Supplementary material

Fire exclusion and soil texture interact to influence temperate grassland flora in south-eastern Australia

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Table S1. **Study site locations (latitude and longitude) and their mean elevation, field soil texture, estimated soil particle size, mean tree cover and year of last fire prior to vegetation sampling.**

Site	Latitude	Longitude	Elevation (m, a.s.l.)	Soil Texture	Field Texture[A]	% fine particles[B]	% coarse sand	% fine sand.	Mean tree cover (%)[C]	Last fire event (year)
1	37°50'23.09"S	147°33'9.14"E	40.0	Fine	CLS	33.7	23.4	43.0	5	2009
2	37°50'24.63"S	147°33'13.89"E	37.8	Fine	MC	36.2	22.6	41.2	5	2008
3	37°49'54.67"S	147°29'38.16"E	48.3	Fine	LMC	35.4	25.3	39.3	0	2010
4	37°49'56.52"S	147°29'36.57"E	45.0	Fine	CLS	30.9	25.2	43.9	0	2005
5	37°49'57.65"S	147°23'55.92"E	90.0	Coarse	CS	13.9	64.9	21.2	20	2008
6	37°50'46.42"S	147°22'15.85"E	94.2	Fine	SCL	25.9	39.4	34.8	20	2010
7	37°50'40.74"S	147°22'27.52"E	87.6	Coarse	SL	15.9	56.0	28.1	30	2009
8	37°50'48.21"S	147°22'15.12"E	90.7	Fine	SCL	30.2	31.3	38.5	10	2009
9	37°52'25.02"S	147°18'57.37"E	79.1	Coarse	SL	13.7	52.4	33.9	25	2009
10	37°52'26.12"S	147°19'0.61"E	71.6	Coarse	LS	9.9	53.0	37.1	15	2009

[A]McDonald and Isbell 1990. LS loamy sand; CS, Clayey sand; SL, sandy loam; SCL, sandy clay loam, CLS, clay loam, sandy; LMC, Light medium clay; MC, medium clay.

[B]The percentage of fine particles is the estimated percentage of both clay and silt particles within the top 100 mm of soil.

[C]Mean estimated from three 100 m^2 quadrats at each site.

Fig. S1. Annual rainfall (mm; Bairnsdale airport station number 85279) over the study period (2000–2010). The hashed line (– – –) shows the long-term (LT) median (641 mm; years 1942–2011) and the dotted lines lines (- - -) are the 25th and 75th percentiles (1942–2011).
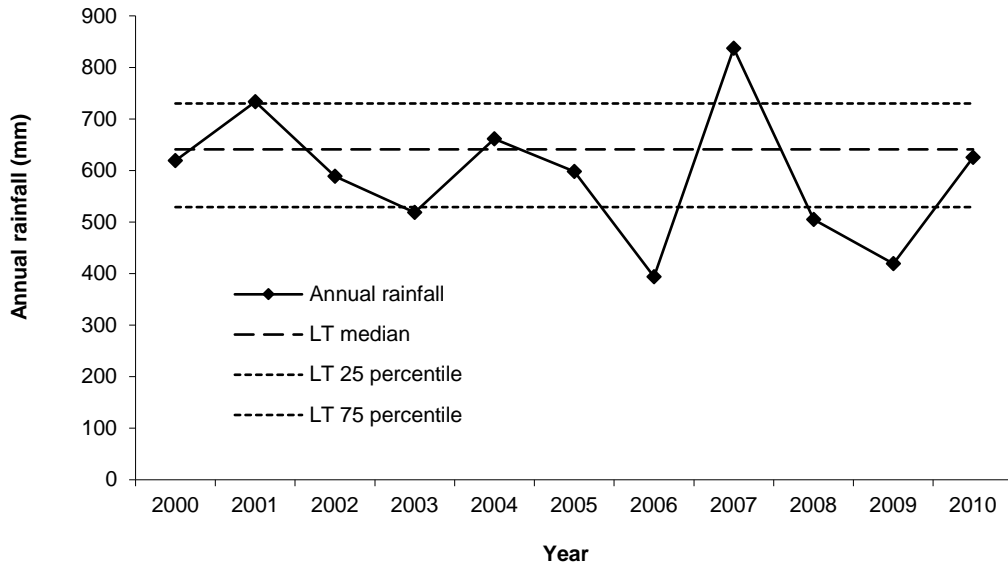
Fig. S2. Plots of relationships between fire management variables.
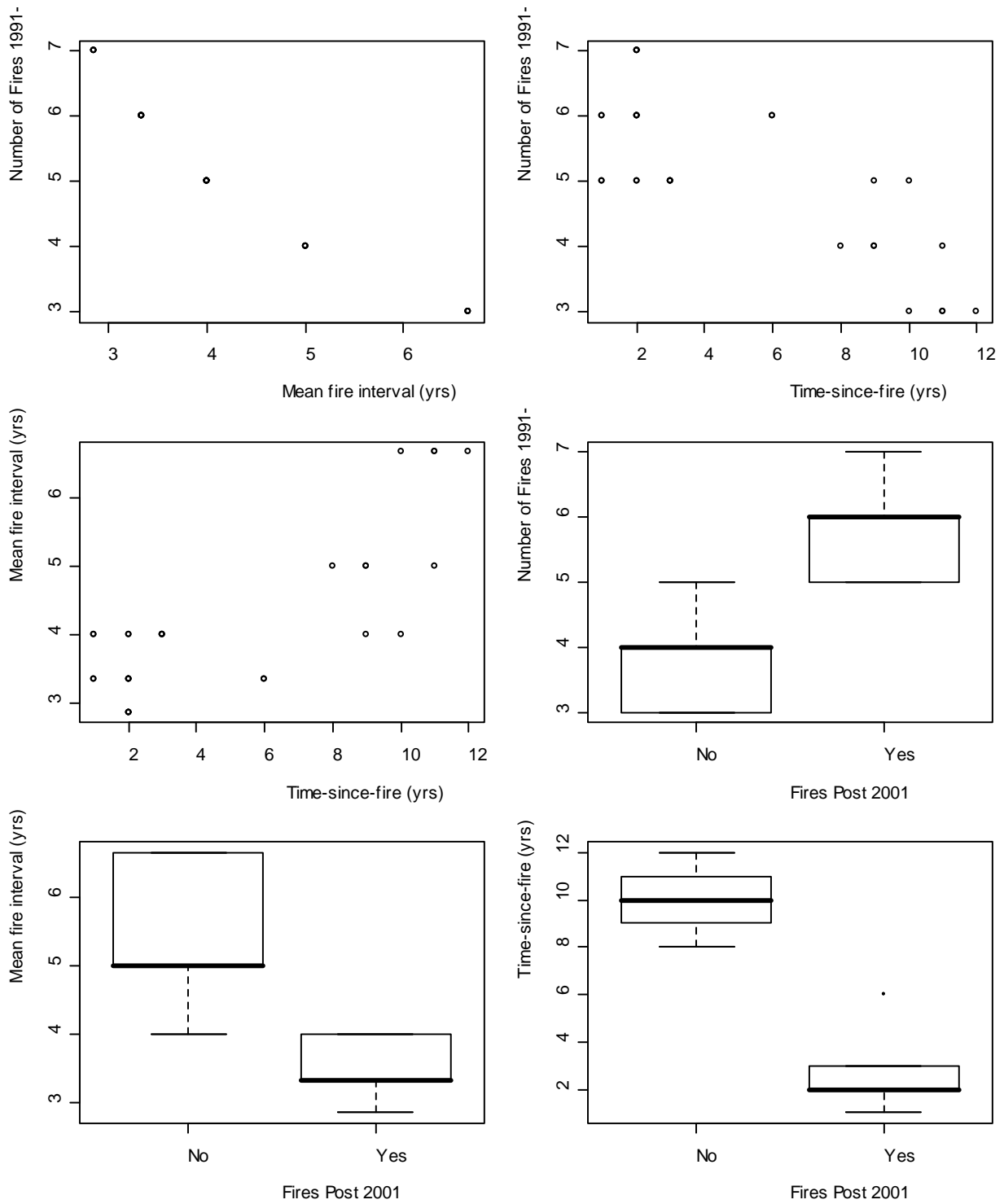
Table S2. Akaike Information Criterion (for a small sample, AICc), and ΔAICc and AICc Weights, and the K value (number of parameters) for alternative models of diversity and richness, presence of individual species and biological soil crusts, and the frequency of Themeda and bare ground at the small scale (0.25 m²). The Interaction model is the interaction between the two fixed effects, burning (present or absent post-2001) and soil group (fine or coarse textured soils).

Response	Model	K	AICc	ΔAICc	AICc Weight
Shannon Diversity	Burnt model	5	1394.28	0	0.40
	Additive model	6	1394.31	0.03	0.40
	Interaction model	7	1396.11	1.82	0.16
	Random model	4	1400.51	6.23	0.02
	Soil model	5	1400.51	6.23	0.02
Native Richness	Interaction model	6	389.49	0	0.49
	Additive model	5	390.12	0.63	0.36
	Burnt model	4	392.56	3.07	0.11
	Soil model	4	394.91	5.42	0.03
	Random model	3	397.26	7.77	0.01
Exotic Richness	Random model	3	1363.38	0	0.39
	Burnt model	4	1363.93	0.54	0.29
	Soil model	4	1365.29	1.90	0.15
	Additive model	5	1365.84	2.46	0.11
	Interaction model	6	1367.24	3.85	0.06
Themeda	Additive model	6	1088.44	0	0.52
	Interaction model	7	1089.13	0.7	0.37
	Soil model	5	1092.32	3.88	0.07
	Burnt model	5	1094.63	6.2	0.02
	Random model	4	1095.7	7.27	0.01
Bare ground	Interaction model	7	1193.97	0	0.89
	Burnt model	5	1198.98	5.01	0.07
	Additive model	6	1200.56	6.59	0.03
	Random model	4	1210.56	16.59	0
	Soil model	5	1212.08	18.11	0
Biological soil crust	Interaction model	6	279.74	0	0.81
	Random model	3	284.84	5.1	0.06
	Burnt model	4	285.24	5.5	0.05
	Soil model	4	285.4	5.66	0.05

	Additive model	5	287.04	7.3	0.02
Aira caryophyllea (exotic)[A]	Burnt model	3	406.02	0	0.57
	Additive model	4	407.76	1.74	0.24
	Interaction model	5	408.19	2.17	0.19
	Random model	2	426.30	20.28	0
	Soil model	3	428.11	22.09	0
Arthropodium stricta	Additive model	5	351.96	0	0.52
	Interaction model	6	353.67	1.72	0.22
	Burnt model	4	354.31	2.35	0.16
	Soil model	4	355.83	3.88	0.08
	Random model	3	358.79	6.83	0.02
Briza maxima (exotic)[A]	Burnt model	3	427.92	0	0.62
	Additive model	4	429.81	1.89	0.24
	Interaction model	5	431.28	3.36	0.12
	Random model	2	435.06	7.14	0.02
	Soil model	3	436.88	8.96	0.01
Gahnia radula[A,B]	Interaction model	-	-	-	-
	Additive model	4	329.56	0	0.64
	Burnt model	3	331.89	2.33	0.20
	Soil model	3	332.82	3.26	0.13
	Random model	2	335.44	5.87	0.03
Hypochaeris radicata (exotic)	Additive model	5	378.75	0	0.52
	Burnt model	4	380.48	1.73	0.22
	Interaction model	6	380.52	1.78	0.21
	Soil model	4	384.19	5.44	0.03
	Random model	3	385.99	7.24	0.01
Pimelea humilis	Additive model	5	344.46	0	0.61
	Interaction model	6	345.81	1.36	0.31
	Burnt model	4	348.51	4.05	0.08
	Soil model	4	354.63	10.18	0
	Random model	3	358.43	13.97	0
Tricoryne elatior	Random model	3	505.72	0	0.49
	Burnt model	4	507.66	1.94	0.18
	Soil model	4	507.71	1.99	0.18
	Interaction model	6	509.26	3.54	0.08

Additive model	5	509.67	3.95	0.07

[A]Quadrat –level random effect removed to allow model(s) convergence.
[B]Interaction model could not converge with modification of random effects.

Reference

McDonald RC and Isbell RF (1990) Soil Profile. In: Australian soil and land survey field handbook. Second Edition. pp. 147-200. (CSIRO Publishing: Melbourne).