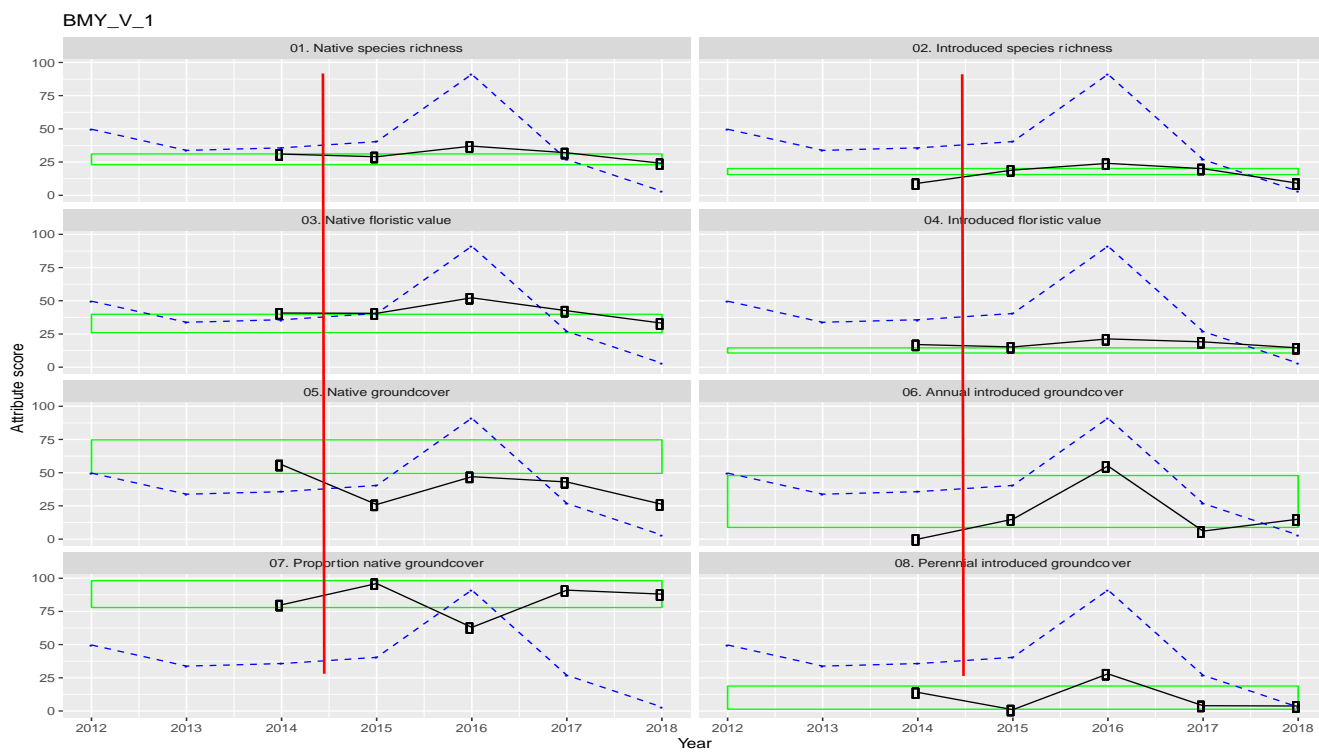
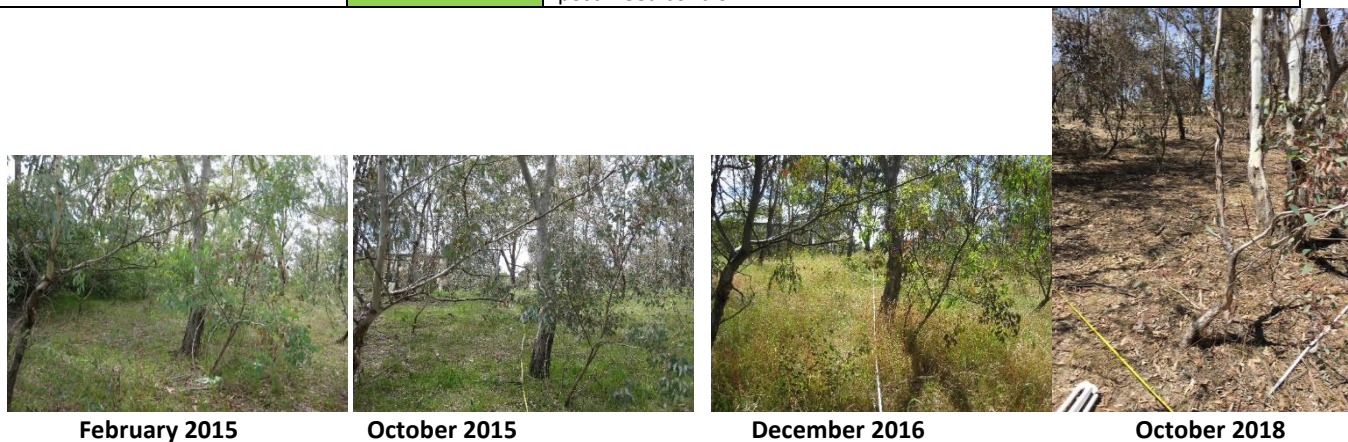
Land use: open space (City Services)

Vegetation Type Yellow Box – Blakely’s Red Gum Grassy Woodland (CEEC) **Vegetation structure** Grassy Woodland

Management Woody weed control autumn 2014.

Aim: to monitor change in vegetation and habitat condition following woody weed control.

Condition indicators	Condition, trend	Interpretation
Overall condition	↕	Changes reflect soil moisture availability post woody weed control. Button Wrinklewort <i>Rutidosis leptorhynchoides</i> count of 62 in 2014, 140 plants in 2016; increase may be because plants were not as visible in 2014 or because of reduced competition for resources.
Native species richness	↕	Increase following control corresponds to available soil moisture
Native floristic value	↕	Increase following control corresponds to available soil moisture
Native groundcover	↕	Decreased in the first year following woody weed control, then increased
Proportion native groundcover	↕	Decrease in 2016 corresponds to increase in Intr. perennial groundcover
Introduced species richness	↔	Fluctuation corresponds to soil moisture availability
Introduced floristic value	↔	Fluctuation corresponds to soil moisture availability
Introduced annual groundcover	↔	Very strong increase in 2016 corresponds to soil moisture availability
Intr. perennial groundcover	↔	Fluctuation corresponds to soil moisture availability
Benchmark condition score	63%	High woody weed content reduced condition.
Habitat diversity score	73%	Some loss of habitat due to clearance of woody weed habitat; more open post weed control.



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, BMY_1

	2014	2015	2016	2017	2018
Native species richness	31	29	37	32	24
Indicator species richness	12	12	14	13	11
Introduced species richness	9	19	24	20	9
Invasive species richness	4	3	6	4	4
Cryptogam cover (%)	0	0	0	0	0
Bare ground cover (%)	6	8	0	6	0
Rock cover (%)	0	0	0	0	0
Litter cover (%)	74	67	62	84	79
Annual introduced cover (%)	0	15	55	6	15
Perennial intr. gr'cover (%)	14	1	28	4	4
Native grass cover (%)	46	18	39	42	24
Native sub-shrub cover (%)	2	1	0	0	0
Other native groundcover (%)	8	7	8	1	3
Total native groundcover (%)	56	26	47	43	26
Native overstorey cover (%)	17	17	17	17	17
Native midstorey cover (%)	0	0	1	1	0
Exotic overstorey cover (%)	6	0	0	0	0
Exotic midstorey cover (%)	2	0	0	0	0
No. species regenerating	2	2	2	2	2
No. age classes	5	5	5	5	5
Length of fallen timber	2	2	2	2	2
No trees with hollows	1	1	1	1	1
Proportion of tree species regenerating (%)	67	67	67	67	67

Species richness

Species	2014	2015	2016	2017	2018
Native species					
<i>Acacia implexa</i>	R				
<i>Acaena novae-zelandiae</i>	R	O	O	R	
<i>Acaena ovina</i>	R	O	O	O	O
<i>Anthosachne scabra</i>		O	O	O	
<i>Aristida ramosa</i>	O	O		O	O
<i>Arthropodium fimbriatum</i>			O		
<i>Asperula conferta</i>		R			
<i>Austrostipa bigeniculata</i>	O	O	O		O
<i>Austrostipa scabra</i>	O	O	O	O	
<i>Bothriochloa macra</i>	O		O		O
<i>Bulbine bulbosa</i>		O	O		R
<i>Cassinia longifolia</i>			R	R	O
<i>Cheilanthes sieberi</i>	O	O	O	O	
<i>Cheilanthes sp.</i>					O
<i>Chrysocephalum apiculatum</i>	O	O	O	O	O
<i>Convolvulus angustissimus</i>		C	O	R	R
<i>Cymbopogon refractus</i>	R				
<i>Desmodium varians</i>	O	O	O	O	R
<i>Dianella revoluta</i>	R				
<i>Einadia nutans</i>				R	
<i>Eucalyptus blakelyi</i>	C	C	O	O	O
<i>Eucalyptus melliodora</i>	C	C	O	O	O
<i>Glycine clandestina</i>	O		O	O	R
<i>Glycine tabacina</i>	O	C	O	O	O
<i>Goodenia hederacea</i>				O	
<i>Goodenia pinnatifida</i>	R	O	R	R	O
<i>Hydrocotyle laxiflora</i>	O	O	O	O	O
<i>Lomandra filiformis filiformis</i>	O			R	O
<i>Lomandra longifolia</i>		R			R
<i>Microlaena stipoides</i>	C	C	C	C	C
<i>Oxalis perennans</i>	O	O		O	O
<i>Pimelea curviflora</i>			O		
<i>Plantago varia</i>	O	O	O	O	O
<i>Poa sieberiana</i>	O	O	O	O	
<i>Rubus parvifolius</i>				R	

Species	2014	2015	2016	2017	2018
<i>Rumex sp. native</i>			R	R	
<i>Rutidosia leptorhynchoides</i>	O	O	O	O	O
<i>Rytidosperma spp.</i>	O	O	O	O	
<i>Schoenus apogon</i>	O	O			
<i>Senecio sp.</i>			R		
<i>Themeda triandra</i>		R	O		
<i>Tricoryne elatior</i>		R	O	O	
<i>Vittadinia cuneata</i>	O	R	R	R	R
<i>Vittadinia muelleri</i>	O				O
<i>Wahlenbergia spp.</i>	R	O	R	R	
Introduced species					
<i>Acacia baileyana</i>			R	R	
<i>Aira sp.</i>		O	O		
<i>Briza maxima</i>	O	O	O	O	O
<i>Bromus diandrus</i>		O	O	O	
<i>Bromus hordeaceus</i>		O	O	O	
<i>Centaurium erythraea</i>		O	O	O	R
<i>Cotoneaster franchetii</i>	C				O
<i>Cotoneaster glaucophyllus</i>	C	R	R		
<i>Dactylis glomerata</i>				R	
<i>Erigeron sp.</i>			O	O	
<i>Festuca arundinacea</i>	R	O	O	O	
<i>Holcus lanatus</i>			O		
<i>Hypericum perforatum</i>	O	O	O	O	O
<i>Hypochaeris glabra</i>		O			
<i>Hypochaeris radicata</i>	O		O	O	O
<i>Lactuca serriola</i>		R		R	
<i>Lathyrus latifolia</i>		R			
<i>Ligustrum lucidum</i>			R		
<i>Lolium perenne</i>		O			
<i>Nassella neesiana</i>		O	O	O	O
<i>Petrorhagia nanteuillii</i>		O	O	R	
<i>Plantago lanceolata</i>	O	O	O	O	O
<i>Pyracantha angustifolia</i>	O		R	O	R
<i>Rubus anglicans</i>	R			R	
<i>Sanguisorba minor</i>			R		
<i>Setaria sp.</i>			R		
<i>Sonchus oleraceus</i>			O		
<i>Taraxacum sect. Taraxacum</i>				O	
<i>Thistle sp.</i>		R			
<i>Trifolium arvense</i>			O	O	
<i>Trifolium glomeratum</i>			O		
<i>Unknown introduced</i>				O	
<i>Vicia sativa</i>			R	O	
<i>Vulpia sp.</i>		O	O		

Blue: indicator species

Red: invasive species

Monitoring undertaken by Sarah Sharp for MCG project

Location: in the south-eastern corner of Bullan Mura Woodland adjacent to the Chinese Embassy on Forster Crescent

Vegetation Type: Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland (CEEC in 2018)

Vegetation structure: grassy woodland

Management: BMY_3 is one of four plots in four sites subject to a cultural cool burn in autumn 2018.

Aim: To monitor change in vegetation composition and structure and condition following a cultural burn.

Data from BMY_1 in the years 2017, 2018 was used to compared to BMY_3, as a control.

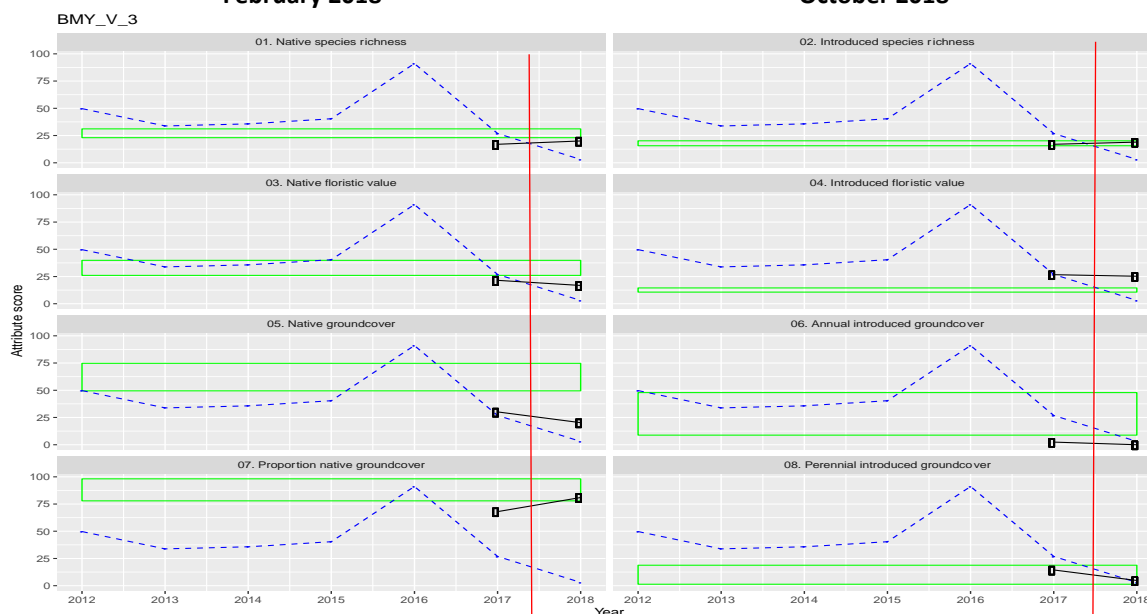
Condition indicators	BMY_3 burnt	BMY_1 control (2017, 2018 data only)	Interpretation
Overall condition	↑	↔	Interpretation was limited by the short period of monitoring. There was a large increase in bare ground cover after the burn. There was a small decrease in introduced perennial groundcover and native groundcover, which correspond both with the burn and with the low soil moisture conditions. In 2018 the plot met the criteria as the critically endangered ecological community.
Native species richness	↑	↔	Very slight increase is apparent, but within the range of the confidence intervals
Native floristic value	↔	↔	
Native groundcover	↓	↓	Poor scores in both plots likely to reflect in part variability in seasonal conditions
Proportion native groundcover	↑	↔	Increase in native groundcover after the burn
Introduced species richness	↔	↑	
Introduced floristic value	↔	↔	
Introduced annual groundcover	↔	↔	
Intr. perennial groundcover	↔	↔	
Benchmark condition score	58%	63%	
Habitat diversity score	55%	73%	



February 2018



October 2018



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability

Summary data

	March 2018	October 2018
Native species richness	17	20
Indicator species richness	5	4
Introduced species richness	17	19
Invasive species richness	6	5
Cryptogam cover (%)	0	2
Bare ground cover (%)	1	24
Rock cover (%)	0	0
Litter cover (%)	92	60
Annual introduced cover (%)	2	0
Perennial intr. gr'cover (%)	14	5
Native grass cover (%)	29	19
Native sub-shrub cover (%)	0	1
Other native groundcover (%)	1	0
Total native groundcover (%)	30	20
Native overstorey cover (%)	15	15
Native midstorey cover (%)	10	1
Exotic overstorey cover (%)	0	0
Exotic midstorey cover (%)	2	0
No. species regenerating	2	2
No. age classes	2	3
Length of fallen timber	0	0
No trees with hollows	0	0
Proportion of tree species regenerating (%)	67	100

Species richness

Species	2017	2018
Native species		
<i>Acacia dealbata</i>	O	O
<i>Austrostipa bigeniculata</i>	O	O
<i>Cheilanthes sp.</i>	O	
<i>Chrysocephalum apiculatum</i>	O	O
<i>Cotula australis</i>		R
<i>Desmodium varians</i>		R
<i>Dichelachne sp</i>	R	
<i>Einadia nutans</i>	O	O
<i>Eucalyptus blakelyi</i>	O	O
<i>Eucalyptus melliodora</i>	O	O
<i>Exocarpos cupressiformis</i>	R	R
<i>Geranium sp.</i>		R
<i>Glycine tabacina</i>	O	R
<i>Goodenia pinnatifida</i>		O
<i>Lomandra filiformis bracteata</i>		O
<i>Lomandra filiformis filiformis</i>	O	
<i>Microlaena stipoides</i>	C	C
<i>Oxalis perennans</i>	O	O
<i>Panicum effusum</i>	O	O
<i>Rumex sp. native</i>		R
<i>Rytidosperma spp.</i>	O	O
<i>Tricoryne elatior</i>	O	O
<i>Wahlenbergia spp.</i>		R
Introduced species		
<i>Acacia baileyana</i>	R	
<i>Arctotheca calendula</i>		O
<i>Avena sp.</i>	O	
<i>Carthamus lanatus</i>		O
<i>Chondrilla juncea</i>		R
<i>Cirsium vulgare</i>	O	O
<i>Cynodon dactylon</i>	O	O
<i>Echium plantagineum</i>		O
<i>Echium vulgare</i>		O
<i>Festuca arundinacea</i>	O	
<i>Hirschfeldia incana</i>	O	
<i>Hypericum perforatum</i>	O	O
<i>Hypochaeris radicata</i>	O	O
<i>Lactuca serriola</i>		O
<i>Lepidium sp.</i>	O	
<i>Modiola caroliniana</i>	O	O
<i>Nassella neesiana</i>	O	O
<i>Nassella trichotoma</i>	O	O
<i>Paspalum dilatatum</i>	O	R
<i>Plantago lanceolata</i>	O	O
<i>Rubus anglicans</i>	O	O
<i>Rumex acetosella</i>	R	O
<i>Trifolium dubium</i>		R
<i>Verbascum thapsus</i>	O	
<i>Verbascum virgatum</i>		R

Blue: indicator species

Red: invasive species

Monitoring 2014, 2016, undertaken by Captains Flat Landcare Group

Location: in the south-western corner of the cemetery, near the sign for the Presbyterian section of the cemetery.

Vegetation Type Snow Gum – Candlebark tall woodland **Vegetation structure** Shrubby forest

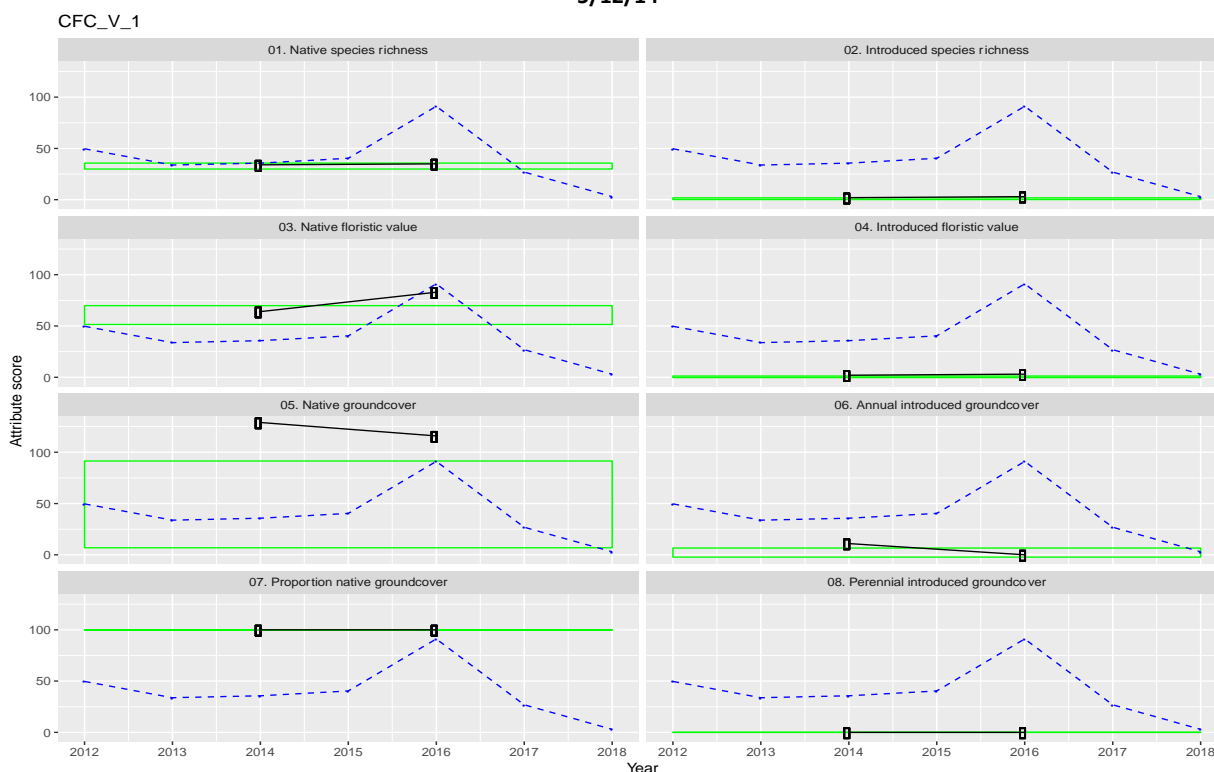
Management no active management. The site has been cleared of trees sometime in the past – there are no mature trees and it is dense with regenerating trees and shrubs.

Aims: to monitor change in vegetation and habitat condition and to use the results to contribute to the management plan.

Condition indicators	Condition, trend	Interpretation
Overall condition	↔	<i>Eucalyptus aggregata</i> , listed as vulnerable in NSW, is present on the site. Changes in vegetation indicators did not reflect variations in soil moisture availability.
Native species richness	↔	
Native floristic value	↑	
Native groundcover	↓	
Proportion native groundcover	↔	
Introduced species richness	↔	Sweet Vernal Grass <i>Anthosanthum odoratum</i> is common
Introduced floristic value	↔	
Introduced annual groundcover	↑	Decrease in annual introduced cover in 2016
Intr. perennial groundcover	↔	
Benchmark condition score	74%	The lack of mature and hollow-bearing trees reduces the benchmark condition score
Habitat diversity score	79%	The lack of mature and hollow-bearing trees reduces the habitat diversity score



5/12/14



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	2014	2016
Native species richness	34	35
Indicator species richness	22	25
Introduced species richness	2	3
Invasive species richness	0	0
Cryptogam cover (%)	0	0
Bare ground cover (%)	0	0
Rock cover (%)	0	0
Litter cover (%)	53	66
Annual introduced cover (%)	11	0
Perennial intr. gr'cover (%)	0	0
Native grass cover (%)	82	95
Native sub-shrub cover (%)	31	2
Other native groundcover (%)	16	18
Total native groundcover (%)	129	116
Native overstorey cover (%)	20	20
Native midstorey cover (%)	5	5
Exotic overstorey cover (%)	0	0
Exotic midstorey cover (%)	0	0
No. species regenerating	3	3
No. age classes	5	5
Length of fallen timber	20	20
No trees with hollows	0	0
Proportion of tree species regenerating (%)	100	100

Species richness

Species	2014	2016
Native species		
<i>Acacia dealbata</i>	O	O
<i>Acacia melanoxylon</i>	R	R
<i>Acaena ovina</i>		R
<i>Asperula conferta</i>	O	O
<i>Bossiaea prostrata</i>	O	O
<i>Brachyloma daphnoides</i>	R	
<i>Brachyscome rigidula</i>	R	
<i>Caesia parviflora</i>		O
<i>Comesperma ericinum</i>		O
<i>Coronidium scorpioides</i>		O
<i>Craspedia variabilis</i>	O	O
<i>Daviesia mimosoides</i>	R	
<i>Dichelachne micrantha</i>	R	
<i>Drosera peltata</i>		R
<i>Epacris microphylla</i>	O	O
<i>Eucalyptus aggregata</i>	O	O
<i>Eucalyptus pauciflora</i>	R	
<i>Eucalyptus rubida</i>	O	O
<i>Glycine clandestina</i>	R	R
<i>Gonocarpus tetragynus</i>		O
<i>Hakea dactyloides</i>	R	R
<i>Hakea microcarpa</i>	O	O
<i>Hypericum gramineum</i>	O	O
<i>Leptorhynchus squamatus</i>		O
<i>Leptospermum brevipes</i>	O	C
<i>Lomandra filiformis filiformis</i>		O
<i>Lomandra longifolia</i>	R	
<i>Lomandra multiflora</i>	O	O
<i>Microlaena stipoides</i>		O
<i>Microtis unifolia</i>	O	O
<i>Pimelea curviflora</i>	O	O
<i>Plantago varia</i>		O
<i>Poa meionectes</i>		O
<i>Poa sieberiana</i>	C	C
<i>Pultenaea microphylla</i>	O	O
<i>Ranunculus lappaceus</i>		O
<i>Rubus parvifolius</i>	R	
<i>Rytidosperma pallidum</i>	O	
<i>Schoenus apogon</i>		O
<i>Senecio quadridentatus</i>	O	
<i>Stellaria pungens</i>	O	O
<i>Stylidium graminifolium</i>	O	O
<i>Thelymitra sp.</i>	O	
<i>Themeda triandra</i>	O	O
<i>Unknown native spp.</i>	O	
Introduced species		
<i>Wahlenbergia spp.</i>	O	O
<i>Anthoxanthum odoratum</i>	O	O
<i>Holcus lanatus</i>		O
<i>Hypochaeris radicata</i>	O	O

Blue: indicator species

Captains Flat Property 2014–2016

CFH_1

Monitoring undertaken by Captains Flat Landcare Group

Location: property located on the Molonglo River, 5 km north of Captains Flat

Vegetation Type: native grassland (pasture), origin unknown

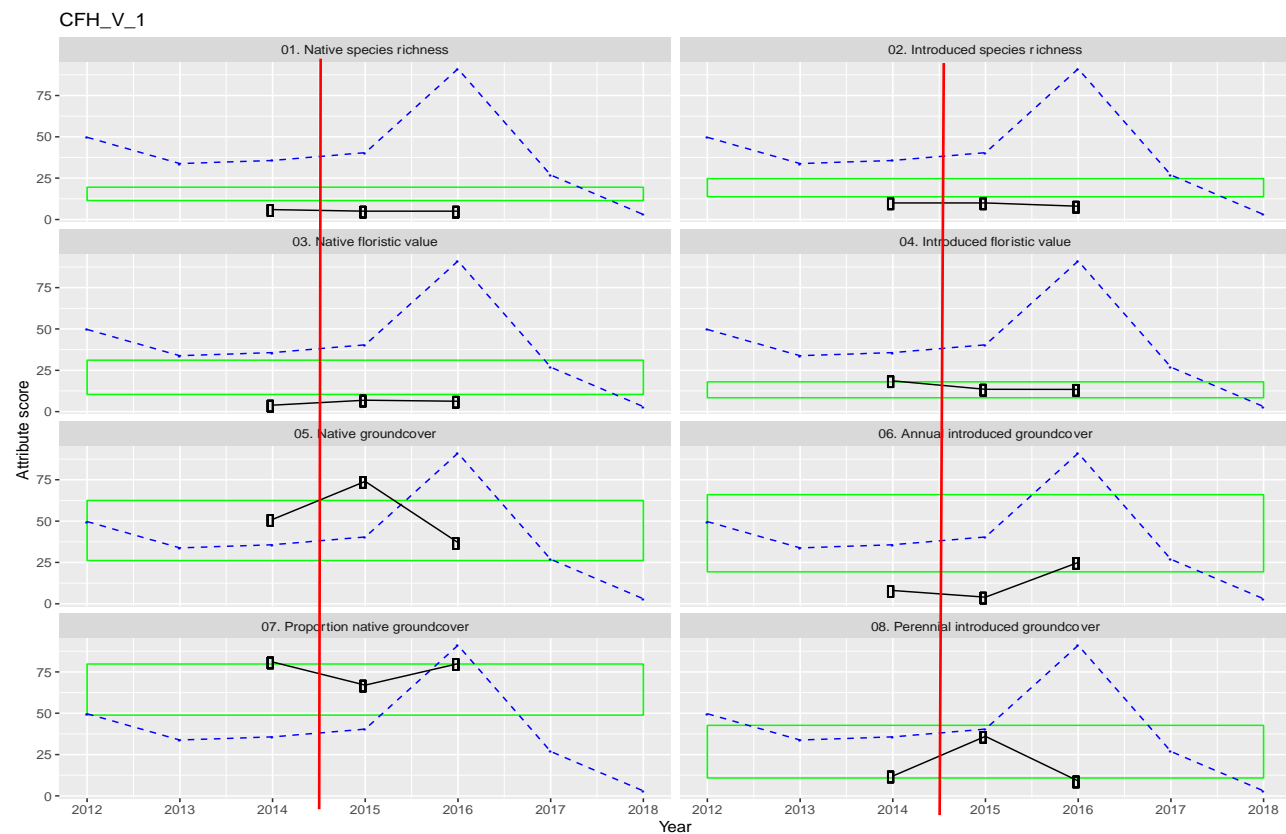
Vegetation structure: grassland

Management: Blackberry and Broom were sprayed in January 2015

Aim: To monitor change in vegetation and habitat condition after spraying Blackberry and Broom

Condition indicators	Condition, trend	Interpretation
Overall condition	↔	Following spraying in January 2015 there was a significant reduction in the cover of Montpellier Broom (<i>Genista monspessulana</i>), and Blackberry evident in summer 2015, but recovery of Broom and some Blackberry was evident in 2016. Cover of introduced annual species, litter and bare earth were much higher in 2016 than in previous years, corresponding to variations in fluctuations in soil moisture availability. Reduction in native groundcover in 2016 may be due in part to lack of visibility due to the higher annual groundcover.
Native species richness	↔	Very low, no change following woody weed control
Native floristic value	↔	Very low, no change following woody weed control
Native groundcover	↑↓	Fluctuating increase following woody weed control, then decrease
Proportion native groundcover	↔	Fluctuating, decrease following woody weed control, then increase
Introduced species richness	↔	Low, stable
Introduced floristic value	↔	Low, slight decrease
Introduced annual groundcover	↓	Increase may reflect clearing or soil moisture availability
Intr. perennial groundcover	↑↓	Increase following woody weed control then decrease
Benchmark condition score	54%	
Habitat diversity score	51%	

No photos available



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	2014	2015	2016
Native species richness	6	5	5
Indicator species richness	0	1	1
Introduced species richness	10	10	8
Invasive species richness	4	4	3
Cryptogam cover (%)	0	0	0
Bare ground cover (%)	19	16	36
Rock cover (%)	47	2	2
Litter cover (%)	4	20	25
Annual introduced cover (%)	8	4	25
Perennial intr. gr'cover (%)	12	36	9
Native grass cover (%)	41	64	37
Native sub-shrub cover (%)	2	10	0
Other native groundcover (%)	8	0	0
Total native groundcover (%)	51	74	37
Native overstorey cover (%)	0	0	0
Native midstorey cover (%)	0	0	0
Exotic overstorey cover (%)	0	0	0
Exotic midstorey cover (%)	0	0	0
No. species regenerating	1	1	1
No. age classes	3	3	3
Length of fallen timber	0	0	0
No trees with hollows	0	0	0
Proportion of tree species regenerating (%)	100	100	100

Species richness

Species	2014	2015	2016
Native species			
<i>Acacia dealbata</i>	C	C	O
<i>Juncus sp.</i>	O	O	C
<i>Leptospermum sp.</i>	O		
<i>Poa labillardierei</i>	C	A	A
<i>Schoenus apogon</i>	O	C	A
<i>Typha orientalis</i>	O	C	R
Introduced species			
<i>Carduus nutans</i>	O		
<i>Cytisus scoparius</i>	C	R	
<i>Genista monspessulana</i>	C	R	A
<i>Holcus lanatus</i>		C	C
<i>Phalaris aquatica</i>	O	C	A
<i>Rubus anglicans</i>	A	R	O
<i>Rumex acetosella</i>	O	O	O
<i>Salix sp.</i>	A	C	O
<i>Sisymbrium officinale</i>	O	O	R
<i>Taraxacum sect. Taraxacum</i>	O	O	R
<i>Unknown introduced</i>	O	O	

Red: invasive species

Monitoring undertaken by Coolleman Ridge ParkCare

Location: eastern slope of Mt Arawang.

Vegetation Type Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland (CEEC in 2018)

Vegetation structure: grassy woodland

Management Serrated Tussock control in 2011; control burn in autumn 2017 for wildfire mitigation.

Aim: To monitor change in vegetation and habitat condition after control of Serrated Tussock and implementation of a control burn.

Condition indicators	Condition, trend	Interpretation
Overall condition	↑	Changes in introduced species cover reflects both improved changes post burn, and soil moisture availability. Serrated Tussock was recorded annually, but after 2014, at lower abundance.
Native species richness	↔	Slight reduction post burn, increased again after 18 months
Native floristic value	↔	Reduction post burn
Native groundcover	↑	Increase post burn, despite reduced soil moisture availability
Proportion native groundcover	↑	Increase post burn, despite reduced soil moisture availability
Introduced species richness	↔	No change
Introduced floristic value	↓	Slight increase in weeds (decrease in condition)
Introduced annual groundcover	↑	Significant decrease post burn, also reflecting soil moisture availability (increase in condition)
Intr. perennial groundcover	↑	Significant decrease post burn, also reflecting soil moisture availability (increase in condition)
Benchmark condition score	69%	
Habitat diversity score	70%	



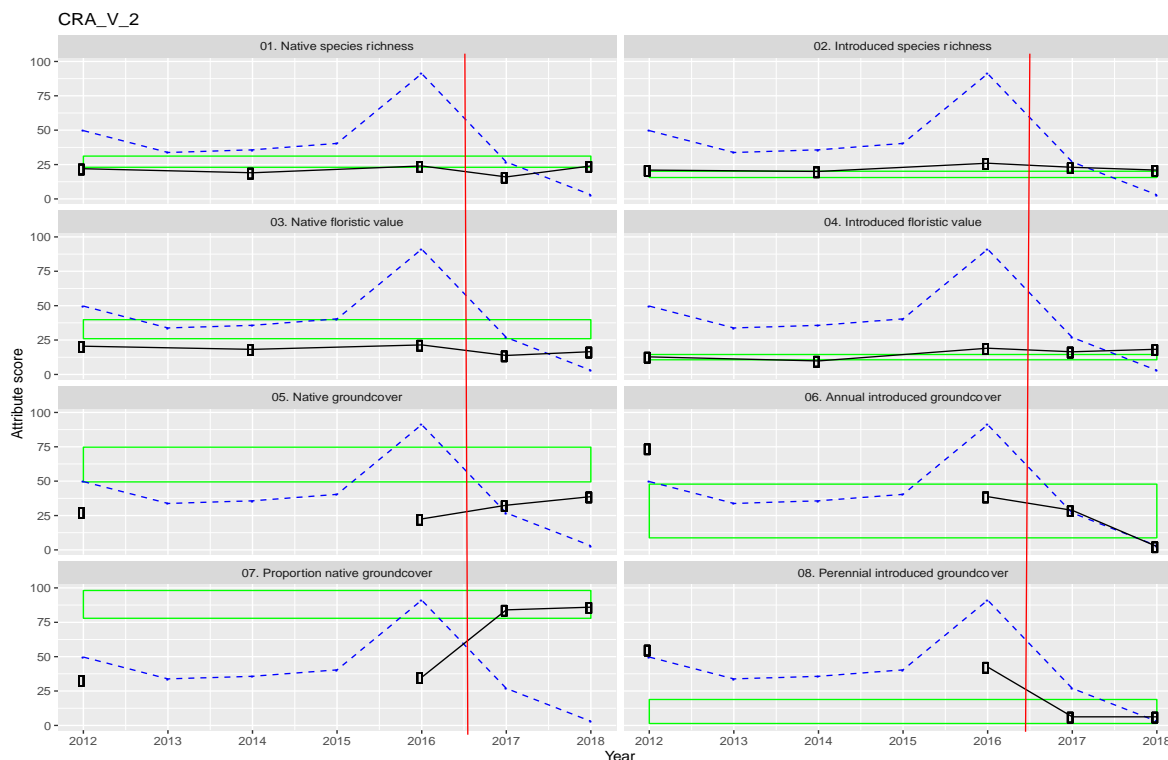
6/12/16



23/11/17



27/11/18



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, CRA_2

	2012	2014	2016	2017	2018
Native species richness	22	19	24	16	24
Indicator species richness	5	5	7	5	3
Introduced species richness	21	20	26	23	21
Invasive species richness	2	0	3	3	3
Cryptogam cover (%)	0		0	0	0
Bare ground cover (%)	1		1	9	11
Rock cover (%)	9		9	14	10
Litter cover (%)	36		1	16	41
Annual introduced cover (%)	74		39	29	3
Perennial intr. gr'cover (%)	55		43	6	6
Native grass cover (%)	28		6	19	26
Native sub-shrub cover (%)	0		15	0	6
Other native groundcover (%)	0		1	14	6
Total native groundcover (%)	28		23	33	39
Native overstorey cover (%)	0	0	0	0	0
Native midstorey cover (%)	0	0	0	0	0
Exotic overstorey cover (%)	0	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0	0
No. species regenerating	1	1	1	1	1
No. age classes	1	1	1	1	1
Length of fallen timber	27	27	27	27	27
No trees with hollows	5	5	5	5	5
Proportion of tree species regenerating (%)	0	0	0	0	0

Species richness

	2012	2014	2016	2017	2018
Native species					
<i>Acacia implexa</i>	O	O	R	O	O
<i>Acaena ovina</i>					R
<i>Anthosachne scabra</i>	O	O	R		R
<i>Austrostipa bigeniculata</i>		R			
<i>Austrostipa scabra</i>	O	C	O		O
<i>Bothriochloa macra</i>			R	R	O
<i>Cassinia quinquefaria</i>					R
<i>Cheilanthes sp.</i>	O	O	O	R	O
<i>Chenopodium pumilio</i>			R		O
<i>Convolvulus angustissimus</i>	O	O	R	O	O
<i>Cyperaceae sp.</i>		R			
<i>Dichondra repens</i>	O				
<i>Einadia nutans</i>					O
<i>Epilobium sp.</i>	R				
<i>Eucalyptus sp. planted</i>	R	R	R	R	R
<i>Geranium retrorsum</i>					O
<i>Geranium solanderi</i>	O				O
<i>Geranium sp.</i>		O	O	O	
<i>Glycine tabacina</i>	O		O	R	R
<i>Hackelia suaveolens</i>	R		R		
<i>Juncus sp.</i>	R				R
<i>Lomandra filiformis filiformis</i>	O	O	O	R	
<i>Microlaena stipoides</i>	C	C	O	C	O
<i>Oxalis perennans</i>	R		R	R	O
<i>Panicum effusum</i>	R		R		R
<i>Poa sieberiana</i>	R	R	R		
<i>Rubus parvifolius</i>	C	C	C	C	C
<i>Rumex sp. native</i>	R	R	R	R	R
<i>Rytidosperma spp.</i>					R
<i>Senecio hispidulus</i>		O	O	O	
<i>Senecio sp.</i>	O				R
<i>Sorghum leiocladum</i>		O	R		

	2012	2014	2016	2017	2018
<i>Themeda triandra</i>		R	R	R	
<i>Vittadinia cuneata</i>		O		O	O
<i>Wahlenbergia spp.</i>	R	R	R	O	R
Introduced species					
<i>Avena sp.</i>	O	C	R	O	R
<i>Bromus diandrus</i>			R	R	O
<i>Bromus hordeaceus</i>			R	O	O
<i>Bromus spp.</i>		C	O	O	
<i>Carthamus lanatus</i>		O	O	R	O
<i>Chondrilla juncea</i>		R	R		
<i>Cirsium vulgare</i>	O		O	R	
<i>Erigeron sp.</i>	R	R	O	O	O
<i>Festuca arundinacea</i>		C	R	O	
<i>Festuca pratensis</i>			O		O
<i>Galium aparine</i>	R				
<i>Hirschfeldia incana</i>	O	O	O	O	O
<i>Hypericum perforatum</i>			R	R	O
<i>Hypochaeris glabra</i>	R				
<i>Hypochaeris radicata</i>	R	R	R	R	R
<i>Modiola caroliniana</i>	R	R	R	R	O
<i>Nassella trichotoma</i>	O	C	O	O	O
<i>Oenothera stricta</i>			R		
<i>Orobanche minor</i>	R	R			
<i>Petrorhagia nanteuillii</i>	O	C	O	O	O
<i>Phalaris aquatica</i>	O		O	R	R
<i>Plantago lanceolata</i>					R
<i>Rosa rubiginosa</i>	R	R		R	R
<i>Rubus anglicans</i>		R	R	R	
<i>Rumex acetosella</i>	R	R	R	R	O
<i>Salvia verbenaca</i>	O		O	C	O
<i>Senecio vulgaris</i>		R	R		
<i>Solanum nigrum</i>			R		
<i>Sonchus oleraceus</i>	R				
<i>Trifolium arvense</i>	C	C	C	O	O
<i>Trifolium campestre</i>	O				
<i>Trifolium sp.</i>		R		O	O
<i>Trifolium spp.</i>	O		O		
<i>Verbascum thapsus</i>	R	R	O	O	R
<i>Verbascum virgatum</i>					R
<i>Vulpia sp.</i>	O	C	O	C	

Blue: indicator species

Red: invasive species

Coleman Ridge Nature Reserve, 2013–2018

CRD_1

Monitoring undertaken by Coleman Ridge ParkCare

Location: south facing slope south from Darrell Place, Chapman.

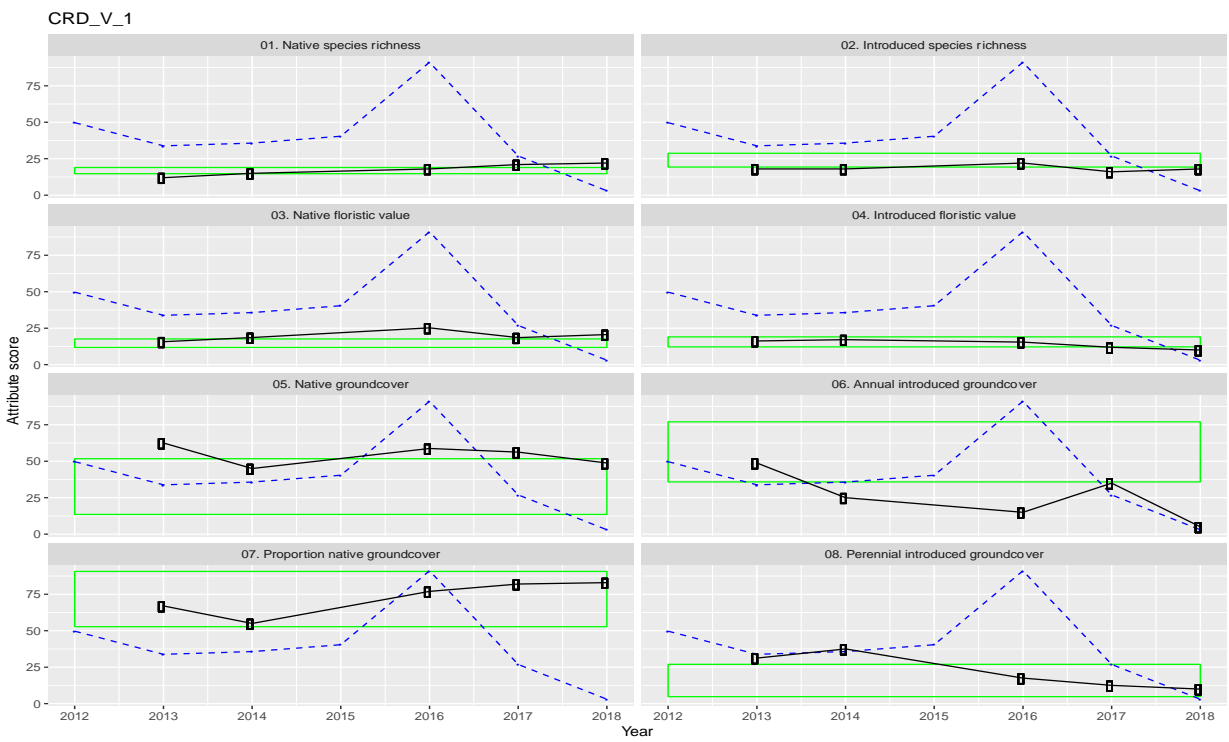
Vegetation Type Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland CEEC (2017)

Vegetation structure Derived grassland

Management general weeding. Possible treatment of St John's Wort in 2018.

Aim: To monitor change in vegetation and habitat condition, particularly change in native and introduced species cover and richness.

Condition indicators	Condition, trend	Interpretation
Overall condition	↑	The cover of St John's Wort has reduced. Changes in condition do not reflect soil moisture availability, with possible exception of reduced introduced annual cover in 2018.
Native species richness	↑	Gradual increase in species richness
Native floristic value	↑	Slightly higher in 2016, year of higher soil moisture
Native groundcover	↔	Moderately stable
Proportion native groundcover	↑	
Introduced species richness	↔	
Introduced floristic value	↔	
Introduced annual groundcover	↑	Decrease over time, perhaps reflecting lower soil moisture in 2018 (an increase in condition)
Intr. perennial groundcover	↑	Decrease over time (an increase in condition)
Benchmark condition score	39%	Low, reflecting lack of tree cover and fallen timber
Habitat diversity score	49%	Low, reflecting lack of habitat features



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	2013	2014	2016	2017	2018
Native species richness	12	15	18	21	22
Indicator species richness	5	6	7	7	6
Introduced species richness	18	18	22	16	18
Invasive species richness	2	2	2	2	2
Cryptogam cover (%)	0	0	0	0	0
Bare ground cover (%)	0	4	0	0	8
Rock cover (%)	0	3	6	1	1
Litter cover (%)	58	8	14	14	31
Annual introduced cover (%)	39	25	15	35	5
Perennial intr. gr'cover (%)	25	38	18	13	10
Native grass cover (%)	48	39	51	50	47
Native sub-shrub cover (%)	0	3	0	0	0
Other native groundcover (%)	2	4	8	6	1
Total native groundcover (%)	50	45	59	56	48
Native overstorey cover (%)	0	0	0	0	0
Native midstorey cover (%)	0	0	0	0	0
Exotic overstorey cover (%)	0	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0	0
No. species regenerating	0	0	0	0	0
No. age classes	0	0	0	0	0
Length of fallen timber	0	0	0	0	0
No trees with hollows	0	0	0	0	0
Proportion of tree species regenerating (%)	0	0	0	0	0

Species richness

Species	2013	2014	2016	2017	2018
Native species					
<i>Acaena ovina</i>	O	O	O	R	O
<i>Anthosachne scabra</i>	O	C		O	R
<i>Aristida ramosa</i>				R	O
<i>Austrostipa bigeniculata</i>			R		R
<i>Austrostipa scabra</i>	O	C	O	O	O
<i>Bothriochloa macra</i>				R	O
<i>Bulbine bulbosa</i>	R	R	O	R	
<i>Carex inversa</i>			R	R	R
<i>Cheilanthes sp.</i>	R				
<i>Chrysocephalum apiculatum</i>			O	R	O
<i>Convolvulus angustissimus</i>	O	C	R	R	O
<i>Cynoglossum australe</i>			R		
<i>Desmodium varians</i>		R		R	R
<i>Dichondra repens</i>				R	
<i>Epilobium sp.</i>					R
<i>Geranium solanderi</i>				O	O
<i>Geranium sp.</i>		O	O		
<i>Lomandra filiformis bracteata</i>	O		O	O	
<i>Lomandra filiformis filiformis</i>		O			R
<i>Microlaena stipoides</i>	O	O	O	O	O
<i>Microtis unifolia</i>		R	O	O	
<i>Panicum effusum</i>			O	R	R
<i>Poa sieberiana</i>	O	C	O	O	O
<i>Rytidosperma spp.</i>	O	R	O		
<i>Schoenus apogon</i>			R		R
<i>Themeda triandra</i>	O	C	C		O
<i>Tricoryne elatior</i>				R	R
<i>Vittadinia cuneata</i>		O	O	R	O
<i>Wahlenbergia spp.</i>	O	O		R	O

	2013	2014	2016	2017	2018
Introduced species					
<i>Aira sp.</i>		O	O	O	
<i>Avena sp.</i>	O	O		R	R
<i>Billardiera heterophylla</i>	R				
<i>Bromus diandrus</i>	R		O		R
<i>Bromus spp.</i>	O		O	R	R
<i>Centaurium erythraea</i>		O	O		R
<i>Chondrilla juncea</i>	O	O	O		O
<i>Dactylis glomerata</i>	O	C	O	O	R
<i>Echium plantagineum</i>		R			
<i>Erigeron sp.</i>			R		
<i>Festuca arundinacea</i>			R		R
<i>Hypericum perforatum</i>	O	C	O	O	O
<i>Hypochaeris radicata</i>	O	O	O	O	O
<i>Orobanche minor</i>			O	R	R
<i>Petrrohagia nanteuillii</i>	O	O	O	O	
<i>Phalaris aquatica</i>	O	C	R	R	R
<i>Plantago lanceolata</i>	O	O	O	O	O
<i>Prunus sp.</i>		R			
<i>Rosa rubiginosa</i>	R		R	R	R
<i>Rumex acetosella</i>	O	O	O	R	R
<i>Salvia verbenaca</i>	O	C	O	C	O
<i>Tragopogon sp.</i>	O	C	R		
<i>Trifolium arvense</i>	C	C			O
<i>Trifolium sp.</i>	O			O	O
<i>Trifolium spp.</i>			O		
<i>Unknown introduced</i>	O				
<i>Verbascum thapsus</i>		O	O	O	R
<i>Vulpia sp.</i>		O	O	R	

Blue: indicator species

Red: invasive species

Monitoring undertaken by Isaacs Ridge ParkCare

Location: ridgetop on the easternmost border of Isaacs Ridge, adjacent to the boundary track

Vegetation Type: Native grassland, possibly derived from Yellow Box +/- Apple Box tall grassy woodland?

Vegetation structure: derived grassland

Management: cleared of pine trees in 2007.

Aim: To monitor change in vegetation and habitat condition following removal of the pines and regular weeding.

Condition indicators	Condition, trend	Interpretation
Overall condition	↑	High increase in introduced annual cover in 2016 corresponding to high soil moisture availability
Native species richness	↑	Gradual increase over time
Native floristic value	↑	Gradual increase over time
Native groundcover	↑?	Increase, measured only twice
Proportion native groundcover	↑?	Increase, measured only twice
Introduced species richness	↔	Stable
Introduced floristic value	↔	Stable
Introduced annual groundcover	↓?	Increase, measured only twice (decrease in condition)
Intr. perennial groundcover	↓?	Increase, measured only twice (decrease in condition)
Benchmark condition score	52%	
Habitat diversity score	54%	

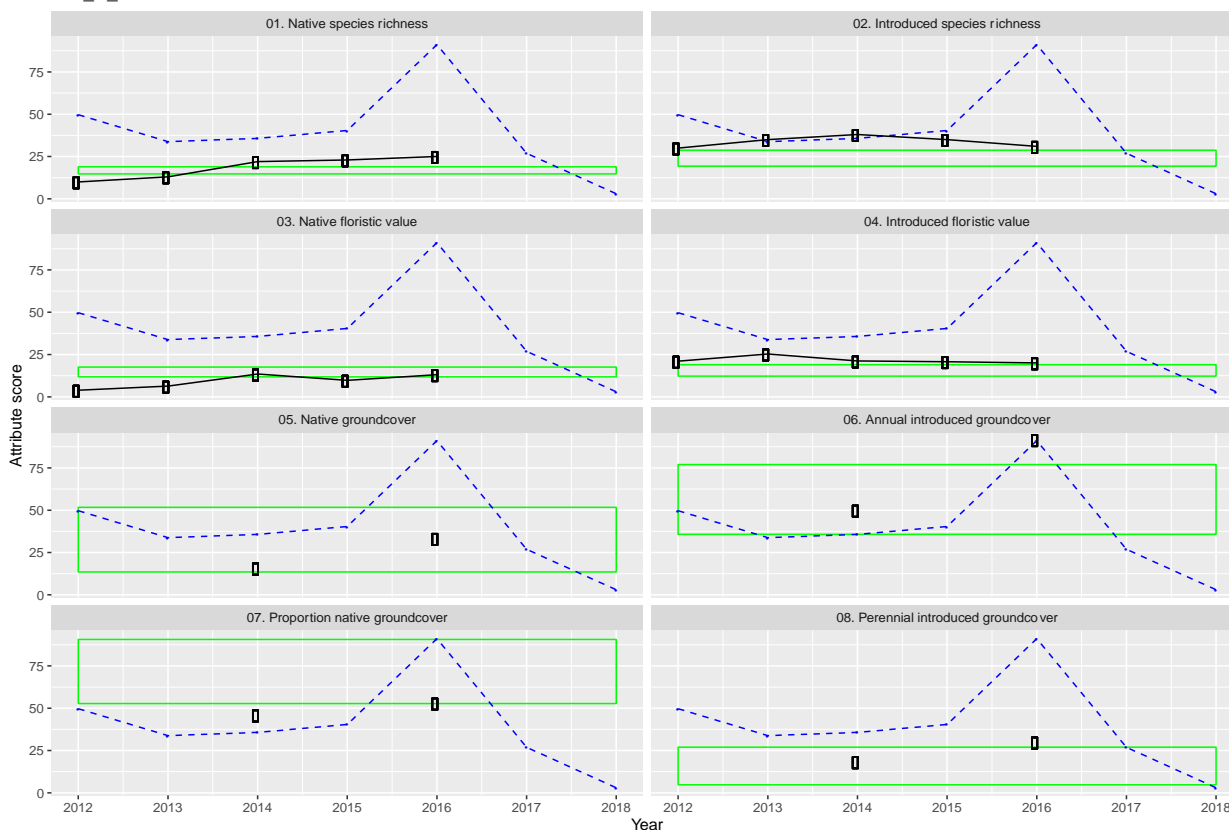


25/11/2013



28/11/2016 (photos taken from different angles)

ISR_V_1



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	2012	2013	2014	2015	2016
Native species richness	10	13	22	23	25
Indicator species richness	1	2	3	3	6
Introduced species richness	30	35	38	35	31
Invasive species richness	1	3	3	2	1
Cryptogam cover (%)			1		0
Bare ground cover (%)			1		3
Rock cover (%)			4		5
Litter cover (%)			24		2
Annual introduced cover (%)			50		10
Perennial intr. gr'cover (%)			18		92
Native grass cover (%)			16		30
Native sub-shrub cover (%)			0		30
Other native groundcover (%)			0		0
Total native groundcover (%)			16		60
Native overstorey cover (%)	0	0	0	0	0
Native midstorey cover (%)	0	0	0	0	0
Exotic overstorey cover (%)	0	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0	0
No. species regenerating	0	0	0	0	0
No. age classes	0	0	0	0	0
Length of fallen timber	0	0	0	0	0
No trees with hollows	0	0	0	0	0
Proportion of tree species regenerating (%)	0	0	0	0	0

Species richness

Species	2012	2013	2014	2015	2016
Native species					
<i>Acaena novae-zelandiae</i>	R	R	R	R	
<i>Acaena ovina</i>	O	O	O	O	O
<i>Anthosachne scabra</i>					R
<i>Austrostipa bigeniculata</i>					O
<i>Austrostipa scabra</i>	O	O	O	O	
<i>Bothriochloa macra</i>			O	O	O
<i>Carex inversa</i>	O	O	O	O	R
<i>Cheilanthes sp.</i>					R
<i>Convolvulus angustissimus</i>			O		O
<i>Crassula sieberiana</i>		O	O	O	C
<i>Cynoglossum australe</i>		O	O		
<i>Desmodium varians</i>			O		
<i>Einadia nutans</i>			O	O	O
<i>Erodium crinitum</i>				O	R
<i>Eucalyptus bridgesiana</i>				R	R
<i>Euchiton sp.</i>			O	O	
<i>Geranium solanderi</i>	O	O	O	O	O
<i>Hackelia suaveolens</i>			R		R
<i>Juncus filicaulis</i>	R	R	R	R	R
<i>Juncus sp.</i>	O	O	O	O	
<i>Lomandra filiformis coriacea</i>	R	R	R	R	R
<i>Microlaena stipoides</i>	O		O	O	O
<i>Microtis unifolia</i>					R
<i>Oxalis perennans</i>		O	O	O	O
<i>Panicum effusum</i>				O	O
<i>Poa sieberiana</i>		R			R
<i>Rubus parvifolius</i>			R	R	R
<i>Rumex sp. native</i>	R		R	R	R
<i>Rytidosperma spp.</i>			O	O	O
<i>Schoenus apogon</i>					R
<i>Senecio quadridentatus</i>				R	
<i>Solanum cinereum</i>				R	R
<i>Vittadinia muelleri</i>				R	

Species	2012	2013	2014	2015	2016
Introduced species					
<i>Aira sp.</i>	O	O	O	O	O
<i>Avena sp.</i>	O	O	O		O
<i>Briza maxima</i>			C		
<i>Briza minor</i>			O		
<i>Bromus diandrus</i>	R	R	R	R	R
<i>Bromus hordeaceus</i>	O	O	O	O	O
<i>Carthamus lanatus</i>	R	R	R	R	R
<i>Centaurium erythraea</i>		O		O	O
<i>Cerastium glomeratum</i>					O
<i>Chondrilla juncea</i>			R		
<i>Crataegus monogyna</i>		R	R	R	
<i>Cynosurus echinatus</i>		R		R	R
<i>Echium plantagineum</i>	O	O	O	R	O
<i>Erigeron sp.</i>				R	
<i>Erodium botrys</i>	O	O	O		
<i>Erodium cicutarium</i>		O	O		
<i>Hirschfeldia incana</i>	O	O	O	O	O
<i>Hordeum sp.</i>	R	R	R	R	
<i>Hypericum perforatum</i>	O	O	O	O	C
<i>Hypochaeris glabra</i>	O		O	O	O
<i>Hypochaeris radicata</i>	O	O	O	O	O
<i>Lepidium sp.</i>			R		
<i>Lysimachia arvensis</i>	R		R	R	R
<i>Marrubium vulgare</i>	O	O	O	O	O
<i>Modiola caroliniana</i>	O	O	O	O	O
<i>Myosotis discolor</i>		R		R	
<i>Nassella trichotoma</i>		O	O		
<i>Onopordum acanthium</i>	O	O	O		
<i>Orobanche minor</i>	R	R	R	R	
<i>Paronychia brasiliana</i>	O	O	O	O	
<i>Petrorhagia nanteuillii</i>	O	O	O	O	O
<i>Plantago lanceolata</i>	O	O	O	O	O
<i>Poa annua</i>					O
<i>Rosa rubiginosa</i>				R	R
<i>Rumex acetosella</i>	O	O	O	O	O
<i>Salvia verbenaca</i>	O	O	O	O	O
<i>Silene gallica</i>		R	R		R
<i>Tragopogon sp.</i>					R
<i>Trifolium arvense</i>	O	O	R	O	O
<i>Trifolium campestre</i>	O	O		O	O
<i>Trifolium dubium</i>		O		R	
<i>Trifolium glomeratum</i>		O	O	O	O
<i>Trifolium sp.</i>	O				
<i>Trifolium striatum</i>		O	O	O	
<i>Trifolium subterraneum</i>	O		O	O	O
<i>Unknown introduced</i>			O		
<i>Unknown introduced</i>	O			O	
<i>Verbascum thapsus</i>	O	O	O	O	O
<i>Verbascum virgatum</i>	O	O		O	R
<i>Vulpia sp.</i>	O	O	O	O	O

Blue: indicator species

Red: invasive species

Monitoring undertaken by Mt Ainslie Weeders

Location: at the end of the tip track, accessed from Phillip Ave gate, MAI_1 in the northern end of the tip revegetation plot, MAI_2 south towards the powerlines.

Vegetation Type Environmental revegetation, native, formerly Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland

Vegetation structure Shrubby woodland

Management: the area was used as a tip until the 1990s. Following that, the site was covered with soil and revegetated with trees and shrubs, mainly Acacias.

Aim: To monitor change in vegetation and habitat condition following revegetation with native trees and shrubs.

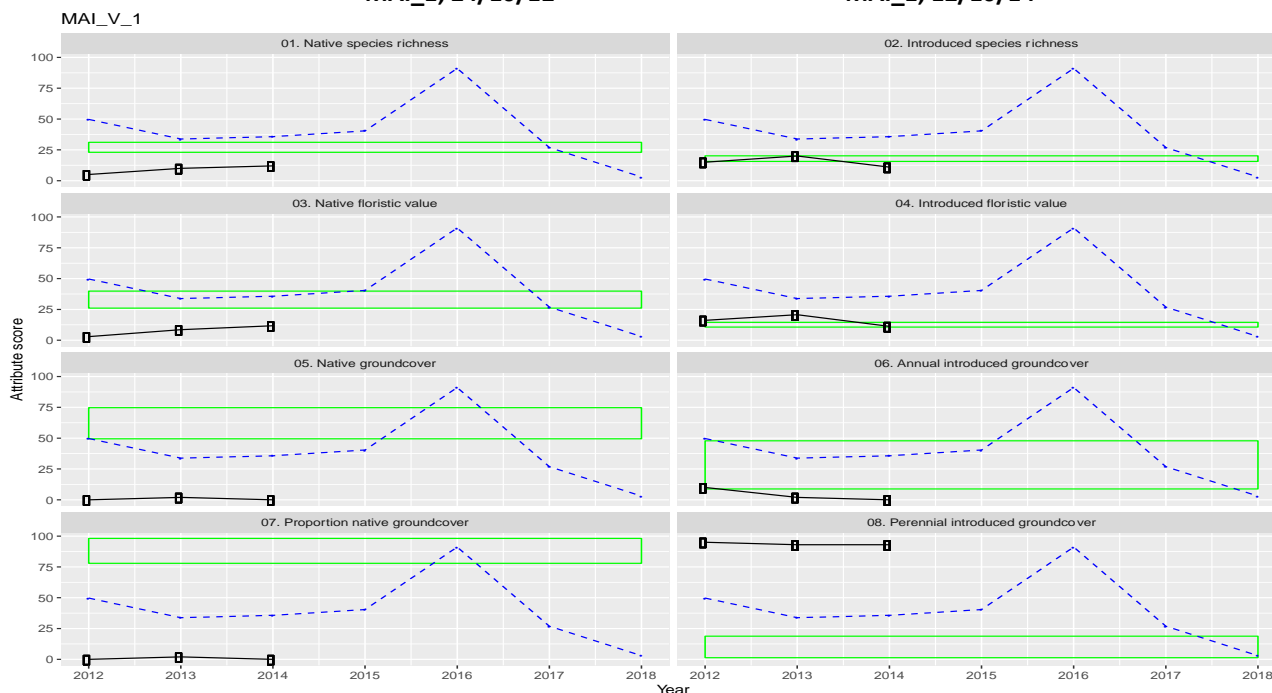
Condition and trend	MAI_1, 2 condition, trend	Interpretation
Overall condition	↑	Higher cover of planted trees and shrubs in MAI_1 than MAI_2. The monitoring ceased prior to the period of lower soil moisture availability so no data are available to assess changes in species cover or richness to soil moisture.
Native species richness	↑	Trees planted mainly Yellow Box and Blakely's Red Gum. Some native forbs surviving in low numbers, higher richness in MAI_2.
Native floristic value	↑	
Native groundcover	↔	
Proportion native groundcover	↔	Very low proportion of understorey is native.
Introduced species richness	↔	
Introduced floristic value	↔	
Introduced annual groundcover	↑	Decrease in IAC, increase in condition
Intr. perennial groundcover	↔	Paterson's Curse, Cape Weed and St John's Wort
Benchmark condition score	26%	
Habitat diversity score	46%	



MAI_1, 24/10/12



MAI_1, 12/10/14



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data,MAI_1

	2012	2013	2014
Native species richness	5	10	12
Indicator species richness	0	1	2
Introduced species richness	15	20	11
Invasive species richness	2	3	1
Cryptogam cover (%)	0	0	0
Bare ground cover (%)	10	33	12
Rock cover (%)	1	1	1
Litter cover (%)	40	51	13
Annual introduced cover (%)	10	2	0
Perennial intr. gr'cover (%)	95	93	93
Native grass cover (%)	0	0	0
Native sub-shrub cover (%)	0	0	0
Other native groundcover (%)	0	2	0
Total native groundcover (%)	0	2	0
Native overstorey cover (%)	0	0	0
Native midstorey cover (%)	5	5	5
Exotic overstorey cover (%)	0	0	0
Exotic midstorey cover (%)	0	0	0
No. species regenerating	0	0	0
No. age classes	1	1	1
Length of fallen timber	0	0	0
No trees with hollows	0	0	0
Proportion of tree species regenerating (%)	0	0	0

Species richness

Species	2012	2013	2014
Native species			
<i>Acacia dealbata</i>		0	0
<i>Acacia sp.</i>		0	0
<i>Acaena ovina</i>	0	0	0
<i>Cassinia longifolia</i>			0
<i>Chrysocephalum apiculatum</i>			0
<i>Chrysocephalum semipapposum</i>		0	0
<i>Convolvulus angustissimus</i>		0	
<i>Cynoglossum australe</i>	0	0	0
<i>Erodium crinitum</i>	0		
<i>Eucalyptus blakelyi</i>			0
<i>Eucalyptus goniocalyx</i>			0
<i>Eucalyptus melliodora</i>		0	0
<i>Eucalyptus sp. planted</i>	0	0	0
<i>Poa sieberiana</i>		0	
<i>Vittadinia gracilis</i>	0	0	0
Introduced species			
<i>Arctotheca calendula</i>	0		0
<i>Bromus spp.</i>	0	0	
<i>Echium plantagineum</i>	0	0	0
<i>Erigeron sp.</i>	0		
<i>Erodium cicutarium</i>			0
<i>Galium aparine</i>	0		
<i>Hirschfeldia incana</i>	0	0	0
<i>Hypericum perforatum</i>		0	
<i>Hypochaeris glabra</i>		0	
<i>Hypochaeris radicata</i>	0	0	
<i>Ligustrum lucidum</i>	0	0	
<i>Lolium perenne</i>	0	0	
<i>Marrubium vulgare</i>		0	
<i>Medicago sativa</i>			0
<i>Modiola caroliniana</i>	0	0	0
<i>Moenchia erecta</i>	0		
<i>Nassella neesiana</i>	0	0	0
<i>Onopordum acanthium</i>			0
<i>Oxalis corniculata</i>		0	0
<i>Plantago lanceolata</i>	0	0	0
<i>Polygonum aviculare</i>		0	
<i>Rumex crispus</i>			0
<i>Salvia verbenaca</i>		0	
<i>Taraxacum sect. Taraxacum</i>		0	
<i>Thistle sp.</i>		0	
<i>Trifolium sp.</i>	0	0	
<i>Unknown introduced</i>			
<i>Unknown introduced</i>		0	
<i>Vulpia sp.</i>	0		

Blue: indicator species

Red: invasive species

Monitoring undertaken by Friends of Mt Majura

Location: Northern edge of Mt Majura Nature Reserve on Antill Street, Majura, south of The Fair housing development.

Vegetation Type Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland (CEEC)

Vegetation structure Derived grassland

Management: revegetation of shrubs, trees and herbaceous species in 2013.

Aim: To monitor change in vegetation and habitat condition following revegetation of a variety of trees, shrubs and forbs.

Condition indicators	Condition, trend	Interpretation
Overall condition	↔	The significant increase in cover, particularly of the annual introduced species, corresponds with the very high soil moisture in 2016.
Native species richness	↔	
Native floristic value	↔	
Native groundcover	↓	
Proportion native groundcover	↓	
Introduced species richness	↔	
Introduced floristic value	↔	
Introduced annual groundcover	↓	High increase corresponds to high soil moisture availability, decrease in condition
Intr. perennial groundcover	↔	
Benchmark condition score	57%	
Habitat diversity score	61%	Increased habitat diversity due to growth of shrub revegetation



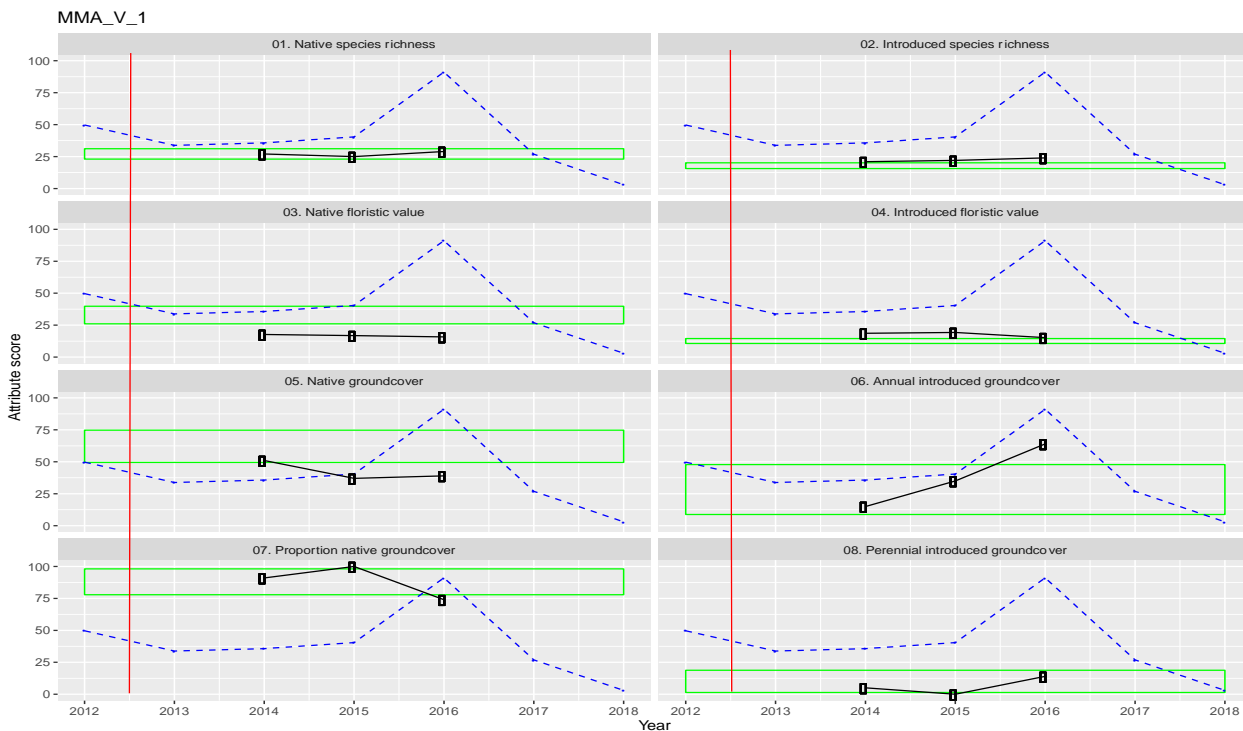
28/11/2014



13/11/15



25/11/2016



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	2014	2015	2016
Native species richness	27	25	29
Indicator species richness	4	4	3
Introduced species richness	21	22	24
Invasive species richness	3	3	2
Cryptogam cover (%)	4	5	0
Bare ground cover (%)	23	24	7
Rock cover (%)	0	0	0
Litter cover (%)	43	33	45
Annual introduced cover (%)	15	35	64
Perennial intr. gr'cover (%)	5	0	14
Native grass cover (%)	45	34	27
Native sub-shrub cover (%)	1	0	1
Other native groundcover (%)	5	3	11
Total native groundcover (%)	51	37	39
Native overstorey cover (%)	8	11	11
Native midstorey cover (%)	0	0	0
Exotic overstorey cover (%)	0	0	0
Exotic midstorey cover (%)	0	0	0
No. species regenerating	2	2	2
No. age classes	3	3	3
Length of fallen timber	4	6	6
No trees with hollows	0	0	0
Proportion of tree species regenerating (%)	100	100	100

Species richness

Species	2014	2015	2016
Native species			
<i>Acacia dealbata</i>			R
<i>Acacia genistifolia</i>	R	R	R
<i>Acacia implexa</i>	R	R	R
<i>Acaena ovina</i>	O		O
<i>Anthosachne scabra</i>	O	O	O
<i>Austrostipa bigeniculata</i>	O	O	O
<i>Austrostipa scabra</i>	O	O	O
<i>Bothriochloa macra</i>	A	A	C
<i>Chrysocephalum semipapposum</i>	O	O	O
<i>Convolvulus angustissimus</i>	R	R	R
<i>Epilobium sp.</i>	O	O	O
<i>Erodium crinitum</i>	O	O	O
<i>Eryngium ovinum</i>	O	O	O
<i>Eucalyptus blakelyi</i>	O	O	R
<i>Eucalyptus bridgesiana</i>	R	O	R
<i>Eucalyptus melliodora</i>	R	O	R
<i>Euchiton sp.</i>			O
<i>Euphorbia dallachyana</i>	R	R	R
<i>Hackelia suaveolens</i>			R
<i>Helichrysum luteoalbum</i>	O	R	R
<i>Leucochrysum albicans</i>	R	R	R
<i>Microlaena stipoides</i>	O	O	O
<i>Oxalis perennans</i>	R	R	R
<i>Rumex sp. native</i>	R	O	
<i>Rytidosperma spp.</i>	O	O	O
<i>Senecio quadridentatus</i>			R
<i>Tricoryne elatior</i>	R	R	
<i>Vittadinia gracilis</i>	O	O	R
<i>Vittadinia muelleri</i>	O	O	O
<i>Wahlenbergia spp.</i>	O	R	R
Introduced species			
<i>Aira sp.</i>			O

Species	2014	2015	2016
<i>Bromus hordeaceus</i>	O	R	O
<i>Bromus spp.</i>	O	O	O
<i>Carthamus lanatus</i>	O	O	O
<i>Centaurium erythraea</i>	R	R	R
<i>Chondrilla juncea</i>	O	O	O
<i>Cirsium vulgare</i>	O	R	
<i>Echium plantagineum</i>	R	O	O
<i>Erigeron sp.</i>	R	R	
<i>Erodium cicutarium</i>			O
<i>Galium aparine</i>		R	
<i>Hirschfeldia incana</i>	O	O	R
<i>Hypericum perforatum</i>	O	O	O
<i>Hypochaeris glabra</i>			O
<i>Hypochaeris radicata</i>	O	O	O
<i>Lactuca serriola</i>	O		R
<i>Lolium perenne</i>			R
<i>Modiola caroliniana</i>	O	O	
<i>Nassella trichotoma</i>	R	O	
<i>Paspalum dilatatum</i>	O	R	R
<i>Petrorhagia nanteuillii</i>	O	O	O
<i>Plantago lanceolata</i>	O	O	O
<i>Rosa rubiginosa</i>			R
<i>Rumex acetosella</i>	R	O	O
<i>Salvia verbenaca</i>		R	
<i>Sonchus asper</i>			R
<i>Thistle sp.</i>	O	O	O
<i>Trifolium arvense</i>			O
<i>Trifolium dubium</i>			C
<i>Trifolium sp.</i>	O	C	
<i>Vulpia sp.</i>	C	C	C

Blue: indicator species

Red: invasive species

Monitoring undertaken by Friends of Mt Painter

Location: on the north-facing slope of Mt Painter above Skinner St in Cook

Vegetation Type Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland (CEEC)

Vegetation structure Derived grassland

Management: weed management including Mullein and St John's Wort.

Aim: To monitor change in vegetation and habitat condition in a high condition location.

Condition indicators	Condition, trend	Interpretation
Overall condition	↔	Increase in introduced annual groundcover in 2016 is probably a result of increase in soil moisture availability
Native species richness	↔	Variable but stable
Native floristic value	↔	Variable but stable
Native groundcover	↔	Variable but stable
Proportion native groundcover	↔	Variable but stable
Introduced species richness	↔	Variable but stable
Introduced floristic value	↔	Variable but stable
Introduced annual groundcover	↑↓	Increase in 2014, otherwise stable
Intr. perennial groundcover	↔	Stable, very low, condition good; no significantly invasive plants present
Benchmark condition score	62%	Lack of mature trees
Habitat diversity score	65%	Plot lacks diversity in tree and shrub cover

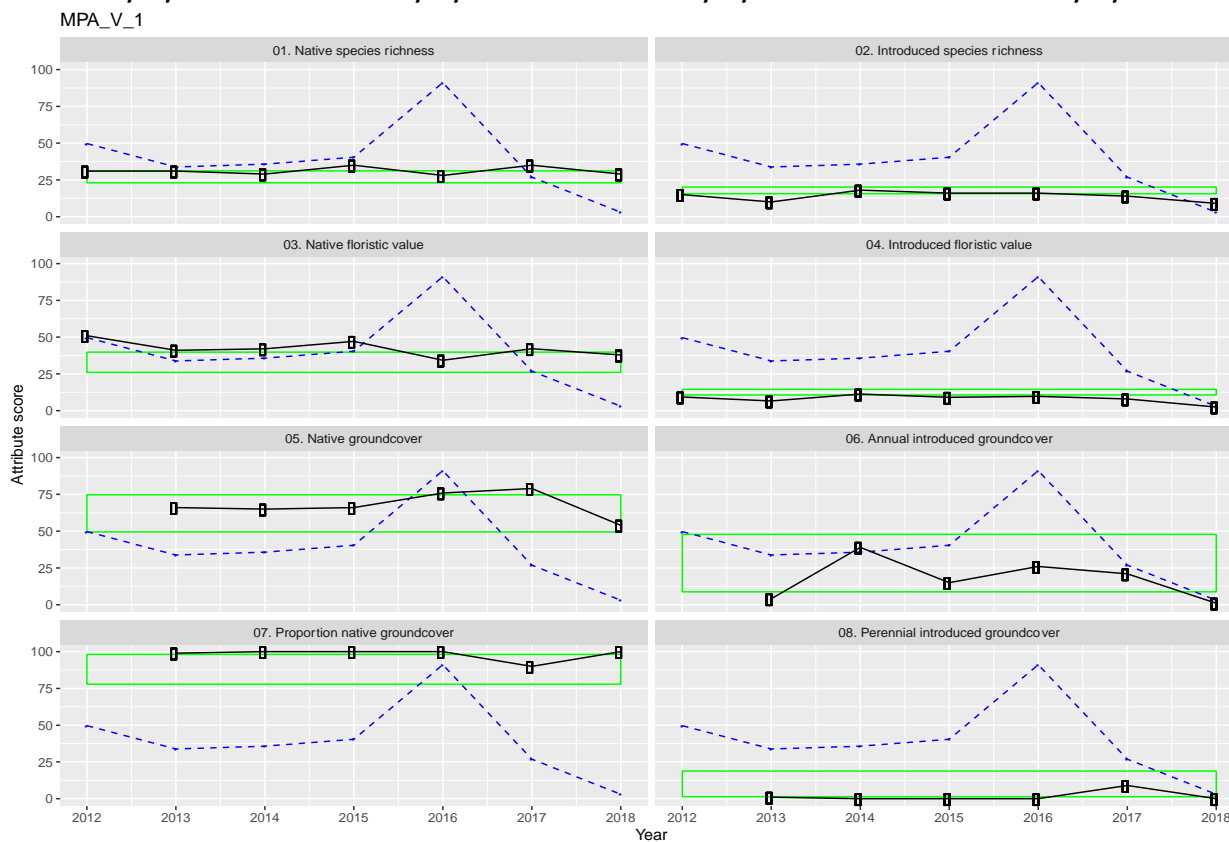


23/10/2012

20/10/16

18/11/17

4/11/18



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

Year	12	13	14	15	16	17	18
Native species richness	31	31	29	35	28	35	29
Indicator species richness	15	11	13	13	10	15	12
Introduced species richness	15	10	18	16	16	14	9
Invasive species richness	0	0	2	0	0	1	0
Cryptogam cover (%)		4	3	0	0	2	0
Bare ground cover (%)		52	28	39	23	8	23
Rock cover (%)		20	17	14	13	16	17
Litter cover (%)		42	68	39	60	65	56
Annual introduced cover (%)		4	39	15	26	21	1
Perennial intr. gr' cover (%)		1	0	0	0	9	0
Native grass cover (%)		66	48	63	61	74	50
Native sub-shrub cover (%)		0	12	0	1	1	2
Other native groundcover (%)		0	5	3	14	4	2
Total native groundcover (%)		66	65	66	76	79	54
Native overstorey cover (%)	4	4	4	4	4	4	4
Native midstorey cover (%)	4	4	4	4	4	4	4
Exotic overstorey cover (%)	0	0	0	0	0	0	0
Exotic midstorey cover (%)	6	0	0	0	0	0	0
No. species regenerating	3	3	3	3	3	3	3
No. age classes	3	3	3	3	3	3	3
Length of fallen timber	0	0	0	0	0	0	0
No trees with hollows	0	0	0	0	0	0	0
Proportion of tree species regenerating (%)	50	50	50	50	50	50	50

Species richness

Species	12	13	14	15	16	17	18
Native species							
<i>Acacia implexa</i>	O	R	R	R		O	O
<i>Acacia mearnsii</i>			R				
<i>Acacia rubida</i>	O	O	O	O	O	O	O
<i>Acaena ovina</i>	O	O	R	R	R	R	R
<i>Anthosachne scabra</i>		O					
<i>Asperula conferta</i>	O		O	O	O	R	O
<i>Austrostipa scabra</i>	O	C	C	O	O	O	O
<i>Bothriochloa macra</i>		C		O		R	R
<i>Brachychiton populneus</i>	R	R	R	R	R	R	R
<i>Calotis lappulacea</i>	O	O		O	O	O	O
<i>Carex inversa</i>			O	O	O		
<i>Cheilanthes austrotenuifolia</i>			R		R	R	R
<i>Cheilanthes sp.</i>	R						
<i>Chloris truncata</i>				R		R	
<i>Chrysocephalum apiculatum</i>	O		O	O	O	C	O
<i>Convolvulus angustissimus</i>	O	O	R	O		O	R
<i>Coronidium scorpioides</i>						O	
<i>Crassula sieberiana</i>					R		
<i>Cynoglossum australe</i>		O					
<i>Cyperaceae sp.</i>	O	O					
<i>Desmodium varians</i>			R		R		R
<i>Einadia nutans</i>							R
<i>Eucalyptus blakelyi</i>	R	R	R	R	R	R	R
<i>Eucalyptus sp. planted</i>	O	O	O	O	O	O	O
<i>Euchiton sp.</i>					R		
<i>Exocarpos cupressiformis</i>	R		R		R	R	R
<i>Glycine clandestina</i>		O		O			
<i>Glycine tabacina</i>	R		R	R		R	

Species	12	13	14	15	16	17	18
<i>Goodenia hederacea</i>	O	R	O	O	O	O	
<i>Leptorhynchus squamatus</i>	O		O	O		O	
<i>Lomandra bracteata</i>	O	O	O				O
<i>Lomandra filiformis bracteata</i>	O			O			
<i>Lomandra filiformis filiformis</i>						R	O
<i>Lomandra multiflora</i>							R
<i>Melichrus urceolatus</i>	O	O	O	O	O	R	O
<i>Microlaena stipoides</i>		R	R		O		
<i>Oxalis perennans</i>		O	R	O		O	R
<i>Panicum effusum</i>		O		O	O		R
<i>Pimelea curviflora</i>		C					
<i>Poa sieberiana</i>	O	C	O	O	O	C	C
<i>Rytidosperma pallidum</i>					R		
<i>Rytidosperma spp.</i>				O			
<i>Schoenus apogon</i>	O			O			
<i>Scleranthus diander</i>	R			R		R	
<i>Senecio quadridentatus</i>		O				R	
<i>Stackhousia monogyna</i>	O	O	O		O	R	
<i>Themeda triandra</i>	A	A	C	A	A	A	A
<i>Tricoryne elatior</i>	O	C	O	O		O	O
<i>Vittadinia cuneata</i>	O	O	O	O			R
<i>Vittadinia muelleri</i>	O		O	O	O	O	
<i>Wahlenbergia spp.</i>	O		O	O	O	R	R
Introduced species							
<i>Aira sp.</i>		O	R	O	O		
<i>Avena sp.</i>	O	C	C		O	C	R
<i>Bromus diandrus</i>			R				
<i>Bromus hordeaceus</i>			O	O	O		R
<i>Carthamus lanatus</i>		O					
<i>Centaurium erythraea</i>			R	O	O	O	
<i>Echium plantagineum</i>	R						
<i>Erigeron sp.</i>				R			
<i>Festuca arundinacea</i>	O		O	O	O	O	
<i>Hirschfeldia incana</i>			O			R	
<i>Holcus lanatus</i>						R	
<i>Hypericum perforatum</i>			R			R	
<i>Hypochaeris glabra</i>			O	O	O		
<i>Hypochaeris radicata</i>	O			O	O	R	R
<i>Linaria arvensis</i>				O			
<i>Linaria pelisseriana</i>			O		O		
<i>Myosotis discolor</i>	O						
<i>Orobanche minor</i>	R						
<i>Petrorhagia nanteuillii</i>	O	C	O		O	O	O
<i>Phalaris aquatica</i>			R				
<i>Plantago lanceolata</i>	O	O	O	O	O	R	R
<i>Rumex acetosella</i>	R	R		R			R
<i>Salvia verbenaca</i>	O	A	O	O	O	O	R
<i>Silene gallica</i>				O			
<i>Trifolium arvense</i>		C	C	C	C	C	R
<i>Trifolium campestre</i>					O		
<i>Trifolium glomeratum</i>			O	O	O	O	
<i>Trifolium sp.</i>	O						
<i>Verbascum thapsus</i>	R						
<i>Verbascum virgatum</i>	O	C	O	O	O	R	R
<i>Vicia sativa</i>	O						
<i>Vulpia sp.</i>	O	R	O	O	O	O	

Blue: indicator species

Red: invasive species

Mt Painter Nature Reserve, 2013–2018

MPA_2R, 2C

Monitoring undertaken by Friends of Mt Painter

Location: north-facing slope on the western side of the summit path

Vegetation Type Native grassland, formerly Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland

Vegetation structure Derived grassland

Management revegetation of herbaceous species in 2011. Weed, kangaroo and rabbit control. Plot MPA2C was established as a control for comparison, in which no revegetation occurred.

Aim: To monitor change in vegetation and habitat condition following native forb revegetation in Plot MP_2R.

Plots are smaller than the standard, being 6 x 15 m (0.01 ha), to fit with the size of the revegetated area.

Condition indicators	2R	2C	Interpretation
Overall condition	↔	↔	Introduced annual species cover coincided with variations in soil moisture availability. Reduction in species richness reflected the senescence of herbaceous revegetation.
Native species richness	↔	↔	Higher in MPA_2R; increase then decrease
Native floristic value	↓	↔	Increase in 2015, then decrease
Native groundcover	↑	↔	Increase in cover compared to control plot
Proportion native groundcover	↑	↑	
Introduced species richness	↕	↔	
Introduced floristic value	↔	↔	
Introduced annual groundcover	↕	↓	Increase in annual groundcover equates to decrease in condition. Very high cover of the annual Wild Oats <i>Avena</i> sp. in 2016
Intr. perennial groundcover	↔	↑	Slight decrease in cover equates to increase in condition
Benchmark condition score	41%	28%	Very poor condition
Habitat diversity score	66%	54%	Moderate to good habitat diversity (rocks, some trees and shrubs)
Revegetation	2016: 42%		54 plants of four species were planted in MP2R (revegetation plot) in 2011; Yellow Buttons <i>Chrysocephalum apiculatum</i> , Chocolate Lily <i>Arthropodium fimbriatum</i> , Bulbine Lily <i>Bulbine bulbosa</i> , and False Sarsparilla <i>Hardenbergia violacea</i> .



MPA_2R

11/10/12



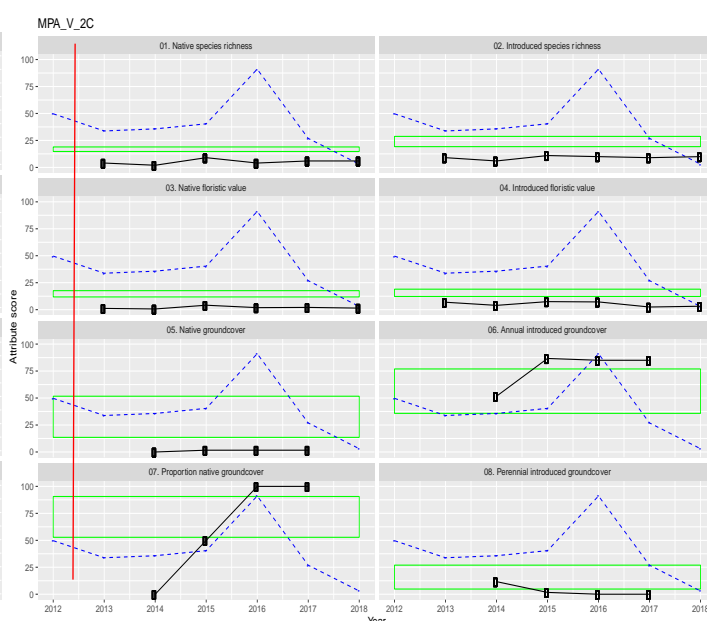
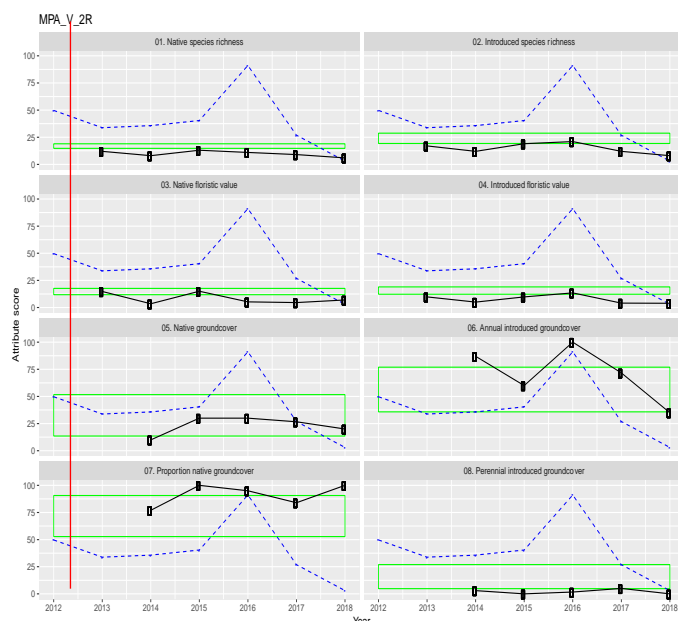
17/11/13



22/10/16



4/11/18



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, MPA2_2R, 2C

	MPA_2R						MPA_2C					
	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018
Native species richness	12	8	13	11	9	6	4	2	9	4	6	6
Indicator species richness	3	2	4	3	5	3	0	0	0	0	0	0
Introduced species richness	17	12	19	21	12	8	9	6	11	10	9	10
Invasive species richness	0	0	0	1	0	0	0	0	0	0	0	0
Cryptogam cover (%)		0	0	0	0	0		2	0	0	0	
Bare ground cover (%)		2	0	0	0	13		0	0	0	0	
Rock cover (%)		3	2	2	3	2		8	3	12	0	
Litter cover (%)		78	87	62	88	87		85	95	68	90	
Annual introduced cover (%)		87	60	100	72	35		52	87	85	85	
Perennial intr. gr'cover (%)		3	0	2	5	0		12	2	0	0	
Native grass cover (%)		8	28	28	20	20		0	2	2	2	
Native sub-shrub cover (%)		0	0	0	0	0		0	0	0	0	
Other native groundcover (%)		2	2	2	7	0		0	0	0	0	
Total native groundcover (%)		10	30	30	27	20		0	2	2	2	
Native overstorey cover (%)	0	0	0	0	0	0	0	0	0	0	0	0
Native midstorey cover (%)	0	0	0	0	0	0	0	0	0	0	0	0
Exotic overstorey cover (%)	0	0	0	0	0	0	0	0	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0	0	0	0	0	0	0	0	0
No. species regenerating	0	0	0	0	0	0	0	0	0	0	0	0
No. age classes	0	0	0	0	0	0	0	0	0	0	0	0
Length of fallen timber	0	0	0	0	0	0	0	0	0	0	0	0
No trees with hollows	0	0	0	0	0	0	0	0	0	0	0	0
Proportion of tree species regenerating (%)	0	0	0	0	0	0	0	0	0	0	0	0

Species richness

Species	MPA_2R (revegetated)						MPA_2C (control)					
	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018
Native species												
<i>Anthosachne scabra</i>					R							
<i>Arthropodium fimbriatum</i>									O			
<i>Austrostipa bigeniculata</i>		O							O	O		
<i>Austrostipa scabra</i>	O				O	O	A	O	O	O	C	C
<i>Bothriochloa macra</i>	O				O	O				O	R	
<i>Bulbine bulbosa</i>							O		O	R	R	
<i>Carex inversa</i>								R		R		
<i>Chrysocephalum apiculatum</i>							O	R	O	R	R	R
<i>Convolvulus angustissimus</i>		R	R			R	O	R	O			
<i>Crassula sieberiana</i>			O						R	R		
<i>Cynoglossum australe</i>				O								
<i>Einadia nutans</i>			O		O	R				R		
<i>Euphorbia dallachyana</i>							O		O			
<i>Geranium sp.</i>			O									
<i>Hardenbergia violacea</i>							O	R	R	R	R	R
<i>Juncus sp.</i>			O						O			
<i>Lomandra bracteata</i>												O
<i>Luzula sp.</i>							O					
<i>Microlaena stipoides</i>	O		O				O		O		R	R
<i>Oxalis perennans</i>				O				R			O	
<i>Rumex sp. native</i>			O		O	R	O	R	R	R	R	
<i>Rytidosperma spp.</i>			O	O	R	R	C	O	O			
<i>Senecio quadridentatus</i>	O		O	O	C	R	O					
<i>Wahlenbergia spp.</i>							O		O	R	R	O
Introduced species												
<i>Avena sp.</i>	A	A	C	C	A	O	A	A	C	O	A	O
<i>Bromus catharticus</i>							O					
<i>Bromus diandrus</i>						R	O	R	O	O	R	O
<i>Bromus hordeaceus</i>			O	O	R				O		R	
<i>Bromus spp.</i>	O					O	R					
<i>Capsella bursa-pastoris</i>										O		
<i>Carthamus lanatus</i>	C	O	O	O	R	R	C	O	O	R	R	R

Species	MPA_2R (revegetated)						MPA_2C (control)					
	2013	2014	2015	2016	2017	2018	2013	2014	2015	2016	2017	2018
Native species												
<i>Celtis australis</i>			O									
<i>Cerastium glomeratum</i>										O		
<i>Chondrilla juncea</i>	C	O	O		R	O	C	O	O		O	O
<i>Echium plantagineum</i>										R		
<i>Erigeron sp.</i>							O			R		
<i>Erodium cicutarium</i>				O						R		
<i>Hirschfeldia incana</i>	O	O	O	O		R	O	O	O	R	R	R
<i>Hypericum perforatum</i>										O		
<i>Hypochaeris glabra</i>								R	O	O		
<i>Hypochaeris radicata</i>		R		O				R	O	O	R	
<i>Lactuca serriola</i>	O						O					
<i>Lolium perenne</i>			O		R	R	O					
<i>Malva parviflora</i>			O	O								
<i>Medicago sativa</i>				O								
<i>Modiola caroliniana</i>	O					R	O					
<i>Onopordum acanthium</i>	O											
<i>Paronychia brasiliiana</i>				O	R		O		O	O	R	
<i>Petrorhagia nanteuillii</i>							C	R	O	O	O	
<i>Plantago lanceolata</i>						R				O		R
<i>Rumex acetosella</i>					R		O	R	O	O	C	O
<i>Salvia verbenaca</i>										O		R
<i>Silene gallica</i>									O			
<i>Sisymbrium officinale</i>	C						O					
<i>Solanum nigrum</i>					R		O					
<i>Solanum pseudocapsicum</i>			O									
<i>Sonchus oleraceus</i>									O			
<i>Trifolium arvense</i>		R	O	O	R		R	R	O			
<i>Trifolium campestre</i>							R	O	O			
<i>Trifolium glomeratum</i>		O	O	O				O				
<i>Trifolium sp.</i>					R							
<i>Trifolium spp.</i>											O	
<i>Trifolium subterraneum</i>		R	O									
<i>Unknown introduced</i>							O					
<i>Verbascum thapsus</i>									R	R		
<i>Vulpia sp.</i>									O	O		

Blue: indicator species

Red: invasive species

Monitoring undertaken by Friends of Mt Painter

Location: within the Wildflower Triangle, accessed from Wybalena Grove

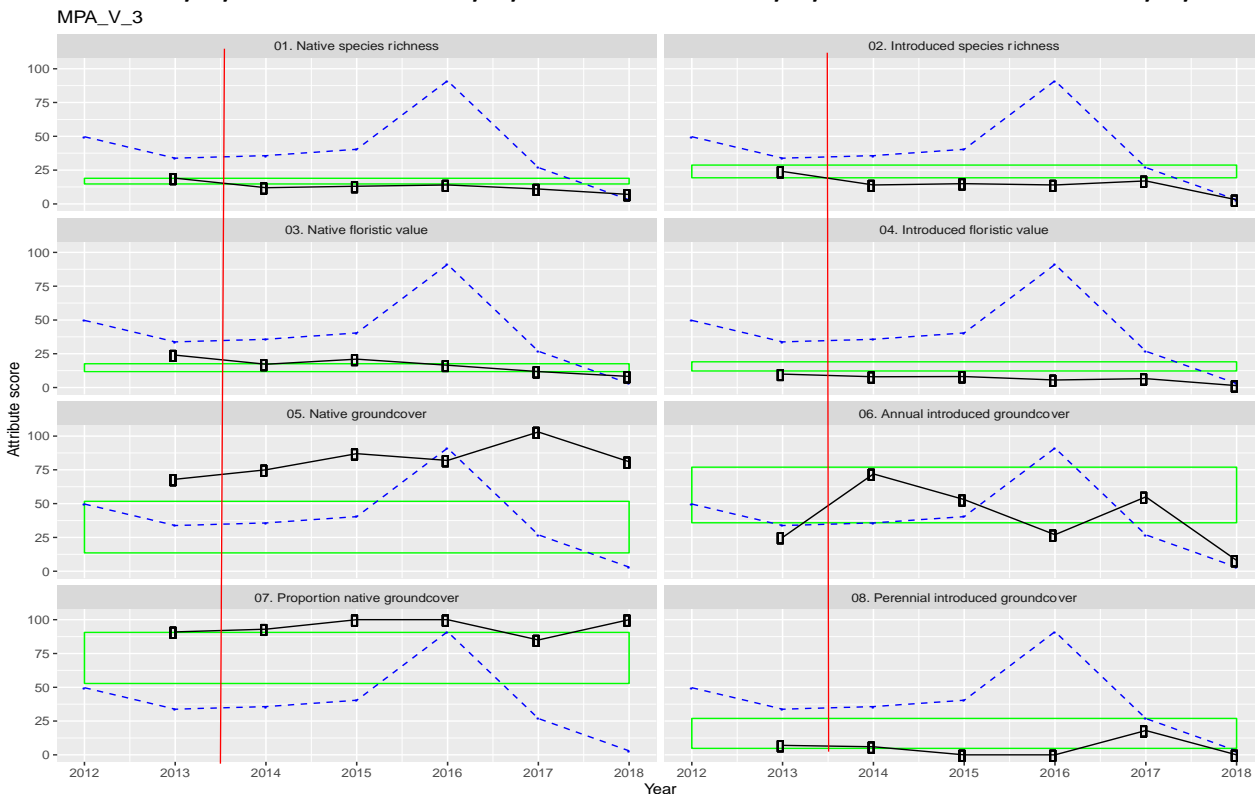
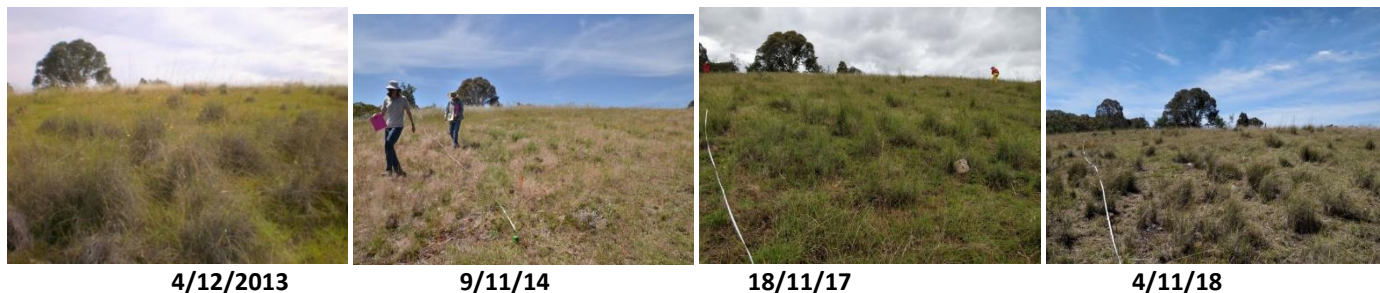
Vegetation Type Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland

Vegetation structure: derived grassland

Management: Control burn in autumn 2014. Weed priorities for control are St John's Wort, Flax-leaved Fleabane (*Conyza bonariensis*) and Twiggy Mullein (*Verbascum virgatum*).

Aim: To monitor change in vegetation and habitat condition after a control burn undertaken in 2014.

Condition indicators	Condition, trend	Interpretation
Overall condition	↑	Introduced annual and perennial species cover reflects the variability in soil moisture availability in 2017 and 2018.
Native species richness	↓	Slight decrease in condition after the burn, regeneration of Silver Wattle.
Native floristic value	↓	Slight decrease in condition after the burn
Native groundcover	↑	Increase in native groundcover after the burn, including an increase post burn in native forb cover, from 0% in 2013 to of 16% in 2017
Proportion native groundcover	↔	Stable, high proportion of native groundcover
Introduced species richness	↑	Decrease after the burn, greater decrease in 2018. Equates to increase in condition
Introduced floristic value	↑	Decrease after the burn. Equates to increase in condition
Introduced annual groundcover	↓↑	High increase following the burn, reduction with fluctuation
Intr. perennial groundcover	↓↑	Stable, increase in 2017
Benchmark condition score	65%	Reduced by the lack of woody overstorey and litter
Habitat diversity score	54%	Lacks trees, shrubs and rocks, but there was



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, MPA_3

	2013	2014	2015	2016	2017	2018
Native species richness	19	12	13	14	11	7
Indicator species richness	8	4	6	5	5	4
Introduced species richness	24	14	15	14	17	3
Invasive species richness	0	0	0	0	0	0
Cryptogam cover (%)	0	0	0	0	5	0
Bare ground cover (%)	0	6	5	2	2	11
Rock cover (%)	0	2	1	0	2	2
Litter cover (%)	80	75	27	66	76	85
Annual introduced cover (%)	25	72	53	27	55	8
Perennial intr. gr'cover (%)	7	6	0	0	18	0
Native grass cover (%)	68	58	76	74	87	75
Native sub-shrub cover (%)	0	0	0	0	1	4
Other native groundcover (%)	0	17	11	8	15	2
Total native groundcover (%)	68	75	87	82	103	81
Native overstorey cover (%)	0	0	0	0	0	0
Native midstorey cover (%)	0	0	0	0	0	0
Exotic overstorey cover (%)	0	0	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0	0	0
No. species regenerating	0	0	0	0	0	0
No. age classes	0	0	0	0	0	0
Length of fallen timber	0	0	0	0	0	0
No trees with hollows	0	0	0	0	0	0
Proportion of tree species regenerating (%)	0	0	0	0	0	0

Species richness

Species	2013	2014	2015	2016	2017	2018
Native species						
<i>Acacia dealbata</i>	R	R	R	R	R	R
<i>Acaena ovina</i>	R	O		O	R	R
<i>Acrotriche serrulata</i>			O			
<i>Anthosachne scabra</i>	R					
<i>Bothriochloa macra</i>						R
<i>Bulbine bulbosa</i>	O	O	O	C	R	R
<i>Carex inversa</i>	R	O	O		R	
<i>Cassinia quinquefaria</i>	R					
<i>Cheilanthes sp.</i>					R	
<i>Daucus glochidiatus</i>	R	O	R	R		
<i>Euchiton sp.</i>	R			O		
<i>Geranium solanderi</i>	O					
<i>Geranium sp.</i>		O		O		
<i>Glycine clandestina</i>			O			
<i>Gonocarpus tetragynus</i>	O					
<i>Halaragis heterophylla</i>	R					
<i>Hypericum gramineum</i>	O					
<i>Juncus sp.</i>				R		
<i>Leucopogon virgatus</i>		O		R		
<i>Lomandra filiformis bracteata</i>			O			
<i>Lomandra filiformis filiformis</i>	O	O		C	O	
<i>Luzula densiflora</i>			O	O		
<i>Melichrus urceolatus</i>	R		R	R	R	R
<i>Microlaena stipoides</i>	R					
<i>Microtis unifolia</i>	R					
<i>Oxalis perennans</i>			R	R	R	
<i>Panicum effusum</i>					R	
<i>Picris angustifolia</i>			O			
<i>Rytidosperma spp.</i>	O	O				

Species	2013	2014	2015	2016	2017	2018
<i>Senecio quadridentatus</i>		R	R	R		
<i>Themeda triandra</i>	A	A	A	A	A	A
Introduced species						
<i>Aira sp.</i>	R	O	O	O	C	
<i>Avena sp.</i>	A	C	O	R	C	O
<i>Briza maxima</i>			O		O	
<i>Briza minor</i>	R		R	R		
<i>Bromus hordeaceus</i>	R		R		R	
<i>Bromus spp.</i>		R			R	
<i>Centaurium erythraea</i>	R		O	O	O	R
<i>Cerastium glomeratum</i>				R		
<i>Crepis capillaris</i>	O					
<i>Cynosurus echinatus</i>	R				R	
<i>Erigeron sp.</i>	R		R	R		
<i>Holcus lanatus</i>	R	O	O	R	R	
<i>Hypochaeris glabra</i>	R		R	R	R	
<i>Hypochaeris radicata</i>	C	O	O	C	O	
<i>Lactuca serriola</i>	R			R		
<i>Linaria pelisseriana</i>				O		
<i>Lysimachia arvensis</i>	R					
<i>Myosotis discolor</i>	R			R		
<i>Petrorhagia nanteuillii</i>	R	O	O		R	
<i>Plantago lanceolata</i>	O	O	O	O	R	R
<i>Polygonum aviculare</i>	R					
<i>Rumex acetosella</i>	C	O	O	C	R	
<i>Sherardia arvensis</i>		O			O	
<i>Sonchus asper</i>	R	O				
<i>Tragopogon sp.</i>	R					
<i>Trifolium arvense</i>			O			
<i>Trifolium glomeratum</i>				O		
<i>Trifolium subterraneum</i>		R	O			
<i>Unknown introduced</i>					R	
<i>Unknown introduced</i>						R
<i>Verbascum virgatum</i>	R					
<i>Vulpia sp.</i>	O	O			C	

Blue: indicator species

Red: invasive species

Monitoring undertaken by Mt Taylor ParkCare group

Location: south-western part of the reserve, adjacent to the powerline track and adjacent to the creekline containing the endangered Small Purple Pea *Swainsona recta*

Vegetation Type Mealy Bundy - Broad-leaved Peppermint shrubby mid-high open forest

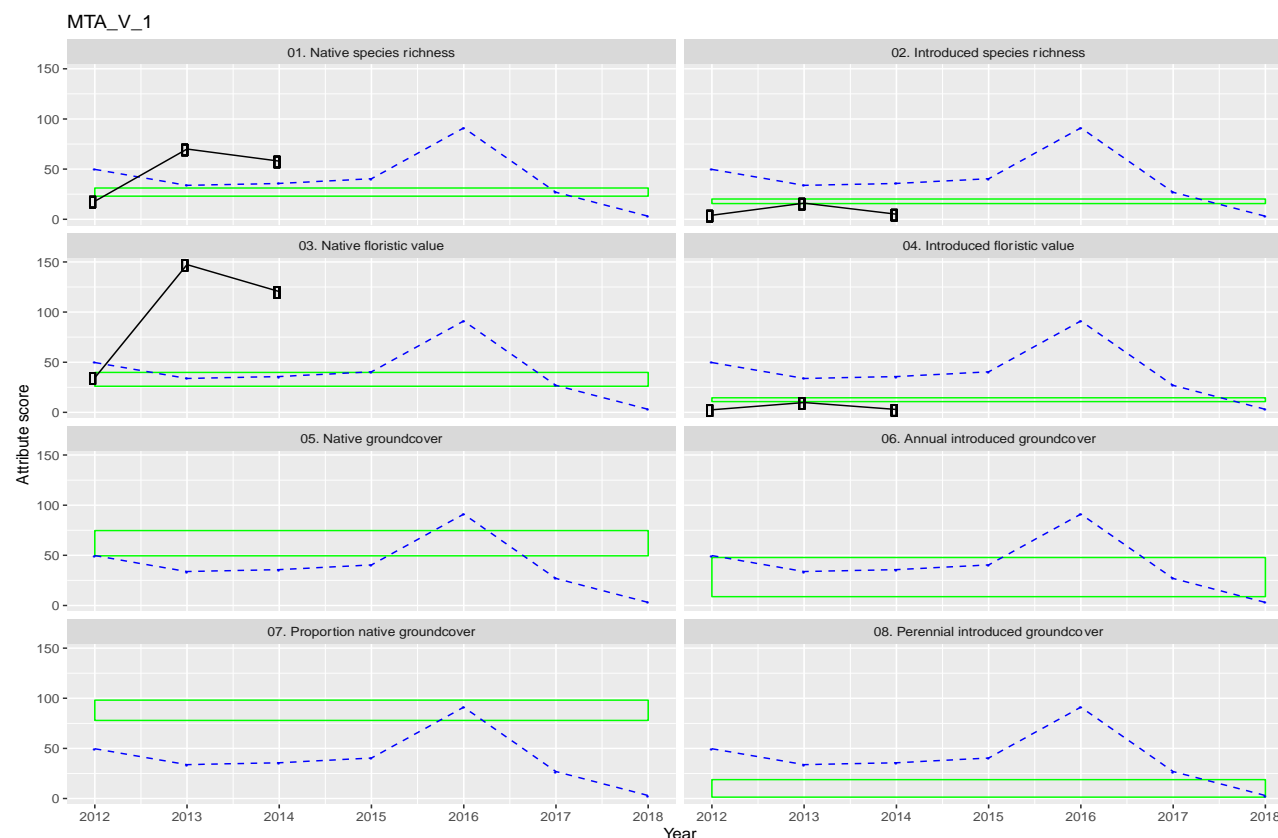
Vegetation structure: shrubby woodland

Management: high intensity wildfire in 2003 resulted in very dense shrub regeneration.

Aim: To monitor change in vegetation and habitat condition after the 2003 wildfire.

Condition indicators	Condition, trend	Interpretation
Overall condition	?	Unclear if condition is improving; errors in species identification likely
Native species richness	↑	Very high increase is thought to be reflecting errors in species identification
Native floristic value	↑	
Native groundcover	not measured	
Proportion native groundcover	not measured	
Introduced species richness	↔	
Introduced floristic value	↔	
Introduced annual groundcover	not measured	
Intr. perennial groundcover	not measured	
Benchmark condition score	not measured	
Habitat diversity score	not measured	

No photos available



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	2012	2013	2014
Native species richness	18	70	58
Indicator species richness	8	38	31
Introduced species richness	4	16	5
Invasive species richness	0	0	0

Species richness

Species	2012	2014	2015
Native species			
<i>Acacia implexa</i>	P	P	P
<i>Acacia penninervis</i>		P	P
<i>Acacia rubida</i>	P	P	P
<i>Acaena novae-zelandiae</i>		P	P
<i>Acrotriche serrulata</i>			P
<i>Allocasuarina verticillata</i>		P	P
<i>Aristida ramosa</i>		P	P
<i>Astroloma humifusum</i>		P	P
<i>Austrostipa bigeniculata</i>		P	P
<i>Austrostipa scabra</i>		P	P
<i>Billardiera scandens</i>			P
<i>Brachyloma daphnoides</i>		P	
<i>Bulbine bulbosa</i>		P	P
<i>Bulbine glauca</i>		P	
<i>Bursaria spinosa</i>	P	P	P
<i>Carex inversa</i>	P		
<i>Cassinia longifolia</i>	P	P	P
<i>Cassytha pubescens</i>		P	P
<i>Cheilanthes austrotenuifolia</i>		P	P
<i>Chrysocephalum apiculatum</i>		P	P
<i>Convolvulus angustissimus</i>		P	P
<i>Cryptandra amara</i>		P	P
<i>Cymbonotus lawsonianus</i>		P	P
<i>Cymbopogon refractus</i>		P	P
<i>Daviesia mimosoides</i>		P	P
<i>Dianella revoluta</i>		P	
<i>Dichondra repens</i>		P	P
<i>Dodonaea viscosa</i>		P	P
<i>Drosera peltata</i>	P	P	P
<i>Eucalyptus bridgesiana</i>		P	P
<i>Eucalyptus dives</i>		P	P
<i>Eucalyptus melliodora</i>			P
<i>Eucalyptus nortonii</i>		P	P
<i>Euchiton involucratus</i>		P	
<i>Exocarpos cupressiformis</i>	P	P	P
<i>Galium ciliare</i>		P	
<i>Galium gaudichaudii</i>	P	P	
<i>Geranium solanderi</i>		P	P
<i>Glycine clandestina</i>		P	P
<i>Goodenia hederacea</i>		P	P
<i>Goodenia pinnatifida</i>		P	
<i>Hardenbergia violacea</i>		P	P
<i>Hedera helix</i>		P	
<i>Hibbertia obtusifolia</i>		P	P
<i>Hibbertia riparia</i>		P	P
<i>Hovea linearis</i>		P	P
<i>Hydrocotyle laxiflora</i>	P	P	P
<i>Hypericum gramineum</i>	P		P
<i>Indigofera adesmiifolia</i>	P	P	
<i>Indigofera australis</i>		P	P
<i>Juncus subsecundus</i>		P	
<i>Kunzea ericoides</i>		P	
<i>Leptorhynchus squamatus</i>		P	P

Species	2012	2014	2015
Native species			
<i>Leucopogon virgatus</i>		P	P
<i>Linum marginale</i>		P	
<i>Lomandra filiformis</i>		P	
<i>Lomandra multiflora</i>	P	P	P
<i>Luzula densiflora</i>		P	
<i>Melichrus urceolatus</i>	P	P	P
<i>Oxalis perennans</i>		P	P
<i>Plantago gaudichaudii</i>		P	P
<i>Plantago varia</i>		P	
<i>Poa labillardieri</i>		P	P
<i>Poa sieberiana</i>	P		
<i>Polygala japonica</i>		P	P
<i>Pultenaea procumbens</i>	P	P	P
<i>Rytidosperma pallidum</i>	P	P	P
<i>Schoenus apogon</i>	P		
<i>Stellaria pungens</i>		P	P
<i>Stylidium armeria</i>		P	
<i>Swainsona recta</i>		P	P
<i>Thelymitra peniculata</i>		P	
<i>Themeda triandra</i>		P	P
<i>Thysanotus patersonii</i>		P	
<i>Tricoryne elatior</i>		P	P
<i>Vittadinia muelleri</i>		P	
<i>Wahlenbergia communis</i>		P	P
<i>Wahlenbergia gracilis</i>		P	P
<i>Wahlenbergia stricta</i>	P	P	
<i>Xerochrysum viscosum</i>		P	P
<i>Zornia dyctiocarpa</i>		P	P
Introduced species			
<i>Acetosella vulgaris</i>		P	
<i>Aira sp.</i>	P	P	P
<i>Anagallis arvensis</i>		P	
<i>Avena sp.</i>		P	
<i>Briza minor</i>		P	
<i>Centaurium erythraea</i>		P	
<i>Conyza bonariensis</i>		P	P
<i>Hypochaeris radicata</i>	P	P	P
<i>Modiola caroliniana</i>		P	
<i>Orobanche minor</i>	P	P	P
<i>Oxalis corniculata</i>		P	P
<i>Petrorhagia nanteuilii</i>		P	
<i>Tolpis barbata</i>		P	
<i>Trifolium campestre</i>		P	
<i>Vulpia sp.</i>	P		

Blue: indicator species

Monitoring undertaken by Royalla Landcare Group

Location: on Royalla Drive on the eastern side of the railway crossing.

Vegetation Type: Mealy Bundy - Broad-leaved Peppermint shrubby mid-high open forest

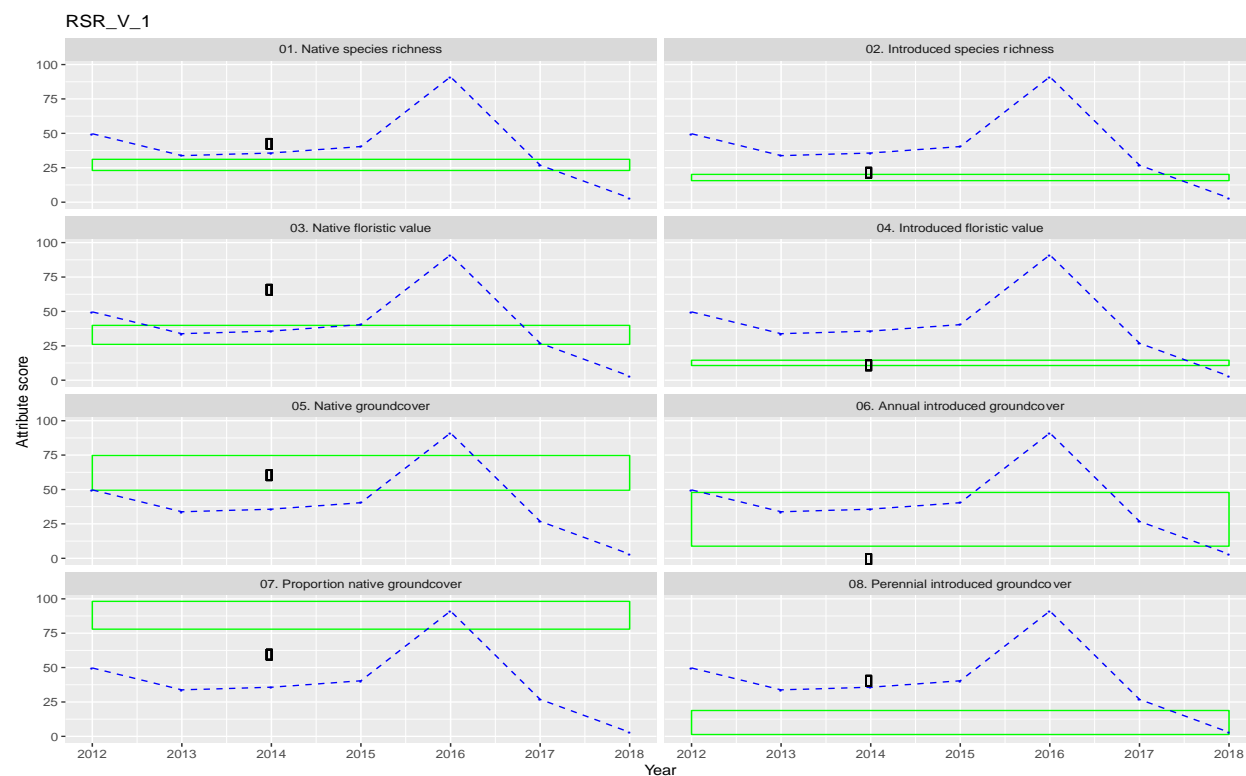
Vegetation structure: shrubby woodland

Management: forb revegetation.

Aim: To monitor change in vegetation and habitat condition following revegetation with native forbs (planting date unknown). The plot was monitored once, in 2014

Condition indicators	Condition	Interpretation
Overall condition		Interpretation was limited by only one survey. This plot has the highest native species richness of all the Vegwatch monitored plots
Native species richness		There are 29 non-grass species and 24 species that are disturbance sensitive, including two species threatened in NSW.
Native floristic value		Very high native floristic value score
Native groundcover		
Proportion native groundcover		Lower due to relatively high introduced perennial groundcover
Introduced species richness		
Introduced floristic value		
Introduced annual groundcover		Very few annual species present
Intr. perennial groundcover		Composition reflects grazing history
Benchmark condition score	68%	
Habitat diversity score	not measured	

No photos available



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, RSR_1

	2014
Native species richness	43
Indicator species richness	23
Introduced species richness	22
Invasive species richness	0
Cryptogam cover (%)	13
Bare ground cover (%)	12
Rock cover (%)	9
Litter cover (%)	92
Annual introduced cover (%)	0
Perennial intr. gr'cover (%)	41
Native grass cover (%)	17
Native sub-shrub cover (%)	3
Other native groundcover (%)	41
Total native groundcover (%)	61
Native overstorey cover (%)	15
Native midstorey cover (%)	0
Exotic overstorey cover (%)	0
Exotic midstorey cover (%)	0
No. species regenerating	1
No. age classes	2
Length of fallen timber	27
No trees with hollows	0
Proportion of tree species regenerating (%)	100

Species richness

Species	2014
Native species	
<i>Acaena ovina</i>	O
<i>Anthosachne scabra</i>	C
<i>ossiaea buxifolia</i>	R
<i>Bulbine bulbosa</i>	O
<i>Carex inversa</i>	R
<i>Cassinia quinquefaria</i>	O
<i>Chrysocephalum apiculatum</i>	R
<i>Chrysocephalum semipapposum</i>	O
<i>Crassula sieberiana</i>	C
<i>Cryptandra amara</i>	R
<i>Cymbonotus lawsonianus</i>	O
<i>Cyperaceae sp.</i>	R
<i>Desmodium varians</i>	R
<i>Dianella revoluta</i>	O
<i>Einadia nutans</i>	O
<i>Eucalyptus nortonii</i>	O
<i>Galium gaudichaudii</i>	C
<i>Geranium solanderi</i>	O
<i>Geranium sp.</i>	O
<i>Gonocarpus tetragynus</i>	R
<i>Hibbertia obtusifolia</i>	R
<i>Hovea heterophylla</i>	R
<i>Hypericum gramineum</i>	R
<i>Juncus filicaulis</i>	O
<i>Leptorhynchus squamatus</i>	O
<i>Leucochrysum albicans</i>	C
<i>Luzula densiflora</i>	O
<i>Melichrus urceolatus</i>	O
<i>Oxalis perennans</i>	R
<i>Pimelea curviflora</i>	R
<i>Plantago varia</i>	C
<i>Poa labillardierei</i>	R
<i>Poa sieberiana</i>	C
<i>Podolepis jaceoides</i>	R

Species	2014
<i>Pultenaea procumbens</i>	O
<i>Ranunculus sessiliflorus</i>	R
<i>Scleranthus fasciculatus</i>	O
<i>Swainsona recta</i>	O
<i>Swainsona sericea</i>	O
<i>Themeda triandra</i>	O
<i>Velleia paradoxa</i>	R
<i>Wahlenbergia spp.</i>	O
<i>Wurmbea dioica</i>	O
Introduced species	
<i>Aira sp.</i>	C
<i>Avena sp.</i>	C
<i>Bromus diandrus</i>	O
<i>Bromus hordeaceus</i>	C
<i>Bromus rubens</i>	O
<i>Centaurium erythraea</i>	O
<i>Cicendia quadrangularis</i>	R
<i>Festuca arundinacea</i>	O
<i>Holcus lanatus</i>	O
<i>Hypericum perforatum</i>	O
<i>Hypochaeris radicata</i>	C
<i>Juncus capitatus</i>	O
<i>Petrorhagia nanteuillii</i>	C
<i>Plantago lanceolata</i>	C
<i>Rosa rubiginosa</i>	R
<i>Rumex acetosella</i>	C
<i>Sonchus asper</i>	O
<i>Trifolium arvense</i>	O
<i>Trifolium sp.</i>	O
<i>Unknown introduced</i>	R
<i>Verbascum virgatum</i>	R
<i>Vulpia sp.</i>	C

Blue: indicator species

Red: invasive species

Monitoring undertaken by Sarah Sharp

Location: on St Marks Theological College, Barton, located at the Charles Sturt University campus of St Marks, between Blackall St and Bowen Drive

Vegetation Type: Natural Temperate Grassland (CEEC) grassland

Vegetation structure:

Management: burnt in 2014? and in 2018.

Aims: To monitor change in vegetation and habitat condition in a site subject to regular ecological burning; To monitor changes in population abundance of Button Wrinklewort and To measure the broader impacts of management of the grassland in accordance with the site's Conservation Management Plan

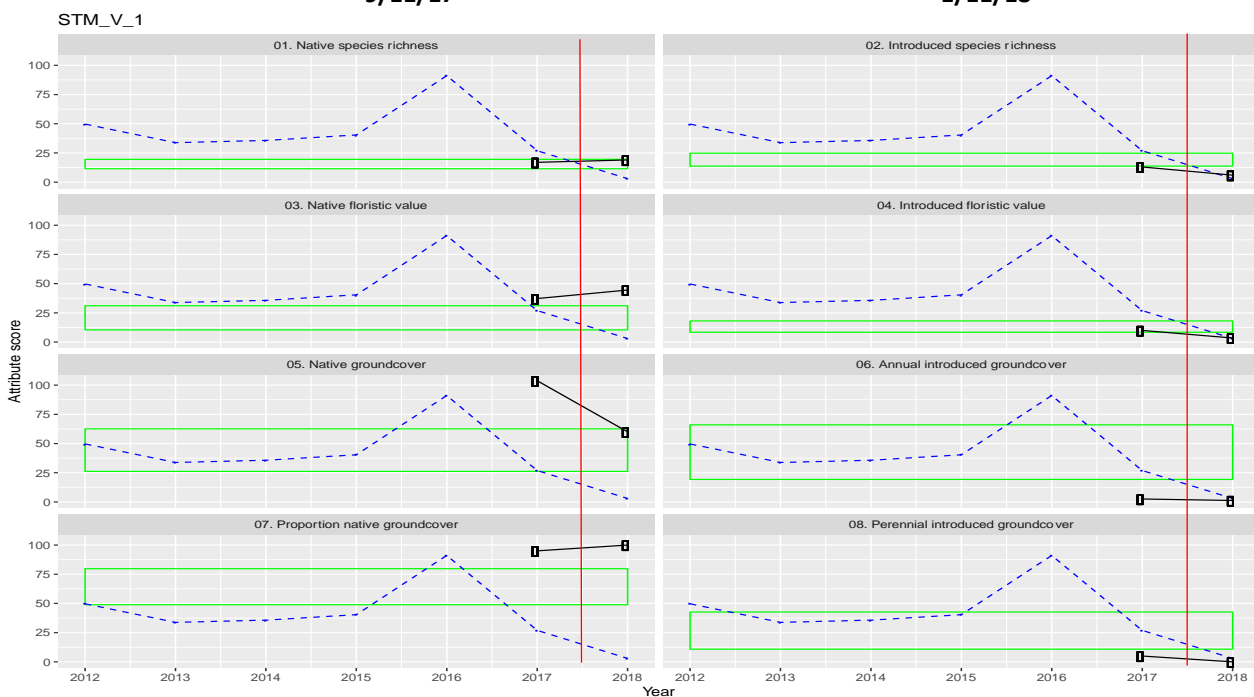
Condition indicators	Condition, trend	Interpretation
Overall condition	↔?	Interpretation was limited by the short period of monitoring. Changes in native species richness and cover may also correspond to soil moisture levels, although with only two years data any significance cannot be inferred. BWW population count: 42 in 2017, stable
Native species richness	↔	No change after the burn, despite increase in bare ground.
Native floristic value	↔	Slight increase after the burn
Native groundcover	↓	High biomass in 2017, mostly native grasses (Kangaroo Grass) which was burnt; decrease in biomass opened out spaces for other species
Proportion native groundcover	↔	Very slight increase after the burn
Introduced species richness	↔	Little response six months after the burn
Introduced floristic value	↔	
Introduced annual groundcover	↔	
Intr. perennial groundcover	↔	
Benchmark condition score	80%	
Habitat diversity score	40%	Low score due to homogeneity of site



9/11/17



1/11/18



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, STM_1

	2017	2018
Native species richness	17	19
Indicator species richness	11	13
Introduced species richness	13	6
Invasive species richness	2	0
Cryptogam cover (%)	0	66
Bare ground cover (%)	0	11
Rock cover (%)	0	0
Litter cover (%)	0	14
Annual introduced cover (%)	3	1
Perennial intr. gr'cover (%)	5	0
Native grass cover (%)	99	58
Native sub-shrub cover (%)	0	0
Other native groundcover (%)	5	3
Total native groundcover (%)	104	60
Native overstorey cover (%)	0	0
Native midstorey cover (%)	0	0
Exotic overstorey cover (%)	0	0
Exotic midstorey cover (%)	0	0
No. species regenerating	0	0
No. age classes	0	0
Length of fallen timber	0	0
No trees with hollows	0	0
Proportion of tree species regenerating (%)	0	0

Species richness

Species	2017	2018
Native species		
<i>Anthosachne scabra</i>	O	O
<i>Austrostipa scabra</i>		O
<i>Bulbine bulbosa</i>	O	O
<i>Carex inversa</i>	O	
<i>Cheilanthes austrotenuifolia</i>		R
<i>Cheilanthes sp.</i>	O	
<i>Convolvulus angustissimus</i>		O
<i>Cymbonotus lawsonianus</i>	R	
<i>Dianella revoluta</i>	O	O
<i>Dichelachne sp.</i>	O	
<i>Eryngium ovinum</i>	O	O
<i>Goodenia pinnatifida</i>	O	O
<i>Hypericum gramineum</i>	O	
<i>Leptorhynchos squamatus</i>		O
<i>Lomandra bracteata</i>		O
<i>Lomandra filiformis filiformis</i>		O
<i>Microseris walteri</i>	O	O
<i>Microtis unifolia</i>	R	
<i>Plantago varia</i>	O	O
<i>Poa sieberiana</i>	O	O
<i>Rumex sp. native</i>	O	O
<i>Rytidosperma spp.</i>		O
<i>Stackhousia monogyne</i>		O
<i>Themeda triandra</i>	A	A
Introduced species		
<i>Aira sp.</i>	O	
<i>Avena sp.</i>		O
<i>Briza maxima</i>	O	
<i>Centaurium erythraea</i>	O	R
<i>Cynodon dactylon</i>	O	
<i>Hirschfeldia incana</i>	R	
<i>Holcus lanatus</i>	R	
<i>Hypericum perforatum</i>	R	
<i>Hypochaeris radicata</i>	O	O
<i>Plantago lanceolata</i>	R	
<i>Poa bulbosa</i>	O	O
<i>Prunus sp.</i>	R	
<i>Senecio vulgaris</i>	O	O
<i>Trifolium dubium</i>	O	
<i>Unknown introduced</i>		R
<i>Vulpia sp.</i>	O	O

Blue: indicator species

Red: invasive species

Monitoring undertaken by Molonglo Conservation Group

Location: on open space between Molonglo River and Tennant St Fyshwick, within an area containing a (mostly) fenced population of Button Wrinklewort *Rutidosia leptorhynchoides*

Vegetation Type Natural Temperate Grassland (CEEC)

Vegetation structure: Grassland

Management: The area is currently grazed (agisted) for bushfire protection but most of the area containing the Button Wrinklewort is fenced off; cattle walk through the fenced area when being moved. Kangaroo grazing pressure appears to be high.

Aims: To monitor change in vegetation and habitat condition and to monitor the plot as a condition benchmark of high quality NTG

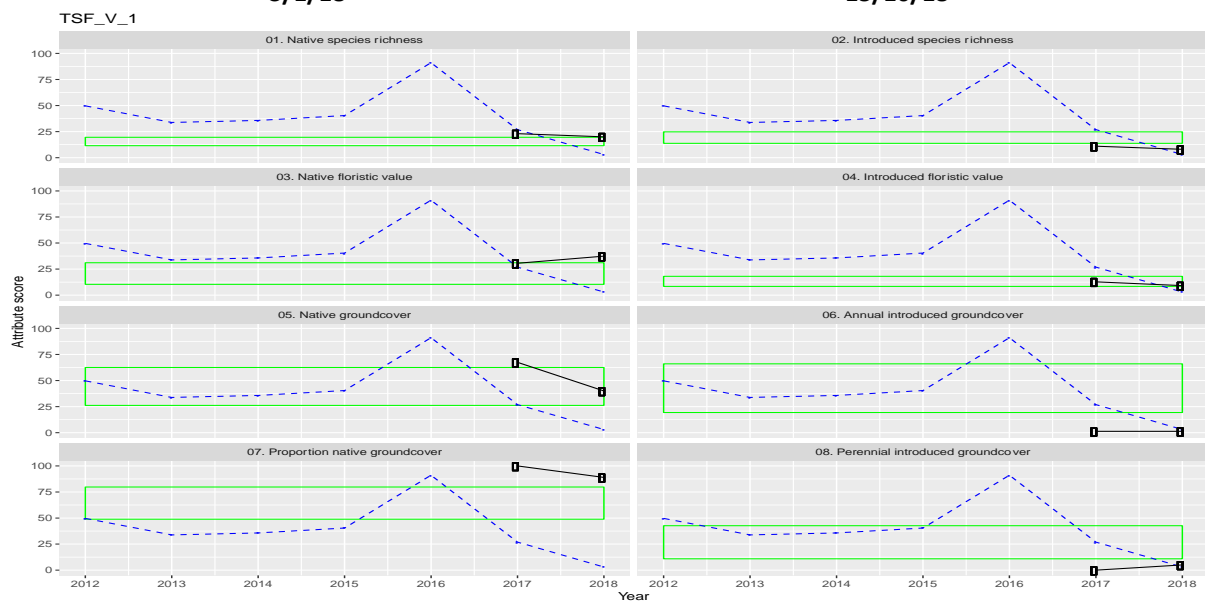
Condition indicators	Condition, trend	Interpretation
Overall condition	↔?	Interpretation was limited by the short period of monitoring. Plot has very shallow soil; past erosion is evident in rilling of soils, although cryptogams are present and may be stabilising the soil to some extent. There are more than 1000 Button Wrinklewort plants, which have spread beyond the enclosure fence.
Native species richness	↔	
Native floristic value	↔	
Native groundcover	↓	
Proportion native groundcover	↓	Native groundcover reduced considerably in 2018, corresponding to the very low soil moisture.
Introduced species richness	↔	Very low ISR
Introduced floristic value	↔	
Introduced annual groundcover	↔	Very low introduced groundcover
Intr. perennial groundcover	↔	
Benchmark condition score	81%	
Habitat diversity score	74%	Rocky site, with surface and buried rocks, cryptogams



3/1/18



15/10/18



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	2017	2018
Native species richness	23	20
Indicator species richness	9	12
Introduced species richness	11	8
Invasive species richness	3	2
Cryptogam cover (%)	13	16
Bare ground cover (%)	20	29
Rock cover (%)	9	11
Litter cover (%)	6	16
Annual introduced cover (%)	1	1
Perennial intr. gr'cover (%)	0	5
Native grass cover (%)	48	34
Native sub-shrub cover (%)	0	0
Other native groundcover (%)	20	6
Total native groundcover (%)	68	40
Native overstorey cover (%)	0	0
Native midstorey cover (%)	0	0
Exotic overstorey cover (%)	0	0
Exotic midstorey cover (%)	0	0
No. species regenerating	0	0
No. age classes	0	0
Length of fallen timber	0	0
No trees with hollows	0	0
Proportion of tree species regenerating (%)	0	0

Species richness

Species	2017	2018
Native species		
<i>Acaena ovina</i>		R
<i>Aristida ramosa</i>	O	O
<i>Austrostipa bigeniculata</i>	O	O
<i>Austrostipa scabra</i>	O	
<i>Cassinia quinquefaria</i>	R	R
<i>Chloris truncata</i>	R	
<i>Chrysocephalum apiculatum</i>	C	C
<i>Convolvulus angustissimus</i>	O	O
<i>Cryptandra amara</i>	O	O
<i>Dianella revoluta</i>	R	R
<i>Eryngium ovinum</i>	O	O
<i>Glycine tabacina</i>		R
<i>Goodenia pinnatifida</i>	O	O
<i>Lomandra bracteata</i>		O
<i>Lomandra filiformis bracteata</i>	O	O
<i>Oxalis perennans</i>	R	
<i>Panicum effusum</i>	O	
<i>Pimelea curviflora</i>		R
<i>Rutidosis leptorhynchoides</i>	O	O
<i>Rytidosperma spp.</i>	O	O
<i>Stackhousia monogyne</i>		O
<i>Themeda triandra</i>	C	O
<i>Tricoryne elatior</i>	R	
<i>Vittadinia cuneata</i>	R	
<i>Vittadinia muelleri</i>	R	
<i>Wahlenbergia spp.</i>	O	O
Introduced species		
<i>Carthamus lanatus</i>	O	O
<i>Chondrilla juncea</i>	O	
<i>Echium vulgare</i>	O	O
<i>Eragrostis curvula</i>	O	O
<i>Hypericum perforatum</i>	O	R
<i>Hypochaeris radicata</i>	O	O
<i>Lepidium sp.</i>	R	
<i>Nassella trichotoma</i>	R	
<i>Petrorhagia nanteuilii</i>	O	
<i>Plantago lanceolata</i>	O	O
<i>Trifolium arvense</i>	C	O
<i>Trifolium dubium</i>	O	
<i>Trifolium subterraneum</i>	O	
<i>Verbascum thapsus</i>	R	R
<i>Verbascum virgatum</i>		R

Blue: indicator species

Red: invasive species

Monitoring undertaken by Friends of The Pinnacle

Location: 'Kama Paddock', in the north of the reserve, south of Marrakai St, Hawker

Vegetation Type: environmental revegetation, native, formerly Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland

Vegetation structure shrubby woodland

Management: revegetation of trees in the 1980s, mostly Red Box with some Red Stringybark and Acacia species; revegetation of shrubs and understorey species in spring 2011; regular weeding undertaken.

Aims: To monitor change in vegetation and habitat condition and structural diversity following revegetation with shrubs and forbs; and to monitor herbaceous revegetation success

Condition indicators	Condition, trend	Interpretation
Overall condition	↔	Reduction in introduced annual groundcover corresponded with the low and extremely low soil moisture in 2017, 2018.
Native species richness	↔	Stable, slight increase over time
Native floristic value	↔	Stable, slight increase over time
Native groundcover	↕	Increase then decrease gradually
Proportion native groundcover	↔	Very high
Introduced species richness	↔	stable
Introduced floristic value	↔	Slight decrease in 2018
Introduced annual groundcover	↑	High, steep decrease in 2017, corresponding to an increase in condition
Intr. perennial groundcover	↔	Very low; significant reduction in St John's Wort, Paterson's Curse, Verbascum
Benchmark condition score	62%	
Habitat diversity score	68%	
Revegetation success	2019: 66%	See separate study

Revegetation success

213 seedlings were planted in 2011, of which 75 were forbs, the remainder shrubs and trees. 94% were alive after several months. After 8 years 140 were still alive (66%) and 38 plants had recruited. Survival varied from 0% (*Hardenbergia violacea*) to 91% (*Callitris endlicheri*)

Species	Common Name	Planted	2012	2019	% alive after 8 years	Recruitment, 2019
<i>Acacia rubida</i>	Red-stemmed Wattle	11	11	6	55%	9
<i>Allocasuarina verticillata</i>	Drooping She-oak	14	13	11	85%	
<i>Bursaria spinosa</i>	Australian Blackthorn	30	30	17	57%	
<i>Callitris endlicheri</i>	Black Cypress Pine	11	11	10	91%	
<i>Cassinia quin/long.</i>	Cassinias	22	22	19	86%	
<i>Dodonaea viscosa</i>	Narrow-leaved Hopbush	17	17	15	88%	
<i>Hardenbergia violacea</i>	False Sarsparilla	3	3	0	0%	
<i>Indigofera adesmiifolia</i>	Leafless Indigo	9	9	3	33%	1
<i>I. australis</i>	Austral Indigo	22	21	13	59%	17
<i>Chrysocephalum apiculatum</i>	Yellow Buttons	16	16	6	38%	
<i>C. semipapposum</i>	Clustered Everlasting	59	48	40	68%	11
Total		213	201	140		38
Percentage survival			94%	66%		74%



13/11/12



7/11/15

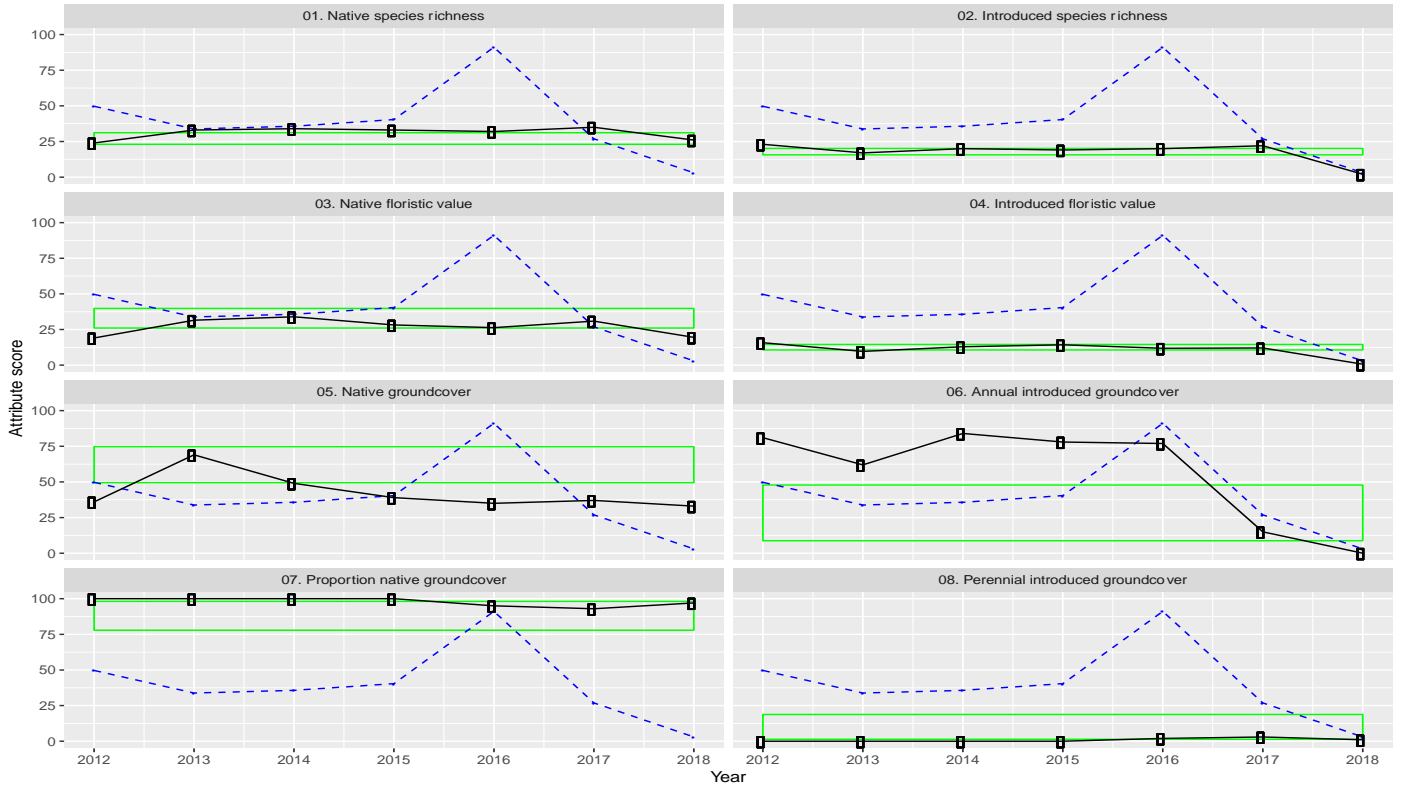


9/11/16



5/11/18

TPI_V_1



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data, TPI_1

Year	2012	2013	2014	2015	2016	2017	2018
Native species richness	24	33	34	33	32	35	26
Indicator species richness	4	9	10	9	7	8	5
Introduced species richness	23	17	20	19	20	22	2
Invasive species richness	1	2	1	2	1	1	0
Cryptogam cover (%)	0	0	0	0	0	0	0
Bare ground cover (%)	5	5	3	2	4	1	4
Rock cover (%)	0	0	4	0	0	1	1
Litter cover (%)	43	64	55	55	93	93	90
Annual introduced cover (%)	81	62	84	78	77	15	0
Perennial intr. gr'cover (%)	0	0	0	0	2	3	1
Native grass cover (%)	36	57	37	32	20	22	27
Native sub-shrub cover (%)	0	0	0	1	0	0	0
Other native groundcover (%)	0	12	12	6	15	15	6
Total native groundcover (%)	36	69	49	39	35	37	33
Native overstorey cover (%)	15	15	15	18	27	24	24
Native midstorey cover (%)	1	1	1	5	5	5	5
Exotic overstorey cover (%)	0	0	0	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0	0	0	0
No. species regenerating	3	3	3	3	3	3	3
No. age classes	4	4	4	4	4	4	4
Length of fallen timber	7	7	7	7	28	28	28
No trees with hollows	0	0	0	0	0	0	0
Proportion of tree species regenerating (%)	75	75	75	75	75	75	75

Species richness

Species	2012	2013	2014	2015	2016	2017	2018
Native species							
<i>Acacia dealbata</i>	O	R	O			O	R
<i>Acacia implexa</i>		R	O	R	R	R	R
<i>Acacia rubida</i>				R	R	R	R
<i>Acaena ovina</i>	O	O	O	O	O	O	
<i>Anthosachne scabra</i>		O	O	R	O	O	R
<i>Austrostipa bigeniculata</i>	O	O	C	C	C	O	O
<i>Austrostipa scabra</i>	O	O	A	A	A	C	C
<i>Bothriochloa macra</i>		R	O	O	O	O	O
<i>Bursaria spinosa</i>	O	O	R	R	R	R	R
<i>Carex inversa</i>		O	C	C	C	C	C
<i>Cassinia quinquefaria</i>	O	O	O	O	R	O	O
<i>Chrysocephalum semipapposum</i>	R	R		R			
<i>Convolvulus angustissimus</i>	O	O	C	C	C	C	O
<i>Desmodium varians</i>		O	R			O	
<i>Dichondra repens</i>	O	O	O			R	
<i>Dodonaea viscosa</i>	R	R	R	R	R	R	R
<i>Einadia nutans</i>		R	R	R	R	O	O
<i>Eucalyptus macrorhyncha</i>	O	C	O	O	O	O	O
<i>Eucalyptus polyanthemus</i>	O	O	O	C	C	C	C
<i>Euchiton</i> sp.	O						
<i>Geranium solanderi</i>	O					R	
<i>Geranium</i> sp.		O	O	O	O		
<i>Glycine tabacina</i>	O	O	O	O	O	C	C
<i>Hackelia suaveolens</i>	O	O	A	A	C	C	R
<i>Indigofera australis</i>		R	R	R	R	R	R
<i>Juncus</i> sp.	O						
<i>Lomandra bracteata</i>			O	O	O		
<i>Lomandra filiformis bracteata</i>	O	O				O	
<i>Lomandra filiformis coriacea</i>			C	C	O	O	O
<i>Lomandra filiformis filiformis</i>			C	C	O	O	O
<i>Microlaena stipoides</i>	C	C	C	C	O	C	O
<i>Oxalis perennans</i>	O	R	O	O	O	C	R
<i>Panicum effusum</i>	O	O	R	O	O	O	O
<i>Pelargonium</i> sp.		R					
<i>Poa sieberiana</i>		O	O	R			
<i>Rumex</i> sp. native		O	R	R	R	O	
<i>Rytidosperma</i> spp.	O	O	O	O	O	O	R
<i>Themeda triandra</i>				R	R		
<i>Tricoryne elatior</i>		O	R			R	
<i>Vittadinia cuneata</i>	R				R	R	R
<i>Wahlenbergia</i> spp.	C	R	O	O	O	R	R
<i>Wurmbea dioica</i>			R				
Introduced species							
<i>Aira</i> sp.	O	O	O		O	R	
<i>Avena</i> sp.	O		A	A	A	C	R
<i>Bromus diandrus</i>	O		C	C	C	C	O
<i>Bromus hordeaceus</i>	O		C	C	C	O	
<i>Bromus rubens</i>		O	O	O	O	C	
<i>Carthamus lanatus</i>	O	R	O	C	R	R	
<i>Cerastium glomeratum</i>	R						
<i>Chondrilla juncea</i>		O					
<i>Cirsium vulgare</i>	O						
<i>Echium plantagineum</i>	O	R	C	O	R	R	
<i>Erigeron</i> sp.						R	
<i>Erodium botrys</i>						R	
<i>Holcus lanatus</i>	O						
<i>Hypericum perforatum</i>	R	R	R	R	R	R	
<i>Hypochaeris glabra</i>	O	O	C	C	C	O	
<i>Hypochaeris radicata</i>	O	O	C	C	O	O	
<i>Nassella trichotoma</i>		R		R			

Species	2012	2013	2014	2015	2016	2017	2018
<i>Paronychia brasiliiana</i>	O						
<i>Petrorhagia nanteuillii</i>	O	O	C	C	O	O	
<i>Plantago lanceolata</i>	O	R		O	O	O	
<i>Rosa rubiginosa</i>		R	R		R		
<i>Rumex acetosella</i>	O	O	C	C	A	C	
<i>Salvia verbenaca</i>	O	O	C	C	C	O	
<i>Sonchus oleraceus</i>			R				
<i>Thistle sp.</i>	O						
<i>Tragopogon sp.</i>						R	
<i>Trifolium arvense</i>	O	O			O		
<i>Trifolium glomeratum</i>	O	O					
<i>Trifolium repens</i>					O		
<i>Trifolium sp.</i>				O	O	O	O
<i>Trifolium subterraneum</i>	O	O					
<i>Verbascum thapsus</i>	O		O	O	R	R	
<i>Vulpia sp.</i>	C	C	A	A	C	O	

Blue: indicator species

Red: invasive species

Tuggeranong Hills Nature Reserve 2017–2018

TUH_1

Monitoring undertaken by Friends of Tuggeranong Hills

Location: on Tuggeranong Hills Nature Reserve, accessed from Christmas St in Theodore, north of the Grinding Grooves

Vegetation Type: Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland (CEEC)

Vegetation structure: grassy woodland

Management: no active management

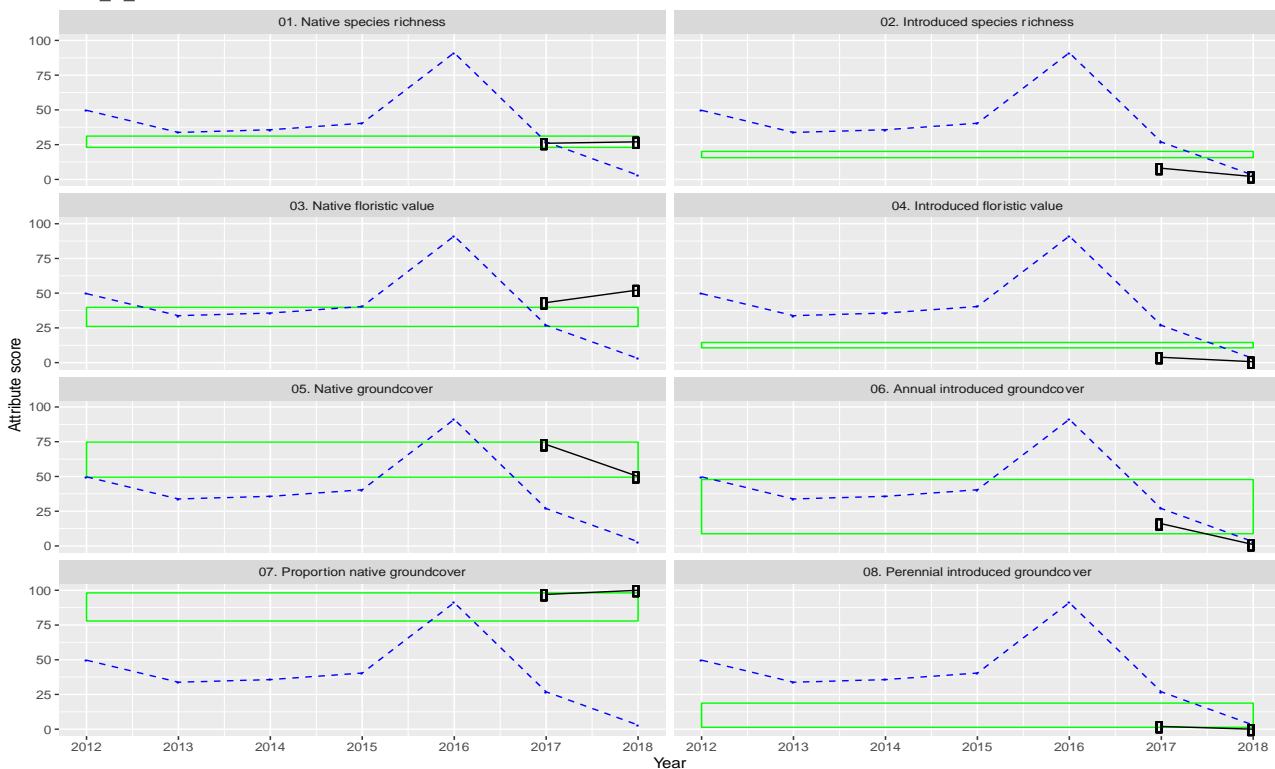
Aim: To monitor change in vegetation and habitat condition while existing very low-level management is undertaken.

Condition indicators	Condition, trend	Interpretation
Overall condition	↔	Interpretation was limited by the short period of monitoring. Reduction in native groundcover corresponds with the reduced soil moisture levels in 2018.
Native species richness	↔	
Native floristic value	↑	
Native groundcover	↓	
Proportion native groundcover	↔	
Introduced species richness	↔	No significant environmental weeds present in the plot
Introduced floristic value	↔	
Introduced annual groundcover	↑	
Intr. perennial groundcover	↔	
Benchmark condition score	69%	Low tree cover, few old-growth trees and no fallen timber in plot
Habitat diversity score	75%	



14/11/17

TUH_V_1



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	2017	2018
Native species richness	26	27
Indicator species richness	13	16
Introduced species richness	8	2
Invasive species richness	0	0
Cryptogam cover (%)	5	1
Bare ground cover (%)	6	18
Rock cover (%)	0	0
Litter cover (%)	56	57
Annual introduced cover (%)	16	1
Perennial intr. gr'cover (%)	2	0
Native grass cover (%)	57	42
Native sub-shrub cover (%)	1	1
Other native groundcover (%)	15	7
Total native groundcover (%)	73	50
Native overstorey cover (%)	5	5
Native midstorey cover (%)	2	2
Exotic overstorey cover (%)	0	0
Exotic midstorey cover (%)	0	0
No. species regenerating	2	2
No. age classes	4	4
Length of fallen timber	0	0
No trees with hollows	1	1
Proportion of tree species regenerating (%)	67	67

Species richness

Species	2017	2018
Native species		
<i>Acacia rubida</i>		R
<i>Anthosachne scabra</i>		R
<i>Aristida ramosa</i>	O	
<i>Austrostipa scabra</i>		O
<i>Bothriochloa macra</i>	O	O
<i>Brachychiton populneus</i>	O	O
<i>Brachyloma daphnoides</i>	O	O
<i>Cassinia longifolia</i>	O	
<i>Cassinia quinquefaria</i>	O	O
<i>Cheilanthes sp.</i>	O	O
<i>Chrysocephalum apiculatum</i>	O	O
<i>Cryptandra amara</i>	O	O
<i>Desmodium varians</i>	O	
<i>Dichelachne crinita</i>	O	
<i>Dillwynia sp.</i>	O	O
<i>Eucalyptus blakelyi</i>	O	O
<i>Eucalyptus melliodora</i>	O	O
<i>Gonocarpus tetragynus</i>	R	R
<i>Hibbertia obtusifolia</i>	R	R
<i>Leptorhynchus squamatus</i>		O
<i>Leucopogon attenuatus</i>		O
<i>Lomandra bracteata</i>		O
<i>Lomandra multiflora</i>	R	R
<i>Melichrus urceolatus</i>	O	O
<i>Panicum effusum</i>		R
<i>Pimelea curviflora</i>	O	O
<i>Poa sieberiana</i>	O	O
<i>Rytidosperma spp.</i>	O	O
<i>Schoenus apogon</i>	O	
<i>Themeda triandra</i>	C	C
<i>Tricoryne elatior</i>	O	O
<i>Wahlenbergia spp.</i>	O	O
Introduced species		
<i>Aira sp.</i>	O	
<i>Briza maxima</i>	O	
<i>Briza minor</i>	O	
<i>Centaurium erythraea</i>	O	O
<i>Hypochaeris radicata</i>	R	R
<i>Linaria pelisseriana</i>	O	
<i>Tolpis barbata</i>	O	

Blue: indicator species

Red: invasive species

Monitoring undertaken by Friends of Grasslands

Location: on east of Ginninderra Creek on the southern end of Umbagog Reserve

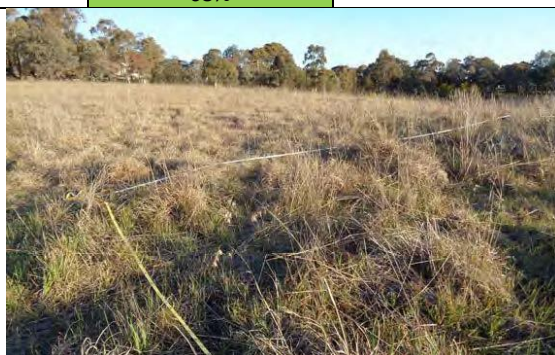
Vegetation Type: Natural Temperate Grassland (CEEC)

Vegetation structure: grassland

Management: regular ecological burns; last burnt 2018.

Aims: To monitor change in vegetation and habitat condition with the implementation of regular ecological burns; and to monitor the plot as a condition benchmark of high quality NTG

Condition indicators	Condition, trend	Interpretation
Overall condition	↔	Interpretation was limited by the short period of monitoring. The low native groundcover reflects the biomass removed by the burn.
Native species richness	↔	
Native floristic value	↔	
Native groundcover		Cover values only measured in 2018.
Proportion native groundcover		
Introduced species richness	↔	
Introduced floristic value	↔	
Introduced annual groundcover		Cover values only measured in 2018.
Intr. perennial groundcover		Cover values only measured in 2018.
Benchmark condition score	81%	
Habitat diversity score	68%	

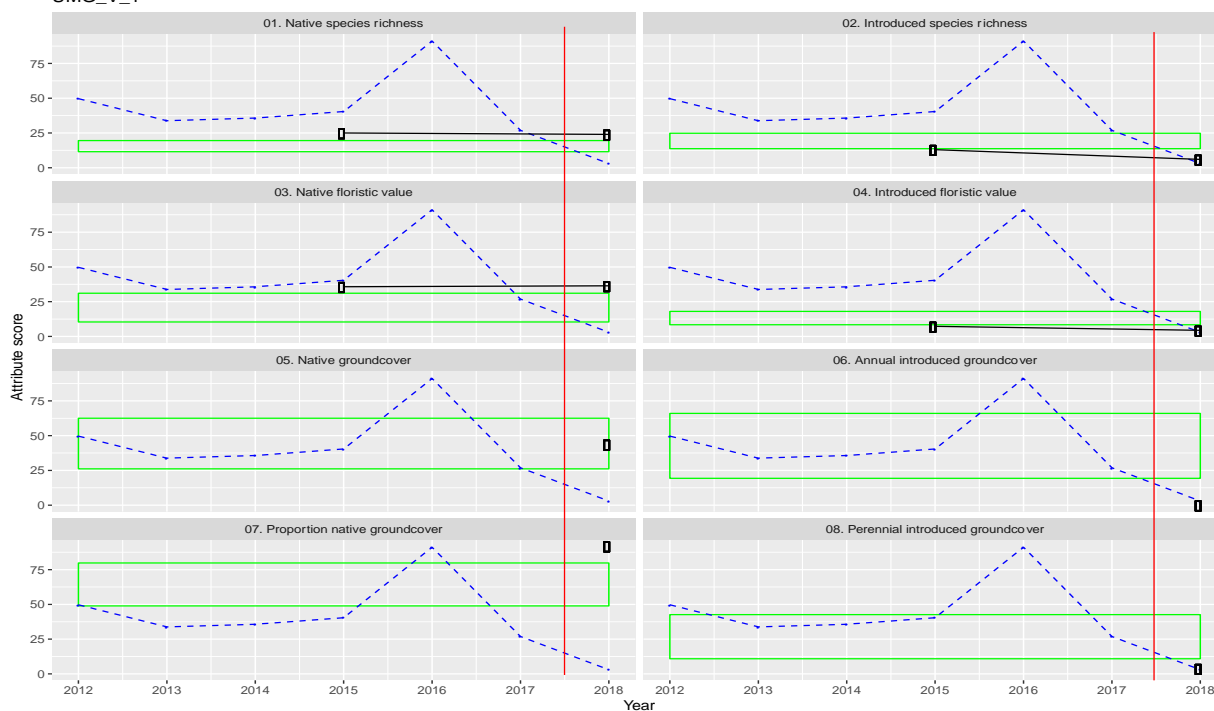


23/11/15



22/10/18

UMG_V_1



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	2015	2018
Native species richness	25	24
Indicator species richness	9	10
Introduced species richness	13	6
Invasive species richness	0	0
Cryptogam cover (%)		8
Bare ground cover (%)		18
Rock cover (%)		0
Litter cover (%)		50
Annual introduced cover (%)		0
Perennial intr. gr'cover (%)		4
Native grass cover (%)		38
Native sub-shrub cover (%)		0
Other native groundcover (%)		6
Total native groundcover (%)		44
Native overstorey cover (%)	0	0
Native midstorey cover (%)	0	0
Exotic overstorey cover (%)	0	0
Exotic midstorey cover (%)	0	0
No. species regenerating	0	0
No. age classes	0	0
Length of fallen timber	0	0
No trees with hollows	0	0
Proportion of tree species regenerating (%)	0	0

Species richness

Species	2015	2018
Native species		
<i>Acaena ovina</i>	O	O
<i>Anthosachne scabra</i>	R	
<i>Asperula conferta</i>	O	O
<i>Austrostipa bigeniculata</i>	O	
<i>Bulbine bulbosa</i>		O
<i>Carex breviculmis</i>	O	
<i>Carex inversa</i>	O	O
<i>Chrysocephalum apiculatum</i>	O	O
<i>Convolvulus angustissimus</i>	O	O
<i>Cymbonotus lawsonianus</i>	R	R
<i>Cynoglossum australe</i>	O	R
<i>Desmodium varians</i>	O	
<i>Dichelachne crinita</i>	R	
<i>Epilobium sp.</i>	O	O
<i>Eryngium ovinum</i>	O	O
<i>Glycine tabacina</i>	R	O
<i>Lomandra filiformis bracteata</i>		R
<i>Lomandra filiformis coriacea</i>	O	
<i>Microtis unifolia</i>	O	O
<i>Oxalis perennans</i>	R	O
<i>Plantago varia</i>		R
<i>Poa sieberiana</i>	O	O
<i>Rumex sp. native</i>	O	R
<i>Rytidosperma spp.</i>	R	O
<i>Schoenus apogon</i>	R	O
<i>Senecio quadridentatus</i>		O
<i>Themeda triandra</i>	O	C
<i>Tricoryne elatior</i>	O	O
<i>Wahlenbergia spp.</i>	O	O
Introduced species		
<i>Aira sp.</i>	O	
<i>Avena sp.</i>	O	O
<i>Centaurium erythraea</i>	O	O
<i>Chondrilla juncea</i>	O	R
<i>Cirsium vulgare</i>	R	
<i>Erigeron sp.</i>	O	
<i>Hypochaeris radicata</i>	O	O
<i>Petrorhagia nanteuillii</i>	O	
<i>Plantago lanceolata</i>	R	O
<i>Rumex acetosella</i>	O	
<i>Tragopogon sp.</i>	O	O
<i>Trifolium arvense</i>	R	
<i>Trifolium glomeratum</i>	O	

Blue: indicator species

Red: invasive species

Monitoring undertaken by Friends of Grasslands (FOG)

Location: below the Burringiri Aboriginal and Torres Strait Islander Cultural Centre off Lady Denman Drive; YAG_1 directly to the south-east of the buildings, YAG_2 the southern side of the creek.

Vegetation Type Natural Temperate Grassland (YAG_2: CEEC)

Vegetation structure: grassland

Management: ecological burns have occurred in 2012 and 2017 (YAG_1) and 2011 and 2017 (YAG_2). Both areas are weeded regularly by FOG, particularly for St John’s Wort and Chilean Needlegrass. YAG_1 was revegetated with forbs following disturbance in 2012.

Aims:

- To measure change in vegetation and habitat condition with the implementation of management by FOG and National Capital Authority.
- To measure change in vegetation and habitat condition in an area of high native diversity natural temperate grassland to provide a benchmark of change against seasonal conditions.

Condition indicators	YAG_1	YAG_2	Interpretation
Overall condition	↔	↔	Interpretation was limited by the short period of monitoring. Decrease in cover of introduced annual and perennial groundcover may reflect lower soil moisture availability in 2018.
Native species richness	↔	↔	
Native floristic value	↔	↔	
Native groundcover	↔	↓	Small reduction in groundcover in YAG_2
Proportion native groundcover	↑	↔	
Introduced species richness	↔	↔	
Introduced floristic value	↔	↔	
Introduced annual groundcover	↑	↔	Decrease in cover corresponds to increase in condition
Intr. perennial groundcover	↑	↔	Decrease in cover corresponds to increase in condition
Benchmark condition score	52%	78%	
Habitat diversity score	43%	54%	



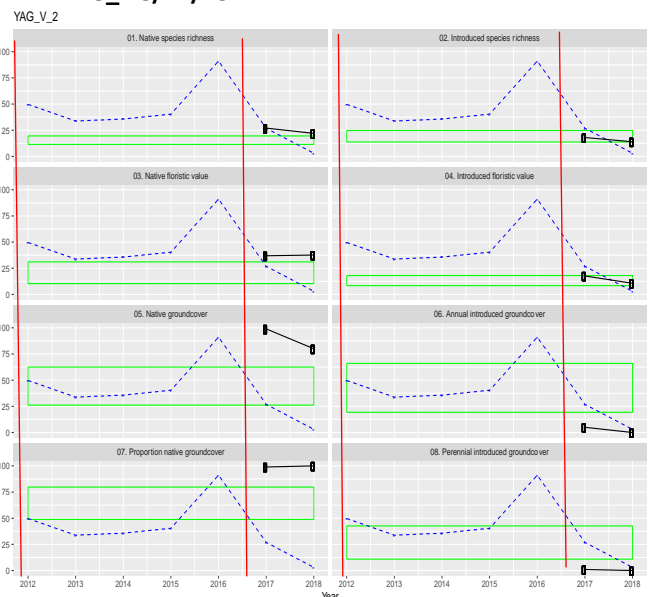
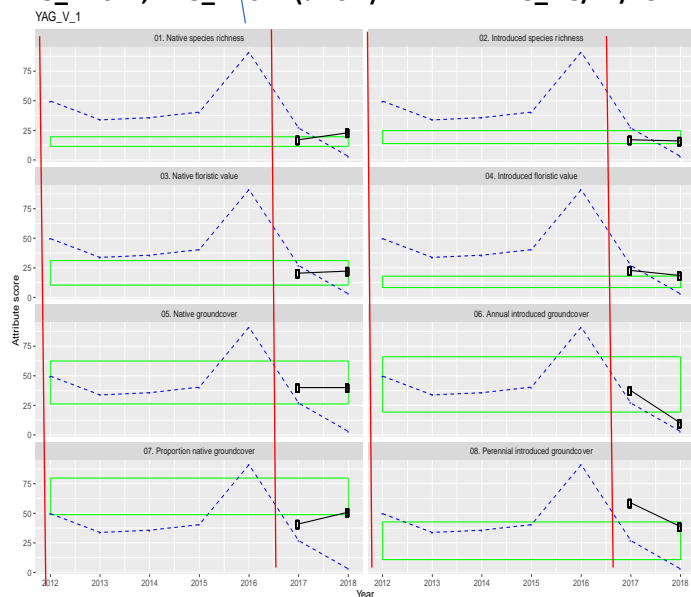
YAG_1 2017, YAG_2 2017 (arrow)



YAG_1 8/12/18



YAG_2 8/12/18



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	YAG_1		YAG_1	
	2017	2018	2017	2018
Native species richness	17	23	27	22
Indicator species richness	6	7	10	10
Introduced species richness	17	16	18	14
Invasive species richness	4	3	2	2
Cryptogam cover (%)	0	0	2	15
Bare ground cover (%)	39	21	81	40
Rock cover (%)	0	0	0	0
Litter cover (%)	34	46	4	20
Annual introduced cover (%)	38	10	5	0
Perennial intr. gr'cover (%)	59	39	1	0
Native grass cover (%)	26	30	86	78
Native sub-shrub cover (%)	0	0	0	0
Other native groundcover (%)	14	10	13	2
Total native groundcover (%)	40	40	99	80
Native overstorey cover (%)	0	0	0	0
Native midstorey cover (%)	0	0	0	0
Exotic overstorey cover (%)	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0
No. species regenerating	0	0	0	0
No. age classes	0	0	0	0
Length of fallen timber	0	0	0	0
No trees with hollows	0	0	0	0
Proportion of tree species regenerating (%)	0	0	0	0

Species richness

Species	YAG_1		YAG_2	
	2017	2018	2017	2018
Native species				
<i>Acaena ovina</i>	O	O	O	O
<i>Anthosachne scabra</i>	R	O	O	O
<i>Arthropodium fimbriatum</i>		R		
<i>Asperula conferta</i>	O		O	O
<i>Austrostipa scabra</i>			O	O
<i>Bothriochloa macra</i>			R	R
<i>Bulbine bulbosa</i>		R		R
<i>Carex appressa</i>	O			
<i>Carex breviculmis</i>	R	O	O	
<i>Carex inversa</i>		O	O	O
<i>Cheilanthes sp.</i>			R	
<i>Chrysocephalum apiculatum</i>			O	O
<i>Convolvulus angustissimus</i>		R	O	O
<i>Epilobium sp.</i>	O	O		
<i>Eryngium ovinum</i>	R	O	O	O
<i>Euchiton sp.</i>			R	
<i>Goodenia pinnatifida</i>			O	O
<i>Hackelia suaveolens</i>	O	O	R	R
<i>Juncus sp.</i>		R		
<i>Leptorhynchus squamatus</i>			O	O
<i>Lomandra bracteata</i>		O		O
<i>Lomandra filiformis coriacea</i>	O		R	
<i>Lomandra multiflora</i>	R	R		
<i>Microlaena stipoides</i>	O	O		
<i>Oxalis perennans</i>	O	O	O	O
<i>Panicum effusum</i>		R		
<i>Persicaria prostrata</i>		R		
<i>Plantago varia</i>			O	O
<i>Poa labillardierei</i>		O		
<i>Poa sieberiana</i>	O		O	O

Species	YAG_1		YAG_2	
	2017	2018	2017	2018
<i>Pseudognaphalium luteo-album</i>			R	
<i>Rumex sp. native</i>	O	O	R	O
<i>Rytidosperma spp.</i>	O	O	O	O
<i>Themeda triandra</i>	C	C	A	A
<i>Tricoryne elatior</i>	O	O	O	O
<i>Wahlenbergia spp.</i>		R	O	O
Introduced species				
<i>Aira sp.</i>	O	R	O	
<i>Avena sp.</i>	C	O		O
<i>Briza maxima</i>			O	R
<i>Briza minor</i>			O	R
<i>Bromus hordeaceus</i>	O		R	
<i>Centaurium erythraea</i>	O			R
<i>Chondrilla juncea</i>		R		
<i>Cynodon dactylon</i>	O	O		
<i>Dactylis glomerata</i>	O	R		
<i>Erigeron sp.</i>	O	O	O	O
<i>Festuca arundinacea</i>		O	O	
<i>Hirschfeldia incana</i>			R	R
<i>Hypericum perforatum</i>	O	O	O	O
<i>Hypochaeris radicata</i>	C	O	O	R
<i>Lactuca serriola</i>		O	O	
<i>Nassella neesiana</i>	O			
<i>Nassella trichotoma</i>				R
<i>Paspalum dilatatum</i>	O	O	O	
<i>Petrorhagia nanteuillii</i>			O	R
<i>Plantago lanceolata</i>	O	O	O	O
<i>Poa pratensis</i>	O	O		
<i>Prunus sp.</i>	O			
<i>Rumex acetosella</i>	O	O		
<i>Salvia verbenaca</i>			O	R
<i>Sanguisorba minor</i>	O	O	O	O
<i>Sonchus oleraceus</i>	O			
<i>Tragopogon sp.</i>		R	R	R
<i>Trifolium sp.</i>			O	
<i>Vulpia sp.</i>			O	

Blue: indicator species

Red: invasive species

Monitoring undertaken by Sarah Sharp for MCG project

Location: on Icon Water Woodland Biodiversity Offset site, Williamsdale, to the south of the electricity sub-station

Vegetation Type: Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland (CEEC)

Vegetation structure: grassy woodland

Management: IWW_1B is one of four plots in four sites subject to a cultural cool burn in autumn 2018. IWW_2C was not burnt (a control). St John's Wort was treated in March 2018.

Aim: To monitor change in vegetation composition and structure and condition following a cultural burn.

Condition indicators	IWW_1B Burnt	IWW_2C Control	Interpretation
Overall condition	↔	↔	Interpretation is limited by the short period of monitoring. The burn in plot 1B was very light – seedlings were burnt but are regenerating. There are few other visible signs of the burn. It was difficult in spring to identify where the burn occurred in the plot; no changes in indicators is attributable to the burn. The decrease in cover of native groundcover and proportion of native groundcover in both plots reflect changes in soil moisture availability.
Native species richness	↔	↔	
Native floristic value	↔	↓	
Native groundcover	↓	↓	Decrease in native groundcover in both plots
Proportion native groundcover	↔	↓	Decrease in proportion of native species in the control plot.
Introduced species richness	↔	↔	
Introduced floristic value	↔	↔	
Introduced annual groundcover	↔	↔	
Intr. perennial groundcover	↔	↔	
Benchmark condition score	54%	57%	
Habitat diversity score	76%	80%	



Icon_1B, 4/4/18



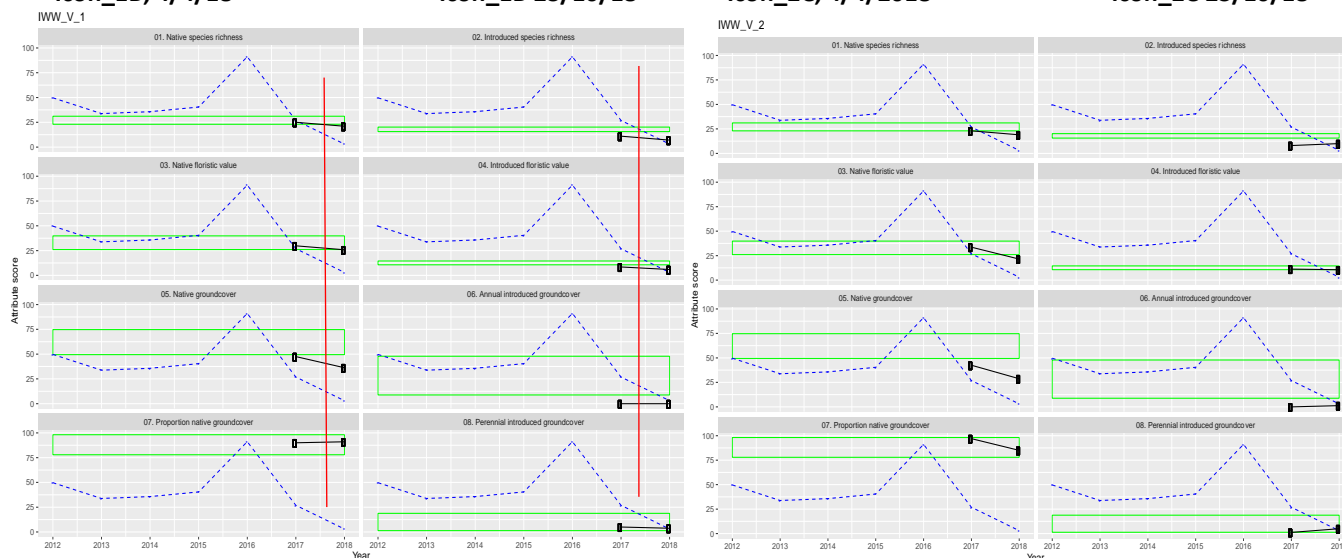
Icon_1B 23/10/18



Icon_2C, 4/4/2018



Icon_2C 23/10/18



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	IWW_1 burnt		IWW_2 control	
	3/2018	10/2018	3/2018	10/2018
Native species richness	25	21	23	19
Indicator species richness	9	8	9	7
Introduced species richness	11	7	8	10
Invasive species richness	2	1	2	2
Cryptogam cover (%)	0	9	1	4
Bare ground cover (%)	18	15	10	6
Rock cover (%)	1	1	3	3
Litter cover (%)	54	55	60	59
Annual introduced cover (%)	0	0	0	1
Perennial intr. gr'cover (%)	5	4	1	5
Native grass cover (%)	44	30	41	24
Native sub-shrub cover (%)	0	1	0	3
Other native groundcover (%)	4	5	1	3
Total native groundcover (%)	48	36	43	29
Native overstorey cover (%)	5	5	10	10
Native midstorey cover (%)	5	5	5	5
Exotic overstorey cover (%)	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0
No. species regenerating	1	1	1	1
No. age classes	2	2	3	3
Length of fallen timber	0	0	0	0
No trees with hollows	0	0	0	0
Proportion of tree species regenerating (%)	100	100	100	100

Species richness

Species	2017	2018	2017	2018
Native species				
<i>Acaena ovina</i>	O	O	O	R
<i>Aristida ramosa</i>	O		O	
<i>Austrostipa scabra</i>	O	O	C	C
<i>Bothriochloa macra</i>	C	O	O	
<i>Cheilanthes sp.</i>	O	O	O	O
<i>Chrysocephalum apiculatum</i>	O	O	O	O
<i>Chrysocephalum semipapposum</i>			O	O
<i>Cymbonotus lawsonianus</i>		O		R
<i>Desmodium varians</i>	O	O	O	R
<i>Dichelachne sp</i>	R			
<i>Dichondra repens</i>	O	O	O	

Species	2017	2018	2017	2018
<i>Enneapogon nigricans</i>			R	
<i>Epilobium sp.</i>	R			
<i>Eucalyptus blakelyi</i>	C	C	C	C
<i>Euphorbia dallachyana</i>	O			
<i>Geranium sp.</i>	O		O	O
<i>Glycine tabacina</i>	O		O	O
<i>Hydrocotyle laxiflora</i>				O
<i>Lomandra filiformis bracteata</i>		R		R
<i>Lomandra filiformis filiformis</i>	O		O	
<i>Melichrus urceolatus</i>	R	R	R	R
<i>Microlaena stipoides</i>	C	C	O	O
<i>Oxalis perennans</i>		R		
<i>Panicum effusum</i>	O	O	O	O
<i>Plantago varia</i>	R	O	O	
<i>Poa sieberiana</i>	O	O	C	
<i>Rumex sp. native</i>	R			
<i>Rytidosperma spp.</i>	O	O	O	C
<i>Senecio quadridentatus</i>			R	
<i>Solenogyne dominii</i>				O
<i>Triptilodiscus pygmaeus</i>		O		
<i>Vittadinia muelleri</i>			R	
<i>Wahlenbergia spp.</i>	O	R	O	R
<i>Xerochrysum viscosum</i>	R	R		
Introduced species				
<i>Aira sp.</i>	O			
<i>Centaurium erythraea</i>	R		O	O
<i>Chondrilla juncea</i>	O			
<i>Cirsium vulgare</i>	R		O	R
<i>Hypericum perforatum</i>	O	O	O	O
<i>Hypochaeris glabra</i>		O		
<i>Hypochaeris radicata</i>	O	O	O	O
<i>Nassella trichotoma</i>	R		O	O
<i>Petrorhagia nanteuillii</i>			O	
<i>Plantago lanceolata</i>				R
<i>Rosa rubiginosa</i>	R		O	O
<i>Rumex acetosella</i>			O	
<i>Tragopogon sp.</i>	R			R
<i>Trifolium sp.</i>		O		O
<i>Unknown introduced</i>	O	O		R
<i>Verbascum thapsus</i>		R		
<i>Verbascum virgatum</i>	O	R		

Blue: indicator species

Red: invasive species

Millpost Bungendore Autumn 2018–Spring 2018

MLP_1B, MLP_2C

Monitoring undertaken by Sarah Sharp for MCG project

Location: on in the hills south-west of Bungendore, on Millpost property, to the east of the homestead

Vegetation Type: Brittle Gum - Scribbly Gum shrubby tall dry open forest

Vegetation structure: shrubby woodland

Management: MLP_1B is one of four plots in four sites subject to a cultural cool burn in autumn 2018. MLP_2C was not burnt as a control but was only monitored in 2018.

Aim: To monitor change in vegetation composition and structure and condition following a cultural burn.

Condition indicators	MLP_1 Burnt	MLP_2 Control	Interpretation
Overall condition	↔		Interpretation is limited by the short period of monitoring. Native floristic condition was high, due to the occurrence of many significant sub-shrub species but was lower following the burn—many of the sub-shrubs were burnt to the ground, although nearly all are regenerating. There was a decrease in native grass cover and litter cover corresponding to the burn and to reduction in soil moisture. MLP_2 not surveyed in 2017; also in poor condition overall in 2018.
Native species richness	↓		
Native floristic value	↓		
Native groundcover	↓		
Proportion native groundcover	↔		
Introduced species richness	↔		Extremely low: only two introduced species were recorded
Introduced floristic value	↔		
Introduced annual groundcover	↔		
Intr. perennial groundcover	↔		
Benchmark condition score	53%	53%	
Habitat diversity score	75%	55%	Plots lack old growth trees



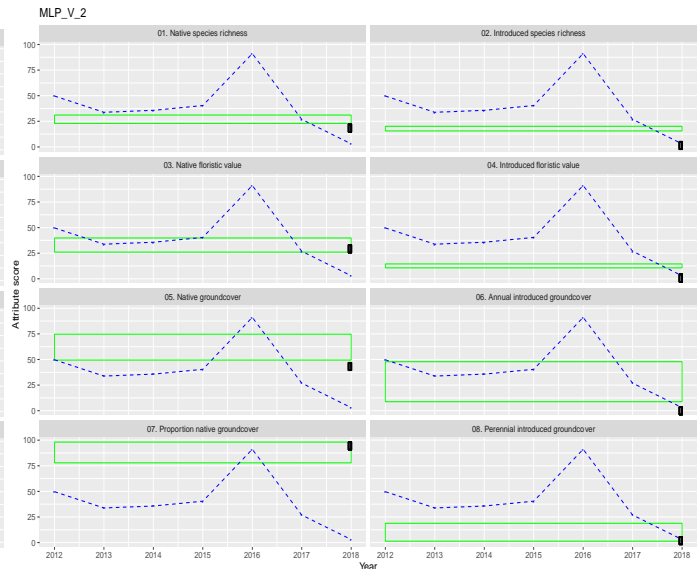
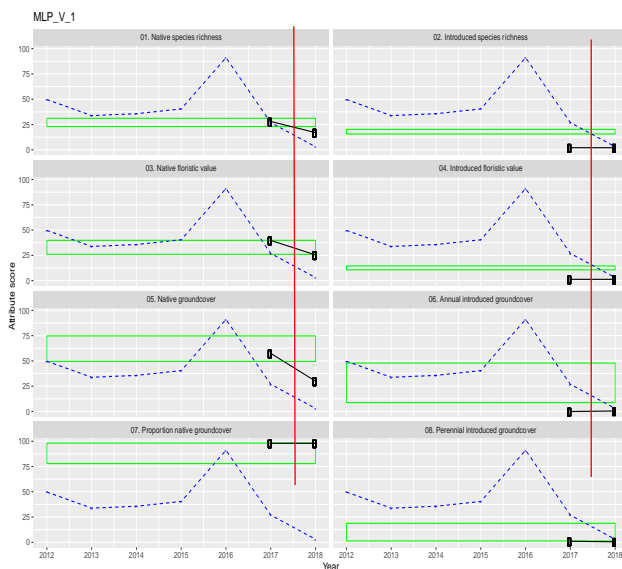
MLP_1B March 2018



MLP_1B October 2018



MLP_2C October 2018



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	MLP_1 burnt		MLP control
	3/2018	11/2018	11/2018
Native species richness	28	17	19
Indicator species richness	12	7	8
Introduced species richness	2	2	2
Invasive species richness	0	0	0
Cryptogam cover (%)	4	1	13
Bare ground cover (%)	9	24	5
Rock cover (%)	0	0	0
Litter cover (%)	75	49	59
Annual introduced cover (%)	0	1	1
Perennial intr. gr'cover (%)	1	1	3
Native grass cover (%)	56	26	35
Native sub-shrub cover (%)	1	3	8
Other native groundcover (%)	0	1	1
Total native groundcover (%)	57	30	44
Native overstorey cover (%)	5	5	5
Native midstorey cover (%)	1	1	1
Exotic overstorey cover (%)	0	0	0
Exotic midstorey cover (%)	0	0	0
No. species regenerating	1	1	1
No. age classes	2	2	2
Length of fallen timber	2	2	2
No trees with hollows	0	0	0
Proportion of tree species regenerating (%)	100	100	100

Species richness

Species	2017	2018	2018
Native species			
<i>Acacia dealbata</i>	O		
<i>Acacia gunnii</i>	O		R
<i>Aristida ramosa</i>	C	O	O
<i>Bothriochloa macra</i>	O		
<i>Caladenia sp.</i>	R		
<i>Desmodium varians</i>	R		
<i>Dillwynia sericea</i>	O		O
<i>Dillwynia sp.</i>	O		
<i>Diuris chryseopsis</i>		R	
<i>Drosera peltata</i>			O
<i>Eragrostis brownii</i>	O		
<i>Eucalyptus mannifera</i>	R	R	
<i>Euchiton sp.</i>	O	R	O
<i>Goodenia hederacea</i>	O	O	O
<i>Haloragis heterophylla</i>			R
<i>Hibbertia obtusifolia</i>	O	O	O
<i>Hovea heterophylla</i>	O		
<i>Hydrocotyle laxiflora</i>	O	O	O
<i>Hypericum gramineum</i>	O		
<i>Juncus sp.</i>	R		
<i>Kunzea ericoides</i>	O	R	
<i>Leptorhynchus squamatus</i>		O	O
<i>Leucopogon fletcheri</i>		O	O
<i>Lomandra filiformis bracteata</i>		O	O
<i>Lomandra filiformis filiformis</i>	O		
<i>Melichrus urceolatus</i>	O	O	O
<i>Microlaena stipoides</i>	O	O	C
<i>Poa sieberiana</i>	R		
<i>Rytidosperma pallidum</i>			O
<i>Rytidosperma spp.</i>	O		O
<i>Schoenus apogon</i>	O		
<i>Solenogyne dominii</i>	O	O	O
<i>Stylidium graminifolium</i>	O		
<i>Themeda triandra</i>	O	O	
<i>Triptilodiscus pygmaeus</i>		O	O
<i>Wahlenbergia spp.</i>			R
Introduced species			
<i>Centaurium erythraea</i>	O	O	O
<i>Hypochaeris radicata</i>	O	O	O

Blue: indicator species

Red: invasive species

Monitoring undertaken by Sarah Sharp for MCG

Location: on the western side of Old Cooma Road near Googong on the property 'Wandiyali'.

Vegetation Type Blakely's Red Gum - Yellow Box +/- White Box tall grassy woodland

Vegetation structure derived grassland

Management: WAN_1B is one of four plots in four sites subject to a cultural cool burn in autumn 2018. WAN_2C was not burnt (a control).

Aim: To monitor change in vegetation composition and structure and condition following a cultural burn.

Condition and trend	WAN_1 Burnt	WAN_2 Control	Interpretation
Overall condition	↑	↔	Interpretation is limited by the short period of monitoring. After the burn there was an increase in native species richness and introduced perennial groundcover in the burnt plot. There was a small decrease in the native forb cover, but other changes occurred in both plots. Plot WAN_1B met the criteria as the critically endangered YBRG woodland in 2018 after the burn.
Native species richness	↑	↔	Slight increase in NSR after the burn
Native floristic value	↑	↔	Slight increase in NFS after the burn
Native groundcover	↓	↓	Similar decrease similar in both plots
Proportion native groundcover	↓	↓	Similar decrease similar in both plots
Introduced species richness	↔	↔	
Introduced floristic value	↔	↔	
Introduced annual groundcover	↔	↔	
Intr. perennial groundcover	↑	↔	
Benchmark condition score	69%	59%	
Habitat diversity score	57%	54%	

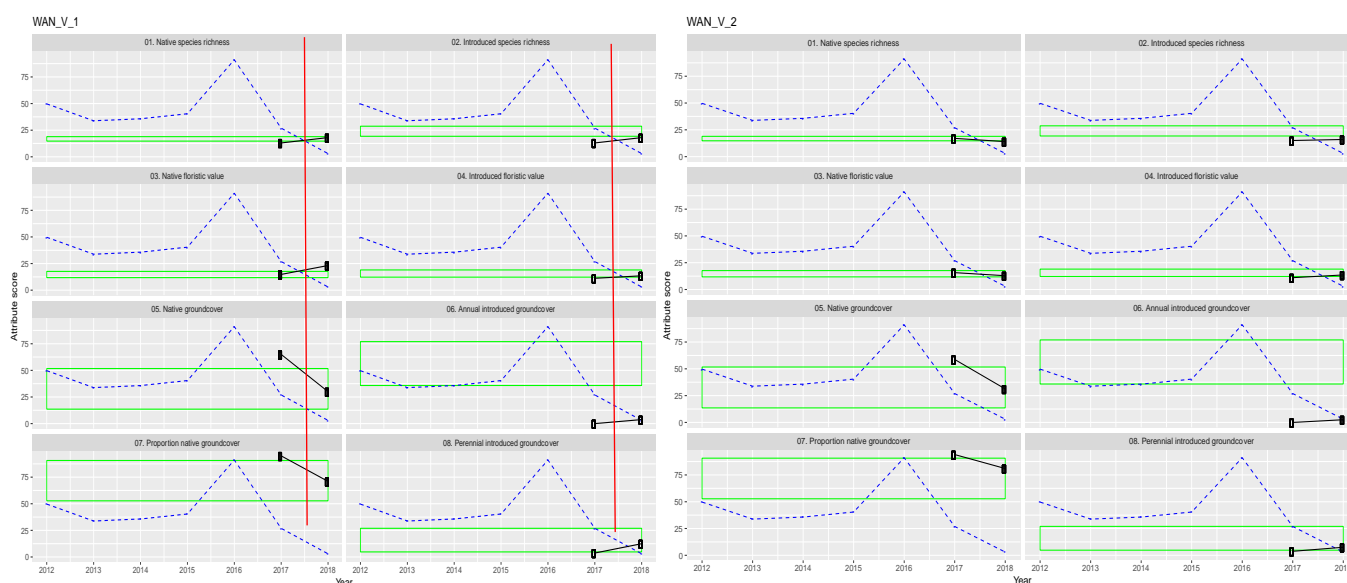


WAG_1B, 28/3/18

WAG_1B 18/10/18

WAG_2C, 28/3/18

WAG_2C, 18/10/18, unburnt



Green rectangle: 95% confidence limits of plots in similar vegetation types in good condition; blue line: soil moisture availability.

Summary data

	WAG_1 burnt		WAG_2 control	
	3/18	10/18	3/18	10/18
Native species richness	13	18	17	14
Indicator species richness	4	5	3	4
Introduced species richness	13	18	15	16
Invasive species richness	2	1	1	1
Cryptogam cover (%)	0	0	0	0
Bare ground cover (%)	3	4	3	3
Rock cover (%)	0	0	0	45
Litter cover (%)	61	65	59	45
Annual introduced cover (%)	0	4	0	3
Perennial intr. gr'cover (%)	4	13	4	8
Native grass cover (%)	59	26	56	29
Native sub-shrub cover (%)	0	0	0	0
Other native groundcover (%)	6	4	3	3
Total native groundcover (%)	65	30	59	31
Native overstorey cover (%)	0	0	0	0
Native midstorey cover (%)	0	0	0	0
Exotic overstorey cover (%)	0	0	0	0
Exotic midstorey cover (%)	0	0	0	0
No. species regenerating	2	2	2	2
No. age classes	4	4	4	4
Length of fallen timber	2	2	2	2
No trees with hollows	2	2	2	2
Proportion of tree species regenerating (%)	100	100	100	100

Species richness

Species	WAG_1 burnt		WAG_2 control	
	3/18	10/18	3/18	10/18
Native species				
<i>Acaena ovina</i>		O	R	O
<i>Austrostipa scabra</i>		O	O	O
<i>Bothriochloa macra</i>	O	O	O	O
<i>Carex inversa</i>	O		O	
<i>Convolvulus angustissimus</i>		O	R	
<i>Cymbonotus lawsonianus</i>		R		
<i>Epilobium sp.</i>	O	O	O	
<i>Euphorbia dallachyana</i>			R	
<i>Geranium atrorsum</i>		O		O
<i>Geranium retrorsum</i>				O
<i>Geranium sp.</i>	O	O	O	
<i>Juncus sp.</i>		R		
<i>Lomandra bracteata</i>	O	O		O
<i>Lomandra filiformis coriacea</i>	O	O		R
<i>Lomandra filiformis filiformis</i>		O	O	
<i>Lomandra filiformis or bracteata</i>			O	
<i>Lomandra longifolia</i>				R
<i>Oxalis perennans</i>		O	O	R
<i>Panicum effusum</i>	O	O	O	O
<i>Rumex sp. native</i>	R	O	O	R
<i>Rytidosperma pallidum</i>			R	
<i>Rytidosperma spp.</i>	R	O	R	O
<i>Schoenus apogon</i>	O			
<i>Themeda triandra</i>	C	C	C	C
<i>Tricoryne elatior</i>	R	O		
<i>Vittadinia cuneata</i>	R			
<i>Vittadinia muelleri</i>			O	R
Introduced species				
<i>Avena sp.</i>		O	R	O
<i>Bromus hordeaceus</i>	R	O	O	O
<i>Carduus nutans</i>		R		
<i>Centaurium erythraea</i>			R	
<i>Chondrilla juncea</i>	O		O	
<i>Cirsium vulgare</i>	R	R	O	R
<i>Echium plantagineum</i>	O	O	O	
<i>Erodium cicutarium</i>		O		O
<i>Hypericum perforatum</i>	O	O	O	O
<i>Hypochaeris glabra</i>		O		
<i>Hypochaeris radicata</i>	R	O	R	O
<i>Modiola caroliniana</i>		R		
<i>Onopordum acanthium</i>				O
<i>Paspalum dilatatum</i>	R			
<i>Plantago lanceolata</i>		O	O	O
<i>Poa pratensis</i>		O		O
<i>Rosa rubiginosa</i>			R	R
<i>Rumex acetosella</i>	O	O	O	O
<i>Sanguisorba minor</i>			R	R
<i>Thistle sp.</i>			R	O
<i>Tragopogon sp.</i>		R		
<i>Trifolium repens</i>		O		O
<i>Trifolium subterraneum</i>	O		O	
<i>Unknown introduced</i>		R		
<i>Unknown introduced</i>	C			O
<i>Verbascum virgatum</i>	R	O	R	R
<i>Vulpia sp.</i>		R		

Blue: indicator species

Red: invasive species