10.1071/WF23159
International Journal of Wildland Fire

Supplementary Material

Multi-century times-since-fire and prior fire interval determine biomass carbon stocks in obligate-seeder eucalypt woodlands

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Fig. S1. Configuration of vegetation biomass samples within plots.

Plot area was ~2 ha, typically arranged as 200 x 100 m. (a) **x** = location of point-centred quarter samples. Coarse woody debris was sampled along transects around the perimeter of the site and the internal transects along which point-centred quarters were placed. Cumulative sequential 0.125 ha subplots (hatching) totalling up to 1 ha (light grey shading) were used to subsample low density combinations of components and cohorts of standing vegetation (see Methods). Dark solid lines indicate the location of the four transects in which litter samples were randomly placed. Litter samples (b) comprised bulked subsample plots of 0.125 m^2 (dark squares) systematically placed relative to a central point.

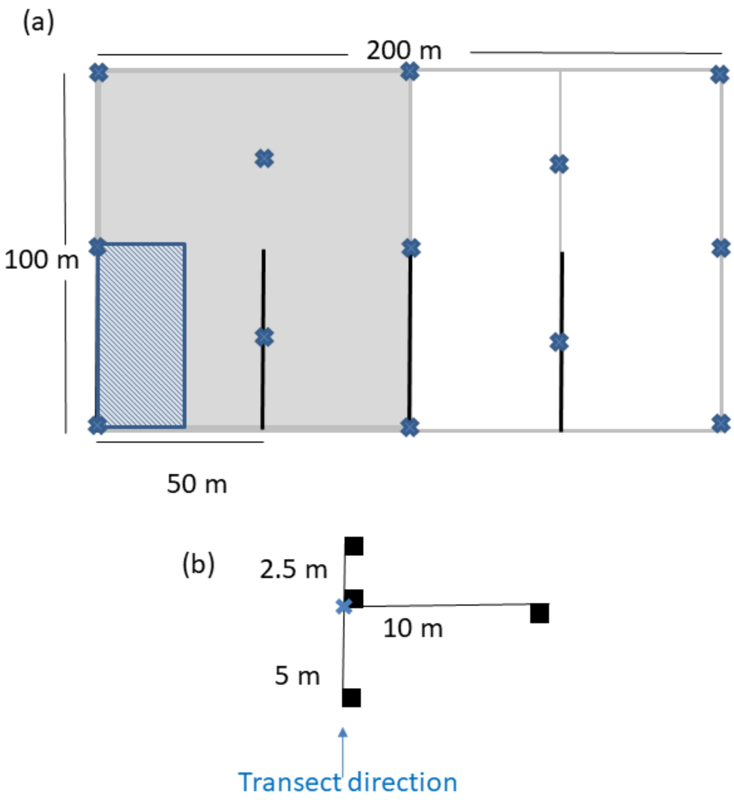

Table S1. Site details.

Site	Datum	Zone (S)	Easting	Northing	Location cluster[A]	Time since fire (years)	Prior fire interval (class)[B]
GIM03	WGS 84	50 H	0747155	6447629	South	44	
GIM06	WGS 84	50 J	0750950	6472203	South	9	short
GIM08	WGS 84	50 J	0749349	6478071	South	303	
GIM09	WGS 84	50 J	0750556	6465872	South	49	
GIM10	WGS 84	50 J	0750336	6457290	South	56	
GIM12	WGS 84	50 J	0740541	6480726	South	13	intermediate
GIM15	WGS 84	50 J	0744153	6494551	South	13	long
GIM31	WGS 84	50 J	0640553	6654518	North	243	
GIM33	WGS 84	50 J	0635137	6648813	North	15	long
GIM34	WGS 84	50 J	0643634	6648823	North	193	
GIM37	WGS 84	50 J	0594944	6661283	North	131	
GIM40	WGS 84	50 J	0629175	6648825	North	141	
GIM41	WGS 84	50 J	0636541	6648792	North	15	long
GIM42	WGS 84	50 J	0637768	6649145	North	15	long
GIM43	WGS 84	50 J	0637393	6640187	North	226	
GIM45	WGS 84	50 J	0637462	6634923	North	219	
GIM50	WGS 84	50 J	0745113	6486094	South	324	
GIM51	WGS 84	50 J	0743365	6497793	South	76	
GIM52	WGS 84	50 J	0742344	6498387	South	209	
GIM53	WGS 84	50 J	0637170	6648914	North	102	
GIM57	WGS 84	50 J	0645021	6652310	North	291	
GIM58	WGS 84	50 J	0637493	6638967	North	369	
GIM60	WGS 84	50 J	0714823	6496978	South	41	
GIM61	WGS 84	50 J	0720836	6496688	South	235	
GIM63	WGS 84	50 J	0723066	6493275	South	13	long
GIM64	WGS 84	50 J	0722874	6495658	South	41	
GIM65	WGS 84	50 H	0758871	6425477	South	22	intermediate
GIM66	WGS 84	50 J	0750744	6475350	South	15	short
GIM68	WGS 84	50 J	0747522	6481226	South	189	
GIM76	WGS 84	50 H	0756427	6436532	South	22	intermediate

[A]Sites were grouped into two geographic clusters for some analyses – see Fig. 1 in main paper. [B]Prior fire interval for sites burnt <25 years prior to sampling were grouped into three classes: short (<~35 years), intermediate (~35-120); and long (>~120).

Table S2. Alternative model forms tested.

The most parsimonious models minimising AICc are shown in **bold**.

Model form	Model	AICc
Trees - density (individuals ha^{-1})		
Live (post-fire cohort)		
linear	$Log_{10}Density = 4.046-0.1309(\sqrt{TSF})$	-74.1419
exponential	$Log_{10}Density = 4.3298e^{-0.0492(\sqrt{TSF})}$	**-74.6776**
inverse	$Log_{10}Density = 1.690+(7.3711/\sqrt{TSF})$	-54.2912
Fire-killed (post-fire cohort)		
linear	$Log_{10}Density = 2.5613-0.1724(\sqrt{TSF})$	-22.6697
exponential	$Log_{10}Density = 9.1291e^{-0.3638(\sqrt{TSF})}$	**-51.8099**
inverse	$Log_{10}Density = -0.8306+(11.700/\sqrt{TSF})$	-49.6208
Dead (not fire-killed; post-fire cohort)		
linear	No significant relationship	
exponential	No significant relationship	
power	No significant relationship	
quadratic	$Log_{10}Density = -0.950+0.5686(\sqrt{TSF})-0.0284(\sqrt{TSF})^2$	**-10.8684**
Trees - individual biomass (kg)		
Live (post-fire cohort)		
linear	$Log_{10}Biomass = -0.1306+0.2016(\sqrt{TSF})$	**-73.0123**
exponential	$Log_{10}Biomass = 0.6507e^{0.0950(\sqrt{TSF})}$	-44.4227
power	$Log_{10}Biomass = 0.1816(\sqrt{TSF})^{1.0197}$	-71.4564
Fire-killed (post-fire cohort)	Not analysed	
Dead (not fire-killed; post-fire cohort)		
linear	$Log_{10}Biomass = -0.5370+0.1780(\sqrt{TSF})$	**-40.098**
exponential	$Log_{10}Biomass = 0.3724e^{0.1123(\sqrt{TSF})}$	-28.4673
power	$Log_{10}Biomass = 0.0607(\sqrt{TSF})^{1.3087}$	-36.7257
Trees - stand biomass (kg ha^{-1})		
Live (post-fire cohort)		
linear	$Log_{10}Biomass = 3.6972+0.0853(\sqrt{TSF})$	-65.1193
exponential	$Log_{10}Biomass = 3.7785e^{0.0181(\sqrt{TSF})}$	-63.1974
power	$Log_{10}Biomass = 3.1285(\sqrt{TSF})^{0.1733}$	**-74.6836**
Fire-killed (post-fire cohort)		
linear	$Log_{10}Biomass = 4.5222-0.3006(\sqrt{TSF})$	7.749003
exponential	$Log_{10}Biomass = 11.1184e^{-0.2770\sqrt{TSF})}$	**-6.29897**
inverse	$Log_{10}Density = -1.2392+(19.2965/\sqrt{TSF})$	-3.97914
Dead (not fire-killed; post-fire cohort)		
linear	$Log_{10}Biomass = 0.4786+0.1534(\sqrt{TSF})$	14.38071
exponential	$Log_{10}Biomass = 1.1144e^{0.0556(\sqrt{TSF})}$	18.16494
power	$Log_{10}Biomass = 0.4802(\sqrt{TSF})^{0.6472}$	12.16125
quadratic	$Log_{10}Density = -3.4564+1.1902(\sqrt{TSF})-0.0500(\sqrt{TSF})^2$	**-23.3917**
All tree stand biomass (kg ha^{-1})		

linear	$Log_{10}Biomass = 4.269+0.0467(\sqrt{TSF})$	-94.5481
exponential	$Log_{10}Biomass = 4.291e^{0.0097(\sqrt{TSF})}$	-93.9824
power	$Log_{10}Biomass = 3.914(\sqrt{TSF})^{0.0888}$	**-98.2437**
Shrubs - density (individuals ha^{-1})		
Live (post-fire cohort)		
linear	$Log_{10}Density = 4.2343-0.1237(\sqrt{TSF})$	-19.433
exponential	$Log_{10}Density = 4.8511e^{-0.0490(\sqrt{TSF})}$	-21.1288
inverse	$Log_{10}Density = 1.2479+(15.7372/\sqrt{TSF})$	**-24.5676**
Fire-killed (post-fire cohort)		
linear	$Log_{10}Density = 1.6555-0.1079(\sqrt{TSF})$	-1.08513
exponential	$Log_{10}Density = 3.5897e^{-0.2358(\sqrt{TSF})}$	**-1.90527**
inverse	$Log_{10}Density = -0.4360+(7.3621/\sqrt{TSF})$	-1.70575
Dead (not fire-killed; post-fire cohort)	No significant relationships	
Shrubs - individual biomass (kg)		
Live (post-fire cohort)		
linear	$Log_{10}Biomass = -0.1313+0.0867(\sqrt{TSF})$	-50.6691
exponential	$Log_{10}Biomass = 0.5031e^{0.0677(\sqrt{TSF})}$	-47.5306
power	$Log_{10}Biomass = 0.1439(\sqrt{TSF})^{0.8486}$	**-51.142**
Fire-killed (post-fire cohort)	Not analysed	
Dead (not fire-killed; post-fire cohort)		
linear	$Log_{10}Biomass = -0.0576+0.0678(\sqrt{TSF})$	-45.4051
exponential	$Log_{10}Biomass = 0.2510e^{0.0869(\sqrt{TSF})}$	-45.194
power	$Log_{10}Biomass = 0.0509(\sqrt{TSF})^{1.0836}$	**-45.4109**
Shrubs - stand biomass (kg ha^{-1})		
Live (post-fire cohort)	No significant relationships	
Fire-killed (post-fire cohort)		
linear	$Log_{10}Biomass = 2.2332-0.1450(\sqrt{TSF})$	14.8556
exponential	$Log_{10}Biomass = 4.7037e^{-0.2300\sqrt{TSF})}$	**14.21112**
inverse	$Log_{10}Biomass = -0.5707+(9.8427/\sqrt{TSF})$	14.36481
Dead (not fire-killed; post-fire cohort)	No significant relationships	
All shrub stand biomass (kg ha^{-1})	No significant relationships	
Litter stand biomass (kg ha^{-1})	No significant relationships	
Coarse woody debris stand biomass (kg ha^{-1})		
All prior intervals	No significant relationships	
Recently-burnt sites with long prior intervals only		
linear	No significant relationship	
exponential	No significant relationship	
inverse	$Log_{10}Biomass = 3.6620+(1.7842/\sqrt{TSF})$	**-76.7173**
Stand biomass with all components and cohorts (kg ha^{-1})		
linear	$Log_{10}Biomass =4.5691+0.0343(\sqrt{TSF})$	-99.0127
exponential	$Log_{10}Biomass = 4.5807e^{0.0069(\sqrt{TSF})}$	-98.7542
power	$Log_{10}Biomass = 4.2905(\sqrt{TSF})^{0.0631}$	**-101.83**