Accessory publication

Contemporary fire regimes in a fragmented and an unfragmented landscape: implications for vegetation structure and persistence of the fire-sensitive malleefowl

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Table A1. Regression models for vegetation and litter cover versus time since fire for mallee-shrub

Height class	Model form	Model	Percentage deviation explained	Standard error	*P*	AIC
400+	Linear	$y = -5.1 + 0.4456x$	48.6	6.44	<0.001	298
	Quadratic	$y = 1.68 - 0.484x + 0.02x^2$	62	5.54	<0.001	287
	Asymptotic	N/A				
	Exponential	$y = -2.43 + 0.96(1.0728^x)$	59.7	5.7	<0.001	290
	Logistic	$\mathbf{y = 0.23 + 15.75/(1 + e^{-0.972(x - 32.37)})}$	**65.5**	**5.27**	**<0.001**	**284**
200–400	Linear	$y = 1.56 + 0.6291x$	63	6.81	<0.001	303
	Quadratic	$\mathbf{y = -7.32 + 1.847x - 0.0262x^2}$	**78.3**	**5.21**	**<0.001**	**282**
	Cubic	$y = -5.19 + 1.305x + 0.0009x^2 - 0.000367x^3$	78	5.25	<0.001	284
	Asymptotic	$26.34 - 36.98(0.9217^x)$	76	5.48	<0.001	287
	Exponential	N/A				
	Logistic	$y = 0.8511 + 23.94/(1 + e^{-0.3585(x - 17.51)})$	78.8	5.16	<0.001	283
100–200	Linear	$y = 7.76 + 0.2239x$	20.7	5.96	0.002	292
	Quadratic	$y = 6.56 + 0.388x - 0.00354x^2$	19.4	6	0.007	294
	Cubic	$\mathbf{y = -2.22 + 2.63x - 0.1158x^2 + 0.001516x^3}$	**31**	**5.56**	**<0.001**	**289**
	Asymptotic	$12.25 - 50.2(0.649^x)$	27.9	5.68	<0.001	289
	Exponential	N/A				
	Logistic	no significant relationship				

Height class	Model form	Model	Percentage deviation explained	Standard error	P	AIC
50–100	Linear	no significant relationship				
	Quadratic	no significant relationship				
	Cubic	no significant relationship				
	Asymptotic	N/A				
	Exponential	no significant relationship				
	Logistic	no significant relationship				
25–50	Linear	no significant relationship				
	Quadratic	no significant relationship				
	Cubic	no significant relationship				
	Asymptotic	no significant relationship				
	Exponential	N/A				
	Logistic	no significant relationship				
12–25	**Linear**	$y = 25.72 - 0.2094x$	**18**	**6.03**	**0.004**	**293**
	Quadratic	no significant relationship				
	Cubic	no significant relationship				
	Asymptotic	N/A				
	Exponential	no significant relationship				
	Logistic	no significant relationship				
0–12	**Linear**	$y = 33.83 - 0.4272x$	**45.4**	**6.56**	**<0.001**	**300**
	Quadratic	$y = 32.03 - 0.18x - 0.00531x^2$	45	6.58	<0.001	301
	Cubic	$y = 30.01 + 0.34x - 0.0311x^2 + 0.000349x^3$	43.9	6.65	<0.001	303
	Asymptotic	N/A				
	Exponential	$43.7 - 11.3(1.0222^x)$	44.9	6.59	<0.001	301
	Logistic	$y = 11.2 + 20.7/(1 + e^{0.121(x - 29.78)})$	43.9	6.65	<0.001	303
Litter	Linear	$y = 3.43 + 0.905x$	64.7	9.45	<0.001	329
	Quadratic	$y = -5.81 + 2.174x - 0.02729x^2$	72.5	8.34	<0.001	320
	Cubic	$y = -10.98 - 3.49x - 0.0933x^2 + 0.000893x^3$	72.6	8.33	<0.001	321
	Asymptotic	$40.34 - 50.77(0.9329^x)$	72.8	8.3	<0.001	320
	Exponential	N/A				
	Logistic	$y = 0.2179 + 36.57/(1 + e^{-0.2252(x - 15.27)})$	**73.8**	**8.14**	**<0.001**	**319**

Table A2. Regression models for vegetation and litter cover versus time since fire for *Acacia* shrublands

Regression equations are presented for all height classes and for litter using six ecologically plausible model curves as described in the text. Bold text denotes the most parsimonious model for each class

Height class	Model form	Model	Percentage deviation explained	Standard error	P	AIC
400+	Linear	$y = -3.49 + 0.2911x$	26.3	6.75	<0.001	302
	Quadratic	$y = 3.39 - 0.545x + 0.01687x^2$	35.4	6.32	<0.001	298
	Asymptotic	N/A				
	Exponential	**$0.42 + 0.00022(1.28^x)$**	**41.3**	**6.02**	**<0.001**	**294**
	Logistic	$y = 0.9936 + 14.7/(1 + e^{-0.9936(x-39.83)})$	39.4	6.12	<0.001	296
200–400	Linear	$y = -7.77 + 0.9203x$	82.1	6.14	<0.001	295
	Quadratic	$y = -7.1 + 0.838x + 0.00165x^2$	81.7	6.22	<0.001	297
	Cubic	$y = 9.6 - 2.479x + 0.1624x^2 - 0.002152x^3$	87.2	5.2	<0.001	283
	Asymptotic	N/A				
	Exponential	$y = -330 + 323(1.0027^x)$	81.7	6.22	<0.001	297
	Logistic	**$y = 0.1697 + 31.18/(1 + e^{-0.3471(x-25.54)})$**	**90.3**	**4.52**	**<0.001**	**272**
100–200	Linear	no significant relationship				
	Quadratic	**$y = -6.6 + 2.757x - 0.05205x^2$**	**49.6**	**8.11**	**<0.001**	**318**
	Cubic	$y = -10.58 + 3.55x - 0.0903x^2 + 0.000512x^3$	48.8	8.18	<0.001	319
	Asymptotic	$22.89 - 67.8(0.773^x)$	29.7	9.58	<0.001	331
	Exponential	N/A				
	Logistic	no significant relationship				
50–100	Linear	$y = 25.17 - 0.3104x$	21.8	8.07	<0.001	317
	Quadratic	$y = 17.79 + 0.587x - 0.0181x^2$	29.1	7.69	<0.001	314
	Cubic	**$y = 3.68 + 3.39x - 0.1539x^2 + 0.001819x^3$**	**38.1**	**7.18**	**<0.001**	**309**
	Asymptotic	N/A				
	Exponential	$23.4 - 0.76(1.0681^x)$	24.9	7.91	0.002	316
	Logistic	$y = 11.24 + 11.96/(1 + e^{0.3467(x-24.88)})$	28.9	7.7	0.002	315
25–50	Linear	$y = 21.49 - 0.3428x$	50.7	4.79	<0.001	275
	Quadratic	$y = 23.68 - 0.609x + 0.00537x^2$	50.9	4.78	<0.001	276
	Cubic	$y = 26.22 - 1.112x + 0.0298x^2 - 0.000326x^3$	50.2	4.82	<0.001	277
	Asymptotic	**$2.79 + 21.76(0.965^x)$**	**51.1**	**4.77**	**<0.001**	**275**
	Exponential	N/A				
	Logistic	$y = -11.55 + 1072/(1 + e^{0.01454(x+234.8)})$	49.1	487	<0.001	278

Height class	Model form	Model	Percentage deviation explained	Standard error	P	AIC
12–25	**Linear**	$y = 17.18 - 0.305x$	**40**	**5.43**	**<0.001**	**285**
	Quadratic	$y = 19.47 - 0.584x + 0.00562x^2$	38.3	5.44	<0.001	286
	Cubic	$y = 22.61 - 1.207x + 0.0358x^2 - 0.000405x^3$	37.5	5.47	<0.001	287
	Asymptotic	$2.6 + 18.44(0.9533^x)$	38.7	5.42	<0.001	286
	Exponential	N/A				
	Logistic	$y = -5.196 + 661.1/(1 + e^{0.02177(x+150.8)})$	36.4	5.52	<0.001	288
0–12	**Linear**	$y = 12.53 - 0.1931x$	**23.6**	**4.79**	**<0.001**	**275**
	Quadratic	$y = 13 - 0.25x + 0.00115x^2$	21.6	4.86	0.004	277
	Cubic	no significant relationship				
	Asymptotic	$y = -7.5 + 20.5(0.9873^x)$	21.6	4.86	0.004	277
	Exponential	N/A				
	Logistic	no significant relationship				
Litter	Linear	$y = 5.46 + 0.386x$	14.5	12.5	0.009	352
	Quadratic	$y = -14.1 + 2.767x - 0.048x^2$	42.4	10.3	<0.001	337
	Cubic	$y = 7.32 - 1.49x + 0.1582x^2 - 0.002762x^3$	**52.2**	**9.37**	**<0.001**	**330**
	Asymptotic	$21.52 + 35.1(0.8997^x)$	25.7	11.7	0.002	347
	Exponential	N/A				
	Logistic	$y = 26.23 - 18.74/(1 + e^{-2.455(x-43.17)})$	39.7	10.5	<0.001	340

Table A3. Regression models for vegetation and litter cover versus time since fire for mallee-heath

Regression equations are presented for all height classes and for litter using six ecologically plausible

model curves as described in the text. Bold text denotes the most parsimonious model for each class

Height class	Model form	Model	Percentage deviation explained	Standard error	P	AIC
400+	Linear	no significant relationship				
	Quadratic	no significant relationship				
	Asymptotic	no significant relationship				
	Exponential	N/A				
	Logistic	no significant relationship				
200–400	Linear	no significant relationship				
	Quadratic	$y = -1.79 + 0.355x - 0.00575x^2$	**23.4**	**2.51**	**0.002**	**244**
	Cubic	$y = -0.31 - 0.006x + 0.0119x^2 - 0.000233x^3$	23.1	2.51	0.004	245
	Asymptotic	$3.386 - 5.71(0.9^x)$	18.8	2.58	0.006	246
	Exponential	N/A				
	Logistic	$y = 3.458 - 3.638/(1 + e^{0.2679(x-17.51)})$	19.7	2.57	0.009	247
100–200	**Linear**	$y = 1.94 + 0.1466x$	**21**	**3.96**	**0.001**	**282**

Height class	Model form	Model	Percentage deviation explained	Standard error	P	AIC
	Quadratic	$y = 1.27 + 0.234x - 0.0018x^2$	19.6	3.99	0.005	284
	Cubic	$y = 4.8 - 0.624x + 0.0401x^2 - 0.000556x^3$	21.4	3.95	0.006	284
	Asymptotic	$13.9 - 12.5(0.9824^x)$	19.4	4	0.005	284
	Exponential	N/A				
	Logistic	no significant relationship				
50–100	Linear	$y = 5.7 + 0.4579x$	50.9	6.47	<0.001	324
	Quadratic	$y = -0.78 + 1.298x - 0.01734x^2$	60.6	5.79	<0.001	316
	Cubic	**$y = 8.1 - 0.859x + 0.0881x^2 - 0.001397x^3$**	**65.4**	**5.43**	**<0.001**	**311**
	Asymptotic	$25.93 - 27.16(0.942^x)$	57.6	6.01	<0.001	319
	Exponential	N/A				
	Logistic	$y = 5.949 + 17.29/(1 + e^{-0.8204(x - 19.52)})$	65	5.46	<0.001	312
25–50	Linear	$y = 17.09 + 0.33x$	33.2	6.65	<0.001	327
	Quadratic	$y = 8.94 + 1.388x - 0.02185x^2$	54	5.52	<0.001	311
	Cubic	**$y = 17.78 - 0.761x + 0.0832x^2 - 0.001392x^3$**	**60.2**	**5.13**	**<0.001**	**306**
	Asymptotic	$30.29 - 23(0.9087^x)$	46.1	5.97	<0.001	318
	Exponential	N/A				
	Logistic	$y = 9.208 + 21.69/(1 + e^{-0.1238(x - 11.07)})$	45.2	6.02	<0.001	320
12–25	**Linear**	no significant relationship				
	Quadratic	no significant relationship				
	Cubic	no significant relationship				
	Asymptotic	no significant relationship				
	Exponential	N/A				
	Logistic	no significant relationship				
0–12	**Linear**	no significant relationship				
	Quadratic	no significant relationship				
	Cubic	no significant relationship				
	Asymptotic	no significant relationship				
	Exponential	N/A				
	Logistic	no significant relationship				
Litter	Linear	$y = 8.38 + 0.509x$	34.4	9.99	<0.001	362
	Quadratic	**$y = 4.91 + 0.96x - 0.00931x^2$**	**34.6**	**9.97**	**<0.001**	**362**
	Cubic	$y = 2.52 + 1.54x - 0.0377x^2 + 0.00038x^3$	33.1	10.1	<0.001	364
	Asymptotic	$34.4 - 30.6(0.9609^x)$	34.6	9.97	<0.001	362
	Exponential	N/A				
	Logistic	$y = 6.039 + 22.75/(1 + e^{-0.1537(x - 16.69)})$	33.3	10.1	<0.001	364