

Appendix S1: Alternative silvicultural systems maintain multiple values in tall eucalypt forest

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Table 1: Number of plots belonging to each combination of treatment and site preparation.

Treatment	Site preparation	Number of plots
Small gap	burnt	3
Small gap	mechanically disturbed	5
Medium gap	burnt	4
Medium gap	mechanically disturbed	4
Large gap	burnt	4
Large gap gap	mechanically disturbed	4
Clearcut	burnt	4
Clearcut	mechanically disturbed	4
Seed tree	burnt	4
Seed tree	mechanically disturbed	4
30 % retention	mechanically disturbed	5
50 % retention	mechanically disturbed	5
Control	none	4

Table 2: Equations used to calculate structural, functional, and compositional metrics.

Response variable	Species	Unit	Equation	Paper
DBH ₅₀	All tree species	cm	Mean diameter of the largest 50 trees per silvicultural treatment	-
Sapwood area	<i>Acacia dealbata</i>	m ²	$10.47DBH - 134.90$ (1)	Pfautsch <i>et al.</i> (2010)
	<i>Eucalyptus regnans</i>	m ²	$9.75DBH - 141.50$ (2)	Pfautsch <i>et al.</i> (2010)
Biomass	<i>Acacia</i> spp.	kg	$e^{-2.544} DBH^{2.569} + e^{-2.497} DBH^{2.051} + e^{-2.626} DBH^{2.149} + e^{-2.393} DBH^{1.303}$ (3)	Bi <i>et al.</i> (2004)
	<i>Eucalyptus</i> spp.	kg	$1612.4 * (1 - \frac{1}{1 + ((DBH + .01)/12.714)^{2.2283}})$ (4)	Dean <i>et al.</i> (2012)
	Understorey spp.	kg	$209.72 * (1 - \frac{1}{1 + ((DBH + .01)/4.0551)^{2.5063}})$ (5)	Dean <i>et al.</i> (2012)
Coarse woody debris		kg	For each piece of CWD:	Van Wagner (1968) and Fedrigo <i>et al.</i> (2014)
			$X = \pi * (\frac{D}{2})^2 * C$ (6)	
			where D is diameter and C is the specific wood density estimate for each decay class: 0.6015 for sound, 0.441 for moderate decay, and 0.2765 for advanced decay. For the entire transect:	
			$\frac{\pi^2 \sum X}{8L}$ (7)	
			where X is the value for each piece of wood that crosses the transect line and L is the full length of the transect	
Stumps		kg		Fedrigo <i>et al.</i> (2014)
			$\pi * (\frac{DBH}{2})^2 * H * p * 0.0497$ (8)	
			where H is height and p is percent remaining	
	<i>Cyathea australis</i> and <i>Dicksonia antarctica</i>	kg	$0.003608H^{1.6669}$ (9)	Fedrigo <i>et al.</i> (2019)
			where H is height	

Age	<i>Cyathea australis</i>	years		Fedrico <i>et al.</i> (2019)
			$7.8139372e^{0.004303 * H}$	(10)
			for ferns between 0.23 and 4.36 m,	
			$\frac{H}{2.66}$	(11)
			for ferns less than 0.23 m and	
			$\frac{H}{8.545148}$	(12)
	<i>Dicksonia antarctica</i>	years		Fedrico <i>et al.</i> (2019)
			$29.57e^{0.004814 * H}$	(13)
			for ferns between 0.50 and 4.25 m,	
			$\frac{H}{21.44}$	(14)
			for ferns less than 0.23 m and	
			$\frac{H}{1.857774}$	(15)

Table 3: Mean and standard deviation (in parentheses) of structural, compositional, and functional attributes associated with the silvicultural treatments with two site preparation metrics. Site preparation had a significant interactive for DBH₅₀ and a main effect for eucalypt sapwood area. Mean values followed by the same letter are part of the same group as indicated by the Tukey-Kramer post hoc test

Variable	Small Gap - Mechanically disturbed	Small Gap - Burnt	Medium Gap - Mechanically disturbed	Medium Gap - Burnt	Large Gap - Mechanically disturbed	Large Gap - Burnt	Clearfell - Mechanically disturbed	Clearfell - Burnt	Seed tree - Mechanically disturbed	Seed tree - Burnt	ω^2 , 95% CI
DBH ₅₀	35.2 ^a (8.0)	35.9 ^a (5.5)	39.4 ^a (6.8)	46.5 ^a (8.0)	50.3 ^{ab} (4.2)	53.1 ^{ab} (11.7)	53.3 ^{ab} (6.7)	47.4 ^a (5.5)	74.0 ^b (35.0)	49.5 ^{ab} (8.3)	Treatment: 0.29 (0.12, 1.0); Site prep: 0.01 (0, 1.0); Treat*SitePrep: 0.12 (0, 1.0)
Eucalypt sapwood area (m ² /ha)	2.3 ^a (2.6)	3.6 ^{ab} (3.1)	3.3 ^{abc} (2.4)	6.3 ^{abc} (2.5)	4.8 ^{abc} (3.4)	7.7 ^{bc} (1.8)	7.7 ^{bc} (1.1)	7.6 ^c (2.0)	7.6 ^{bc} (2.1)	8.3 ^c (0.8)	Treatment: 0.38 (0.07, 1.0); Site prep: 0.11 (0, 1.0)

Table 4: Eigenvalues and eigenvectors for the first five principal components. The column headings are: Ev = eigenvalue; BAeregs = basal area of mountain ash; BAaca = basal area of *Acacia* spp.; BApom = basal area of *Pomaderris aspera*; shannon = Shannon diversity index for tree species; and QMD = quadratic mean diameter

PCs	Ev	Eigenvectors				
		BAeregs	BAaca	BApom	shannon	QMD
PC1	2.20	-0.550	0.098	0.3900	-0.590	-0.430
PC2	1.50	0.390	-0.640	0.4700	0.150	-0.430
PC3	0.68	-0.170	-0.710	-0.3900	-0.450	0.330
PC4	0.49	-0.052	-0.012	0.6900	-0.028	0.730
PC5	0.18	-0.710	-0.260	0.0041	0.650	-0.033

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