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Supplementary Material

Repeat burning affects species composition in degraded Cumberland Plain Woodland

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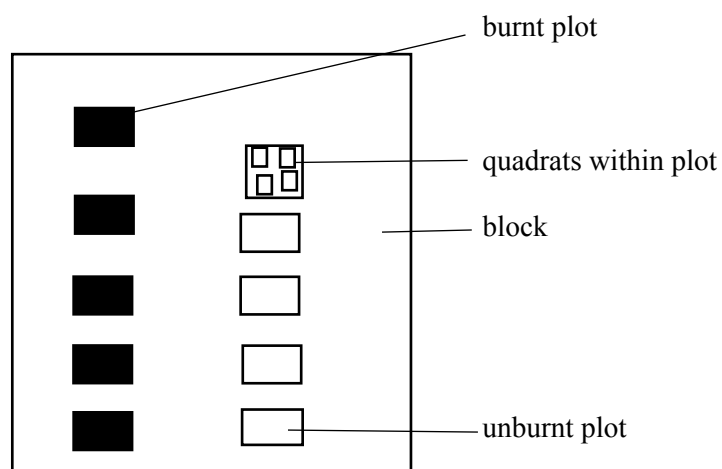
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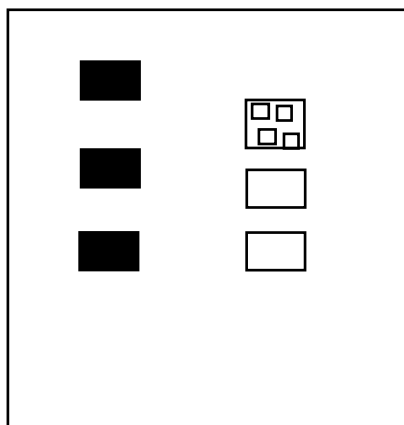
Supplementary Material

Fig. S1 (a). Conceptual layout of a block, plots (50 x 50 m) within blocks, and quadrats (2 x 2 m) within plots for fire 1. There were $n = 3$ grassy blocks, and $n = 1$ woodland block for fire 1 (Fig. S3). Within blocks there were $n = 5$ burnt plots and $n = 5$ unburnt plots. Vegetation sampling was by $n = 4$ quadrats (2 x 2m) per plot. (b) Conceptual layout of a block (large square) and plots within blocks for **fire 2**. There were $n = 3$ grassy blocks for fire 2 (Fig. S3). Within blocks there were $n = 3$ spring burnt plots and $n = 3$ spring unburnt plots (autumn plots not shown). Vegetation sampling was by 4 quadrats (2 x 2 m) per plot.

(a) **Fire 1**



(b) **Fire 2**



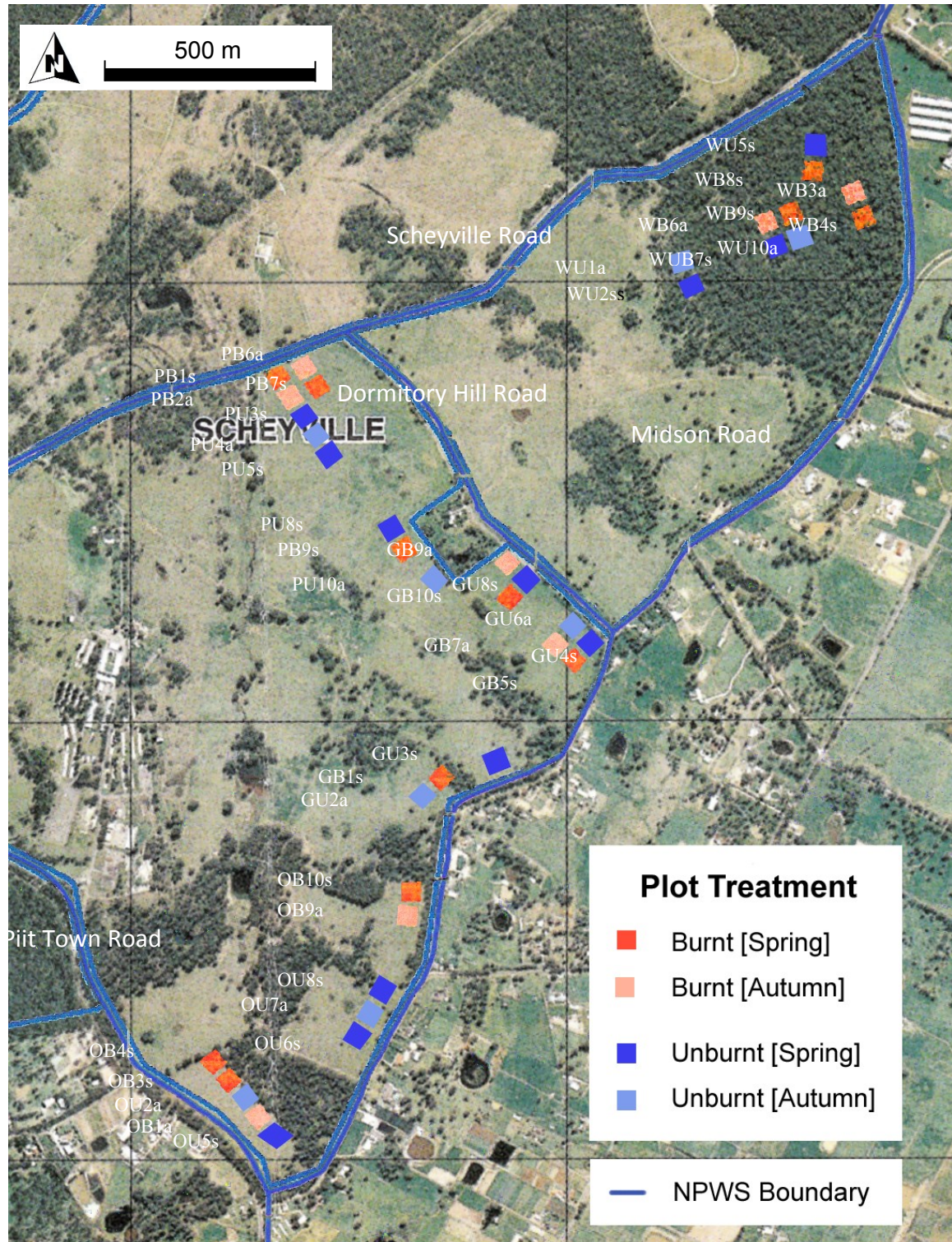


Fig. S2. Scheyville Fire Experiment. Layout of blocks and plots within blocks in Scheyville National Park.

1st letter = grassy block (P= ploughed, G = grazed, O = orchard) or woodland (W = woodland).

2nd letter = fire treatment (B = burnt, U = unburnt). Number = plot number within block.

Spring and autumn burnt and unburnt plots shown by colour code.

Table S1. Timing of fire events and field survey work throughout the experimental period.

Number of plots per treatment x block combination given in parentheses.

Year	Month	All plots ($n = 5$)	
2001	June	Pre-fire 1 survey	
	November	Fire 1	
2002	June/ July	Post-fire 1 survey	
		Spring burn plots ($n = 3$)	Autumn burn plots ($n = 2$)
2005	March/ April	Pre-fire 2 survey	
	Aug/ Sept	Pre-fire 2 survey	
	Sept/ Oct	Fire 2 (excluding woodland)	
2006	April	Post-fire 2 survey	Fire 2
	September	Spring Wildfire	Spring Wildfire
2012	December	All plots on grassy blocks surveyed	

Table S2. List of native and exotic species found on the grassy blocks over all surveys.

Species sorted by growth form, then species. Fire response shown where known (seeder = S, resprouter = R, mixed seeder or resprouter = RS, Rs, or Sr; NSW Flora Fire Response Database (Office of Environment and Heritage 2010). Life history shown (annual, perennial, or mixed annual/perennial plus biennials (ann/peren) (Harden 1990 – 1993). Species characteristic of Cumberland Plain Woodland are coded in green (NSW Threatened Species Scientific Committee 2009). Sum of cover scores (per 4 m²) over both fire treatments and all four surveys is shown as an indicator of overall abundance.

Native species	Growth form	Fire resp.	Life history	Sum cover	Exotic species	Growth form	Fire response	Life history	Sum cover
<i>Glycine clandestina</i>	climber	R	perennial	3.15	* <i>Asparagus asparagoides</i>	climber	R	perennial	0.08
<i>Glycine microphylla</i>	climber	R	perennial	7.57	* <i>Cerastium glomeratum</i>	forb	S	annual	0.05
<i>Glycine</i> sp.	climber			8.53	* <i>Ciclospermum leptophyllum</i>	forb		annual	3.43
<i>Glycine</i> sp. A	climber			0.42	* <i>Cirsium vulgare</i>	forb	S	biennial	7.47
<i>Glycine tabacina</i>	climber	R	perennial	12.43	* <i>Conyza sumatrensis</i>	forb	S	annual	5.62
<i>Cheilanthes sieberi</i>	fern	R	perennial	1.52	* <i>Facelis retusa</i>	forb		perennial	0.35
<i>Asperula conferta</i>	forb	R	perennial	1.30	* <i>Gamochaeta americana</i>	forb	SR	ann/peren	0.45
<i>Brunoniella australis</i>	forb	R	perennial	0.08	* <i>Gnaphalium purpurea</i>	forb			0.08
<i>Calotis lappulacea</i>	forb	R	perennial	0.18	* <i>Hypochaeris radicata</i>	forb	Rs	perennial	3.70
<i>Centella asiatica</i>	forb	S	perennial	2.17	* <i>Hypochaeris</i> sp.	forb			1.40
<i>Dianella longifolia</i>	forb	R	perennial	1.05	* <i>Lactuca serriola</i>	forb	S	biennial	0.05
<i>Dianella</i> sp.	forb		perennial	0.93	* <i>Linum trigynum</i>	forb	S	annual	3.27

<i>Dichondra repens</i>	forb	Sr	perennial	8.87	* <i>Lotus angustissimus</i>	forb	S	perennial	3.80
<i>Einadia hastata</i>	forb		perennial	0.17	* <i>Lotus</i> sp.	forb			2.72
<i>Einadia polygonoides</i>	forb		ann/perenn	0.10	* <i>Lysimachia arvensis</i>	forb	S	annual	6.13
<i>Einadia trigonos</i>	forb		perennial	0.35	* <i>Medicago polymorpha</i>	forb	S	annual	1.68
<i>Euchiton sphaericum</i>	forb	S	annual	2.75	* <i>Modiola caroliniana</i>	forb	S	perennial	0.88
<i>Geranium homeanum</i>	forb	SR	ann/perenn	3.47	* <i>Oxalis corniculata</i>	forb	Rs	perennial	2.47
<i>Geranium solanderi</i>	forb	S	perennial	2.12	* <i>Oxalis</i> sp.	forb			3.92
<i>Hypericum gramineum</i>	forb	Rs		5.23	* <i>Paronychia brasiliiana</i>	forb		perennial	0.08
<i>Hypoxis</i> sp.	forb		perennial	0.05	* <i>Petrorhagia dubia</i>	forb		annual	0.20
<i>Laxmannia gracilis</i>	forb	Sr	perennial	0.17	* <i>Plantago lanceolata</i>	forb	R	ann/peren	15.57
<i>Liliaceae</i> sp.	forb			0.08	* <i>Richardia stellaris</i>	forb		perennial	5.85
<i>Linum marginale</i>	forb	RS	perennial	0.17	* <i>Romulea rosea</i> var. <i>australis</i>	forb		perennial	12.78
<i>Lobelia purpurascens</i>	forb	R	ann/perenn	0.25	* <i>Senecio madagascariensis</i>	forb	S	ann/bien	11.70
<i>Oxalis exilis</i>	forb	SR	perennial	0.58	* <i>Sisyrinchium micranthum</i>	forb		annual	0.05
<i>Oxalis perrenans</i>	forb	Rs	perennial	4.37	* <i>Solanum chenopodioides</i>	forb		perennial	0.05
<i>Oxalis thompsoniae</i>	forb		perennial	0.45	* <i>Solanum linnaeanum</i>	forb		perennial	0.05
<i>Plantago debilis</i>	forb	S	ann/perenn	0.30	* <i>Solanum nigrum</i>	forb	S	perennial	1.87
<i>Plantago gaudichaudii</i>	forb	R	perennial	2.42	* <i>Solanum seaforthianum</i>	forb		perennial	0.05
<i>Poranthera microphylla</i>	forb	SR	annual	0.25	* <i>Sonchus oleraceus</i>	forb		annual	1.73

<i>Rumex brownii</i>	forb	R	perennial	0.05	* <i>Trifolium dubium</i>	forb		annual	1.35
<i>Solanum americanum</i>	forb	S	perennial	0.30	* <i>Verbena bonariensis</i>	forb	R	perennial	2.82
<i>Tricoryne elatior</i>	forb	R	perennial	1.20	* <i>Verbena gaudichaudii</i>	forb		perennial	0.25
<i>Tricoryne</i> sp.	forb		perennial	2.43	* <i>Verbena rigida</i>	forb		perennial	12.70
<i>Veronica plebeia</i>	forb		perennial	0.33	* <i>Verbena</i> sp.	forb			0.45
<i>Viola hederacea</i>	forb	Sr	perennial	0.42	* <i>Vicia sativa subsp. nigra</i>	forb		annual	0.28
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	forb	R	perennial	0.33	* <i>Vicia</i> sp.	forb			0.30
<i>Wahlenbergia communis</i>	forb	Sr	perennial	0.08	* <i>Cyperus brevifolius</i>	graminoid	R	perennial	1.45
<i>Wahlenbergia gracilis</i>	forb	Rs	perennial	1.88	* <i>Cyperus eragrostis</i>	graminoid	R	perennial	0.25
<i>Carex breviculmis</i>	graminoid	Rs	perennial	0.50	* <i>Cyperus reflexus</i>	graminoid		perennial	0.48
<i>Carex inversa</i>	graminoid	R	perennial	27.45	* <i>Cyperus sesquiflorus</i>	graminoid		ann/peren	3.27
<i>Carex</i> sp. 1	graminoid			3.35	* <i>Andropogon virginicus</i>	grass	R	perennial	0.05
<i>Carex</i> sp. 2	graminoid			0.10	* <i>Axonopus fissifolius</i>	grass		perennial	54.20
<i>Cyperus difformis</i>	graminoid		annual	0.05	* <i>Briza subaristata</i>	grass		perennial	0.15
<i>Cyperus gracilis</i>	graminoid	R	perennial	3.02	* <i>Bromus catharticus</i>	grass		ann/peren	1.47
<i>Cyperus</i> sp 1	graminoid			0.10	* <i>Chloris virgata</i>	grass		ann/peren	0.42
<i>Fimbristylis dichotoma</i>	graminoid	R	perennial	7.38	* <i>Ehrharta erecta</i>	grass	R	perennial	3.85
<i>Juncus</i> sp.	graminoid			0.30	* <i>Eragrostis curvula</i>	grass	R	perennial	7.10
<i>Juncus usitatus</i>	graminoid	R	perennial	0.70	* <i>Panicum maximum</i> var. <i>maximum</i>	grass		perennial	0.10

<i>Lomandra filiformis</i>	graminoid	R	perennial	0.05	<i>*Paspalum dilatatum</i>	grass	R	perennial	80.83
<i>Lomandra multiflora</i>	graminoid	R	perennial	0.05	<i>*Setaria gracilis</i>	grass		perennial	45.25
<i>Aristida ramosa</i>	grass	R	perennial	37.37	<i>*Setaria pumila</i>	grass		annual	0.33
<i>Aristida vagans</i>	grass	R	perennial	3.12	<i>*Sporobolus africanus</i>	grass	R	perennial	0.90
<i>Bothriochloa decipiens</i>	grass		perennial	0.58	<i>*Sporobolus fertilis</i>	grass		perennial	1.30
<i>Bothriochloa macra</i>	grass	R	perennial	7.57	<i>*Sporobolus sp. 3</i>	grass			2.42
<i>Bothriochloa sp.</i>	grass			0.65	<i>*Stenotaphrum secundatum</i>	grass		perennial	0.05
<i>Chloris ventricosa</i>	grass	R	perennial	1.98	<i>*Rubus fruticosus</i>	shrub			0.65
<i>Cymbopogon refractus</i>	grass	R	perennial	15.33	<i>*Hypericum perforatum</i>	sub-shrub	R	perennial	0.17
<i>Cynodon dactylon</i>	grass	R	perennial	73.77	<i>*Sida rhombifolia</i>	sub-shrub	S	perennial	6.58
<i>Dichelachne micrantha</i>	grass	R	perennial	2.77					
<i>Dichelachne parva</i>	grass		perennial	4.00					
<i>Dichelachne sp.</i>	grass			0.27					
<i>Echinopogon ovatus</i>	grass	SR	perennial	0.10					
<i>Eragrostis brownii</i>	grass	R	perennial	6.97					
<i>Eragrostis leptostachya</i>	grass	R	perennial	5.43					
<i>Eriochloa pseudoacrotricha</i>	grass		ann/peren	0.25					
Grass 1	grass			1.50					
<i>Imperata cylindrica</i>	grass	R	perennial	0.10					

<i>Lachnagrostis filiformis</i>	grass	Rs	annual	0.42					
<i>Microlaena stipoides</i>	grass	R	perennial	47.03					
<i>Paspalidium distans</i>	grass		perennial	0.98					
<i>Poa labillardierei</i>	grass		perennial	1.17					
<i>Rytidosperma fulvum</i>	grass		perennial	0.05					
<i>Sporobolus creber</i>	grass	SR	perennial	0.68					
<i>Sporobolus elongatus</i>	grass		perennial	0.55					
<i>Sporobolus</i> sp. 2	grass			1.60					
<i>Bossiaea prostrata</i>	shrub		R	0.15					
<i>Bossiaea</i> sp.	shrub			0.10					
<i>Bursaria spinosa</i>	shrub		R	0.53					
<i>Fabaceae</i> sp. 1	shrub			1.50					
<i>Desmodium varians</i>	sub-shrub		R	17.25					
<i>Phyllanthus similis</i>	sub-shrub		R	2.48					
<i>Phyllanthus</i> sp.	sub-shrub			0.60					
<i>Phyllanthus virgatus</i>	sub-shrub		R	3.07					
<i>Eucalyptus crebra</i>	tree		R	0.05					
<i>Grevillea robusta</i>	tree			0.08					

Table S3. Species list for the Woodland block over three surveys.

Species sorted by growth form, then species. Fire response shown where known (seeder = S, resprouter = R, mixed seeder or resprouter = RS, Rs, or Sr; NSW Flora Fire Response Database (Office of Environment and Heritage 2010). Life history shown (annual, perennial, or mixed annual/perennial plus biennials (ann/peren) (Harden 1990 – 1993). Species characteristic of Cumberland Plain Woodland are coded in green (NSW Threatened Species Scientific Committee 2009. Sum of cover scores (per 4 m²) over both fire treatments and all three surveys is shown as an indicator of overall abundance.

Native species	growth form	Fire resp.	Life History	Sum cover	Exotic species	Growth form	Fire resp.	Life History	Sum cover
<i>Glycine clandestina</i>	climber	Rs	perennial	0.43	* <i>Araujia sericifa</i>	climber	R	perennial	0.70
<i>Glycine microphylla</i>	climber	R	perennial	2.62	* <i>Asparagus asparagoides</i>	climber	R	perennial	8.27
<i>Glycine</i> sp.	climber			0.40	* <i>Ciclospermum leptophyllum</i>	forb		annual	1.30
<i>Glycine tabacina</i>	climber	R	perennial	6.18	* <i>Cirsium vulgare</i>	forb	S	biennial	1.00
<i>Hardenbergia violacea</i>	climber	R	perennial	0.15	* <i>Conyza sumatrensis</i>	forb	S	annual	0.08
<i>Parsonsia straminea</i>	climber		perennial	0.20	* <i>Hypochaeris radicata</i>	forb	Rs	perennial	0.60
<i>Cheilanthes sieberi</i>	fern	R		3.33	* <i>Hypochaeris</i> sp.	forb			0.20
<i>Ajuga australis</i>	forb	SR	ann/peren	0.38	* <i>Lotus angustissimus</i>	forb	S	perennial	0.05
<i>Arthropodium</i> sp.	forb		perennial	2.80	* <i>Lotus</i> sp.	forb			0.20
<i>Asperula conferta</i>	forb	R	perennial	0.25	* <i>Lysimachia arvensis</i>	forb	S	annual	0.80
<i>Brunoniella australis</i>	forb	R	perennial	15.15	* <i>Medicago polymorpha</i>	forb	S	annual	0.55
<i>Centella asiatica</i>	forb	S	perennial	0.35	* <i>Oxalis corniculata</i>	forb	Rs	perennial	0.75
<i>Cyanthillium cinereum</i>	forb	SR	ann/peren	1.53	* <i>Oxalis</i> sp.	forb			2.48
<i>Dianella longifolia</i>	forb	R	perennial	1.02	* <i>Sonchus oleraceus</i>	forb	Sr	annual	1.75
<i>Dianella</i> sp.	forb		perennial	0.55	* <i>Plantago lanceolata</i>	forb	R	ann/peren	0.97

<i>Dichondra repens</i>	forb	Sr	perennial	3.17	<i>*Richardia stellaris</i>	forb		perennial	0.25
<i>Dichopogon strictus</i>	forb	SR	perennial	0.20	<i>*Romulea rosea var. australis</i>	forb		perennial	0.60
<i>Einadia hastata</i>	forb		perennial	1.10	<i>*Senecio madagascariensis</i>	forb	S	annual	1.67
<i>Einadia polygonoides</i>	forb		ann/peren	0.42	<i>*Solanum nigrum</i>	forb	S		1.20
<i>Einadia trigonos</i>	forb		perennial	0.33	<i>*Vicia sativa subsp nigra</i>	forb		annual	0.08
<i>Euchiton sphaericus</i>	forb	S	annual	0.10	<i>*Axonopus fissifolius</i>	grass		perennial	0.10
<i>Geranium homeanum</i>	forb	SR	ann/peren	0.35	<i>*Briza subaristata</i>	grass		perennial	0.10
<i>Geranium solanderi</i>	forb	S	perennial	0.25	<i>*Ehrharta erecta</i>	grass	R	perennial	0.40
<i>Goodenia hederacea</i>	forb	R		2.32	<i>*Eragrostis curvula</i>	grass	R	perennial	0.08
<i>Hypericum gramineum</i>	forb	Rs		0.10	<i>*Panicum simile</i>	grass	R	perennial	0.05
<i>Hypoxis</i> sp.	forb		perennial	0.05	<i>*Paspalum dilatatum</i>	grass	R	perennial	0.70
<i>Lagenophora stipitata</i>	forb			0.93	<i>*Setaria gracilis</i>	grass		perennial	1.43
<i>Laxmannia gracilis</i>	forb	Sr	perennial	0.05	<i>*Sporobolus fertilis</i>	grass		perennial	0.08
<i>Liliaceae</i> sp.	forb			4.25	<i>*Stenotaphrum secundatum</i>	grass		perennial	0.08
<i>Linum marginale</i>	forb	RS	perennial	0.05	<i>*Sida rhombifolia</i>	sub-shrub	S	perennial	6.33
<i>Mentha saturejioides</i>	forb	R	perennial	0.08					
<i>Opercularia diphylla</i>	forb	Sr	perennial	2.90					
<i>Oxalis perrenans</i>	forb	Rs	perennial	1.42					
<i>Pelargonium inodorum</i>	forb	S	ann/peren	0.05					

<i>Plantago debilis</i>	forb	S	ann/peren	0.45					
<i>Plantago gaudichaudii</i>	forb	R	perennial	1.18					
<i>Poranthera microphylla</i>	forb	SR	annual	0.15					
<i>Sigesbeckia orientalis</i>	forb	S	ann/peren	0.05					
<i>Solanum prinophyllum</i>	forb	S	ann/peren	1.75					
<i>Stackhousia viminea</i>	forb	S	perennial	0.55					
<i>Tricoryne elatior</i>	forb	R	perennial	1.37					
<i>Tricoryne</i> sp.	forb		perennial	0.97					
<i>Veronica plebeia</i>	forb		perennial	0.10					
<i>Viola betonicifolia</i>	forb	R	perennial	0.05					
<i>Viola hederacea</i>	forb	Sr	perennial	2.60					
<i>Wahlenbergia gracilis</i>	forb	rS	perennial	0.11					
<i>Carex breviculmis</i>	graminoid	Rs	perennial	0.20					
<i>Carex inversa</i>	graminoid	R	perennial	0.78					
<i>Carex</i> sp. 1	graminoid			0.05					
<i>Carex</i> sp. 2	graminoid			0.20					
<i>Cyperus gracilis</i>	graminoid	R	ann/peren	0.42					
<i>Fimbristylis dichotoma</i>	graminoid	R	perennial	0.08					

<i>Juncus</i> sp.	graminoid			0.05					
<i>Lomandra filiformis</i>	graminoid	R	perennial	3.32					
<i>Lomandra gracilis</i>	graminoid	R	perennial	0.43					
<i>Lomandra multiflora</i>	graminoid	R	perennial	0.67					
<i>Aristida ramosa</i>	grass	R	perennial	1.78					
<i>Aristida vagans</i>	grass	R	perennial	3.30					
<i>Bothriochloa macra</i>	grass	R	perennial	0.10					
<i>Chloris truncata</i>	grass	R	perennial	0.48					
<i>Chloris ventricosa</i>	grass	R	perennial	3.22					
<i>Cymbopogon refractus</i>	grass	R	perennial	0.67					
<i>Dichelachne micrantha</i>	grass	R	perennial	0.13					
<i>Dichelachne parva</i>	grass		perennial	0.20					
<i>Dichelachne</i> sp.	grass			0.05					
<i>Echinopogon caespitosus</i>	grass	R	perennial	0.05					
<i>Echinopogon ovatus</i>	grass	SR	perennial	0.20					
<i>Eragrostis brownii</i>	grass	R	perennial	0.92					
<i>Eragrostis leptostachya</i>	grass	R	perennial	1.05					
<i>Eriochloa pseudoacrotricha</i>	grass		ann/peren	0.10					
<i>Microlaena stipoides</i>	grass	R	perennial	15.88					
<i>Oplismenus aemulus</i>	grass	R	perennial	4.02					

<i>Oplismenus imbecillus</i>	grass	R	perennial	0.30					
<i>Paspalidium distans</i>	grass		perennial	5.35					
<i>Rytidosperma racemosum</i> var. <i>racemosum</i>	grass		perennial	0.25					
<i>Rytidosperma</i> sp.	grass			0.05					
<i>Themeda triandra</i>	grass	R	perennial	2.50					
<i>Astroloma humifusum</i>	shrub	R	perennial	0.53					
<i>Bossiaea prostrata</i>	shrub	R	perennial	0.88					
<i>Bursaria spinosa</i>	shrub	R	perennial	18.20					
<i>Daviesia ulicifolia</i>	shrub	Rs	perennial	0.05					
<i>Dillwynia sieberi</i>	shrub	Sr	perennial	0.50					
<i>Eremophila debilis</i>	shrub	R	perennial	2.62					
<i>Ozothamnus diosmifolius</i>	shrub	SR	perennial	0.22					
<i>Polygala japonica</i>	shrub	S	perennial	0.25					
<i>Desmodium varians</i>	sub-shrub	R	perennial	5.83					
<i>Hibbertia diffusa</i>	sub-shrub	SR	perennial	0.05					
<i>Phyllanthus virgatus</i>	sub-shrub	R	perennial	0.15					
<i>Eucalyptus crebra</i>	tree	R	perennial	1.58					
<i>Eucalyptus eugenioides</i>	tree	R	perennial	0.15					

<i>Eucalyptus moluccana</i>	tree	R	perennial	3.13					
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Table S4. Life history categories of native and exotic forbs and grasses in the grassy areas, and the woodland.

Life histories were categorised as annual, annual/perennial (biennials included), or perennial. For some species, life history information was unknown. Percentage in brackets after each value is the percentage of that category calculated using the total known species as the denominator.

Grassy blocks	Native Forbs	Native Grasses	Exotic forbs	Exotic grasses
Annual	2 (6%)	1 (5%)	11 (35%)	1 (7%)
Annual/perennial	4 (12.5%)	1 (5%)	5 (16%)	2 (14%)
Perennial	26 (81%)	19 (90%)	15 (48%)	11 (79%)
Total known	32	21	31	14
Unknown	3	4	6	1
Total	35	25	37	15
Woodland				
Annual	2 (6%)	0	7 (50%)	0
Annual/perennial	7 (20%)	1 (5%)	2 (14%)	0
Perennial	26 (74%)	18 (95%)	5 (36%)	9 (100%)
Total known	35	19	14	9
Unknown	5	2	4	0
Total	40	21	18	9

Table S5. Species contributing to dissimilarity between burnt and unburnt grassy plots, post-fire 1 survey.

Species ranked by contribution to cumulative dissimilarity. Life form, average abundance (Av.Ab., 4th square root) in the burnt and unburnt treatments, percentage contribution (Contrib%) and cumulative contribution to dissimilarity (Cum.%) are shown for each species. Life form, life history and fire response strategy shown for forbs only where known (S = seeder; R = resprouter; Sr = mixed response; NSW Flora Fire Response Database (Office of Environment and Heritage 2010). Exotic forbs coded in grey have the S fire response.

Species	Life Form	Life history	Fire Response	Burnt Av. Abund.	Unburnt Av. Abund.	Contrib%	Cum.%
* <i>Senecio madagascariensis</i>	forb	ann/peren	S	1.16	0.11	3.33	3.33
* <i>Lotus angustissimus</i>	forb	perennial	S	0.95	0	2.97	6.31
* <i>Oxalis sp.</i>	forb			0.97	0.12	2.77	9.07
* <i>Lysimachia arvensis</i>	forb (S)	annual	S	1.08	0.25	2.67	11.74
* <i>Cirsium vulgare</i>	forb (S)	ann/peren	S	0.86	0.05	2.6	14.34
* <i>Plantago lanceolata</i>	forb (R)	ann/peren	R	0.86	0.05	2.6	16.93
<i>Euchiton sphaericum</i>	forb (S)	annual	S	0.85	0.09	2.39	19.32
* <i>Conyza sumatrensis</i>	forb (S)	annual	S	0.77	0	2.37	21.69
<i>Dichelachne parva</i>	grass			0.87	0.22	2.24	23.93
<i>Plantago gaudichaudii</i>	forb (R)	perennial	R	0.76	0.06	2.24	26.17
* <i>Ciclospermum leptophyllum</i>	forb	annual		0.76	0.14	2.1	28.28
<i>Dichondra repens</i>	forb (Sr)	perennial	Sr	0.69	0.09	2.05	30.32
* <i>Trifolium dubium</i>	forb	annual		0.67	0.05	1.99	32.31
* <i>Sonchus oleraceus</i>	forb	annual	Sr	0.6	0.05	1.85	34.17
* <i>Cyperus brevifolius</i>	graminoid			0.63	0.1	1.8	35.97
<i>Desmodium varians</i>	subshrub			0.67	0.41	1.75	37.72
* <i>Medicago polymorpha</i>	forb (S)	annual	S	0.56	0	1.73	39.45
* <i>Lotus sp.</i>	forb			0.55	0.05	1.68	41.13
Fabaceae sp. 1	shrub			0.55	0	1.68	42.81
* <i>Linum trigynum</i>	forb (S)	annual	S	0.54	0.05	1.65	44.47
* <i>Sida rhombifolia</i>	subshrub			0.5	0.1	1.62	46.09
* <i>Verbena rigida</i>	forb			0.5	0.39	1.62	47.71
<i>Aristida ramosa</i>	grass			1.08	0.75	1.61	49.33

<i>Cymbopogon refractus</i>	grass			0.57	0.44	1.56	50.88
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Table S6. Species contributing to dissimilarity between burnt and unburnt grassy plots, pre-fire 2 survey.

Species ranked by contribution to cumulative dissimilarity. Life form, average abundance (Av.Abund., 4th square root) in the burnt and unburnt treatments, percentage contribution (Contrib%) and cumulative contribution to dissimilarity (Cum.%) are shown for each species. Life form, life history and fire response strategy shown for forbs only where known (S = seeder; R= resprouter; Rs, Sr = mixed response; NSW Flora Fire Response Database (Office of Environment and Heritage 2010). Exotic forbs coded in grey have the S fire response.

	Life Form	Life history	Fire Response	Burnt Av. Abund.	Unburnt Av.Abund.	Contrib%	Cum.%
<i>Dichondra repens</i>	forb	perennial	Sr	0.89	0.18	3.28	3.28
* <i>Senecio madagascariensis</i>	forb	ann/perenn	S	0.89	0.21	3.2	6.48
* <i>Plantago lanceolata</i>	forb	ann/perenn	R	1.06	0.41	3.09	9.57
<i>Cymbopogon refractus</i>	grass			0.79	0.17	3.02	12.59
<i>Phyllanthus similis</i>	subshrub			0.8	0.16	2.91	15.5
* <i>Romulea rosea var. australis</i>	forb	perennial		0.82	0.16	2.91	18.41
* <i>Oxalis corniculata</i>	forb	perennial	Rs	0.72	0.17	2.77	21.18
<i>Wahlenbergia gracilis</i>	forb	perennial	Rs	0.71	0.08	2.76	23.94
<i>Oxalis perrenans</i>	forb	perennial	Rs	0.74	0.24	2.68	26.62
* <i>Setaria gracilis</i>	grass			1.01	0.59	2.5	29.12
<i>Aristida ramosa</i>	grass			1.22	0.81	2.48	31.6
<i>Desmodium varians</i>	subshrub			0.97	0.64	2.41	34.01
* <i>Richardia stellaris</i>	forb	perennial		0.6	0.09	2.36	36.37
<i>Geranium homeanum</i>	forb	ann/perenn	S	0.51	0	2.32	38.7
* <i>Verbena rigida</i>	forb	perennial		0.41	0.48	2.27	40.97
* <i>Conyza sumatrensis</i>	forb	annual	S	0.58	0.16	2.21	43.18
<i>Glycine tabacina</i>	climber			0.63	0.45	2.16	45.34
* <i>Verbena bonariensis</i>	forb	perennial		0.48	0.09	2.12	47.46
* <i>Cirsium vulgare</i>	forb	ann/perenn	S	0.39	0.32	2.09	49.55

Table S7. Species contributing to dissimilarity between burnt and unburnt grassy plots, post-fire 2 survey.

Species ranked by contribution to cumulative dissimilarity. Life form, average abundance (Av.Abund., 4th square root) in the burnt and unburnt treatments, percentage contribution (Contrib%) and cumulative contribution to dissimilarity (Cum.%) are shown for each species. Life form, life history and fire response strategy shown for forbs where known (S = seeder; R = resprouter; Sr = mixed response; NSW Flora Fire Response Database (Office of Environment and Heritage 2010). Exotic forbs coded in grey have the S fire response.

Species	Life Form	Life history	Fire Response	Burnt Av. Abund.	Unburnt Av.Abund.	Contrib%	Cum.%
<i>*Plantago lanceolata</i>	forb	ann/perenn	R	1.22	0	5.64	5.64
<i>Dichondra repens</i>	forb	perennial	Sr	0.89	0	4.16	9.8
<i>Cymbopogon refractus</i>	grass			0.91	0.23	3.69	13.49
<i>Fimbristylis dichotoma</i>	graminoid			0.85	0.09	3.67	17.16
<i>*Sporobolus africanus</i>	grass			0.79	0.1	3.44	20.59
<i>Aristida ramosa</i>	grass			1.24	0.59	3.43	24.02
<i>*Verbena rigida</i>	forb	perennial		0.83	0.43	3.31	27.33
<i>Desmodium varians</i>	subshrub			0.75	0.22	3.14	30.47
<i>Cyperus gracilis</i>	gramminoid			0.62	0	2.91	33.38
<i>Eragrostis brownii</i>	grass			0.63	0	2.83	36.21
<i>*Axonopus fissifolius</i>	grass			0.73	0.48	2.82	39.03
<i>Bothriochloa macra</i>	grass			0.64	0.08	2.76	41.79
<i>*Cyperus sesquiflorus</i>	gramminoid			0.58	0	2.63	44.42
<i>*Cirsium vulgare</i>	forb	ann/perenn	S	0.46	0.33	2.45	46.87
<i>Microlaena stipoides</i>	grass			0.75	1.17	2.38	49.26

Table 8. Native species detected only in the burnt treatment on the grassy blocks from post-fire 1 survey onwards.

Category 1 species were only ever detected in the burnt treatment after fire. Category 2 species were detected on unburnt and (to be) burnt plots at pre-fire1 survey, and only on burnt plots from post-fire 1 onwards. Species sorted by life form and then by species. Data are mean abundance score (4th square root) per survey.

Category 1		Pre-fire 1		Post-fire 1		Pre-fire 2		Post-fire 2	
	Life form	Burnt	Unburnt	Burnt	Unburnt	Burnt	Unburnt	Burnt	Unburnt
<i>Einadia hastata</i>	forb							0.09	
<i>Lachnagrostis filiformis</i>	grass							0.2	
<i>Bothriocloa decipiens</i>	grass							0.08	
Category 2									
<i>Brunoniella australis</i>	forb	0.22	0.31			0.08			
<i>Calotis lappulacea</i>	forb	0.04		0.05		0.08			
<i>Centella asiatica</i>	forb	0.25	0.8	0.46		0.09		0.2	
Liliaceae sp. 1	forb	0.24	0.21			0.08			
<i>Hypoxis</i> sp.	forb	0.02	0.02	0.05					
<i>Laxmannia gracilis</i>	forb		0.02			0.09			
<i>Linum marginale</i>	forb		0.02			0.09			
<i>Plantago debilis</i>	forb	0.09	0.02	0.12				1.2	
<i>Solanum</i> sp. 1	forb	0.04		0.05					
<i>Cyperus difformis</i>	graminoid	0.02		0.05					
<i>Cyperus gracilis</i>	graminoid	0.08	0.07	0.1		0.17		0.62	
<i>Lomandra filiformis</i>	graminoid	0.09	0.13	0.05					
<i>Lomandra multiflora</i>	graminoid	0.04	0.08	0.05					
<i>Rytidosperma fulvum</i>	grass	0.02		0.05					
<i>Echinopogon ovatus</i>	grass	0.05	0.04	0.09					
<i>Eriochloa pseudoacrotricha</i>	grass		0.02					0.1	
<i>Sporobolus creber</i>	grass	0.11		0.1					
<i>Bossiaea</i> sp.	shrub	0.04		0.09					
Fabaceae sp. 1	shrub	0.21		0.55			0		