SUPPORTING INFORMATION

Table S1: Functional camera-trap survey summary statistics in the Glenelg region where foxes are controlled across some forest blocks (treatment) but not in other, similar forest blocks (non-treatment).

Forest block	Year	Sites	Treatment	Start date	End date	Mean survey duration
annya	2013	40	non-treatment	2013-11-06	2013-12-13	36
annya	2014	40	non-treatment	2014-11-05	2014-12-16	36
annya	2015	40	non-treatment	2015-11-12	2015-12-16	33
annya	2016	39	non-treatment	2016-11-20	2016-12-23	31
annya	2017	40	non-treatment	2017-11-15	2017-12-19	34
annya	2018	148	non-treatment	2018-01-26	2018-12-21	64
annya	2019	39	non-treatment	2019-10-15	2019-12-16	54
cobb	2013	35	treatment	2013-11-05	2013-12-12	36
cobb	2014	39	treatment	2014-11-06	2014-12-10	32
cobb	2015	39	treatment	2015-11-10	2015-12-19	36
cobb	2016	40	treatment	2016-11-07	2016-12-22	38
cobb	2017	40	treatment	2017-11-15	2017-12-19	34
cobb	2018	149	treatment	2018-02-13	2018-12-28	61
cobb	2019	39	treatment	2019-09-22	2019-12-17	56
hotspur	2013	36	non-treatment	2013-11-12	2013-12-14	30
hotspur	2014	36	non-treatment	2014-10-28	2014-12-16	48
hotspur	2015	40	non-treatment	2015-10-29	2016-01-23	48
hotspur	2016	36	non-treatment	2016-11-02	2016-12-05	32
hotspur	2017	40	non-treatment	2017-11-08	2017-12-12	34
hotspur	2018	138	non-treatment	2018-04-16	2018-12-10	53
hotspur	2019	39	non-treatment	2019-10-15	2019-12-17	55
lgnp_n	2013	31	non-treatment	2013-10-29	2013-12-03	34
lgnp_n	2014	40	non-treatment	2014-10-27	2014-12-03	35
lgnp_n	2015	40	non-treatment	2015-10-25	2015-12-04	37
lgnp_n	2016	39	non-treatment	2016-10-30	2016-12-02	31
lgnp_n	2017	40	non-treatment	2017-11-03	2017-12-06	34
lgnp_n	2018	39	non-treatment	2018-10-30	2018-12-05	36
lgnp_n	2019	30	non-treatment	2019-10-14	2019-12-12	56
lgnp_s	2013	39	treatment	2013-10-28	2013-12-03	35
lgnp_s	2014	40	treatment	2014-10-26	2014-12-04	38
lgnp_s	2015	40	treatment	2015-10-27	2015-12-10	42
lgnp_s	2016	38	treatment	2016-10-27	2016-12-01	34
lgnp_s	2017	40	treatment	2017-11-01	2017-12-04	33
lgnp_s	2018	39	treatment	2018-10-28	2018-12-05	36
lgnp_s	2019	40	treatment	2019-10-14	2019-12-12	58
mtclay	2013	32	treatment	2013-11-11	2013-12-14	32
mtclay	2014	40	treatment	2014-11-04	2014-12-12	36
mtclay	2015	40	treatment	2015-11-05	2015-12-11	34
mtclay	2016	39	treatment	2016-11-06	2016-12-19	38
mtclay	2017	40	treatment	2017-11-08	2017-12-12	33
mtclay	2018	144	treatment	2018-04-30	2018-12-24	47
mtclay	2019	39	treatment	2019-10-15	2019-12-19	56

Table S2: Functional camera-trap survey summary statistics in the Otway Ranges where foxes are controlled across some forest blocks (treatment) but not in other, similar forest blocks (non-treatment). Fox-baiting had occurred in small section of the 'FA1' forest block since 2008, extending to across the remainder of the block in September 2018 (here we summarise this as treatment not started, although this was accounted for in the models). Fox-baiting commenced for the first time in 'FA2' and 'FA3' forest blocks in November 2017.

Forest block	Year	Sites	Treatment	Treatment started?	Start date	End date	Mean survey duration
FA1	2016	77	treatment	no	2016-10-11	2016-12-05	49
FA1	2017	78	treatment	yes	2017-01-25	2017-12-07	38
FA1	2018	78	treatment	yes	2018-10-16	2018-12-11	44
FA2	2016	79	treatment	no	2016-08-15	2016-10-19	42
FA2	2017	76	treatment	no	2017-07-29	2017-10-12	38
FA2	2018	77	treatment	yes	2018-07-23	2018-09-30	30
FA3	2016	139	treatment	no	2016-06-01	2016-10-07	48
FA3	2017	204	treatment	no	2017-06-23	2017-10-25	55
FA3	2018	224	treatment	yes	2018-06-28	2018-09-13	50
FA3	2019	86	treatment	yes	2019-06-07	2019-09-17	83
FA4	2017	139	non-treatment	NA	2017-02-09	2017-09-02	52
FA4	2018	173	non-treatment	NA	2018-02-12	2018-09-21	55
FA4	2019	171	non-treatment	NA	2019-02-06	2019-09-15	59

Table S3: Number of camera-trap sites, total deployments and naive occupancy rates for red foxes, feral cats, southern brown bandicoots (SBB) and long-nosed potoroos (LNP) within Ecological Vegetation Class groups across two broad regions in south-west Victoria, Australia.

Vegetation	Region	Sites	Deployments	Fox	Cat	SBB	LNP
Dry Forest	Glenelg	25	69	0.65	0.10	0.06	0.01
	Otway	111	314	0.42	0.28	0.02	0.06
Heathland	Glenelg	40	119	0.43	0.34	0.14	0.18
	Otway	3	9	0.22	0.44	0.11	0.33
Heathy Woodland	Glenelg	154	424	0.31	0.14	0.29	0.19
	Otway	82	255	0.29	0.15	0.15	0.12
Herb-rich Woodland	Glenelg	59	373	0.50	0.27	0.02	0.12
	Otway	2	6	0.33	0.17	0.00	0.00
Lowland Forest	Glenelg	383	1046	0.46	0.18	0.17	0.05
	Otway	52	163	0.42	0.14	0.04	0.10
Swampy Scrub	Glenelg	4	10	0.60	0.50	0.00	0.00
	Otway	36	98	0.32	0.33	0.08	0.09
Wet Forest	Otway	281	780	0.31	0.54	0.01	0.07

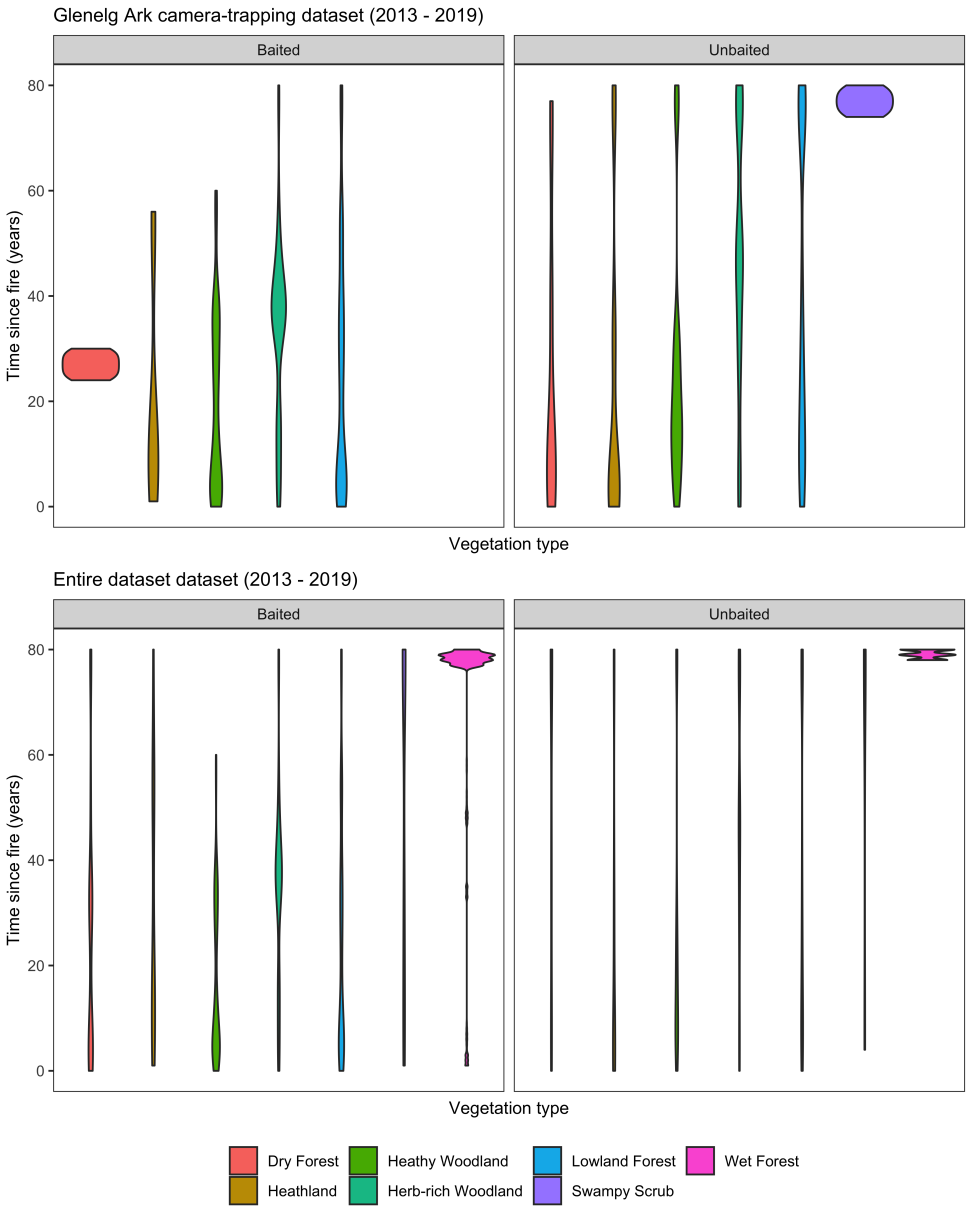

Figure S1: Range and distribution of time since fire values across the surveyed vegetation types in baited and unbaited sites. In the Glenelg Ark camera-trapping dataset, where most sites in the baited landscapes are relatively recently burnt, and most sites are long-unburnt in the unbaited landscapes. Combining M.W.R PhD and Otway Ark surveys provides a wider range of fire history patterns in each vegetation type with and without fox control.

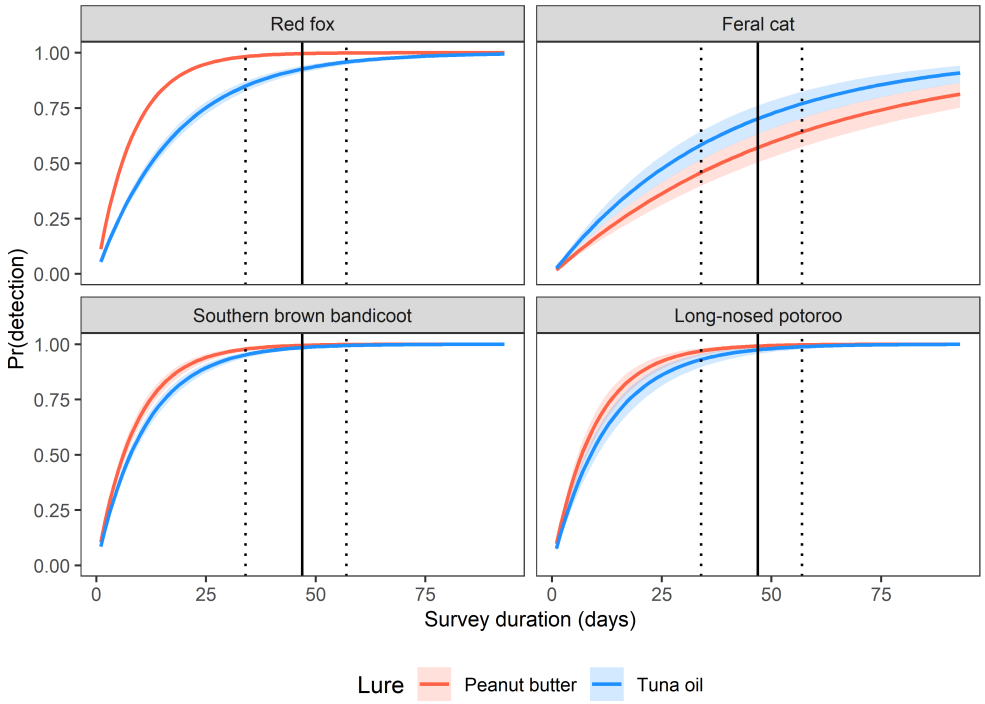

Figure S2: Cumulative detection probabilities of species using camera-traps lured with peanut butter, rolled oats and golden syrup (red) or mechanics cloth soaked in tuna oil (blue) in south-west Victoria, Australia. Vertical grey lines represent mean (solid) as well as 25% and 75% quantiles (dotted) of days camera-traps were active for. Shaded bands represent 95% Bayesian credible intervals. Estimates were derived from Bayesian occupancy-detection models, using unbaited Glenelg landscapes as a reference level.

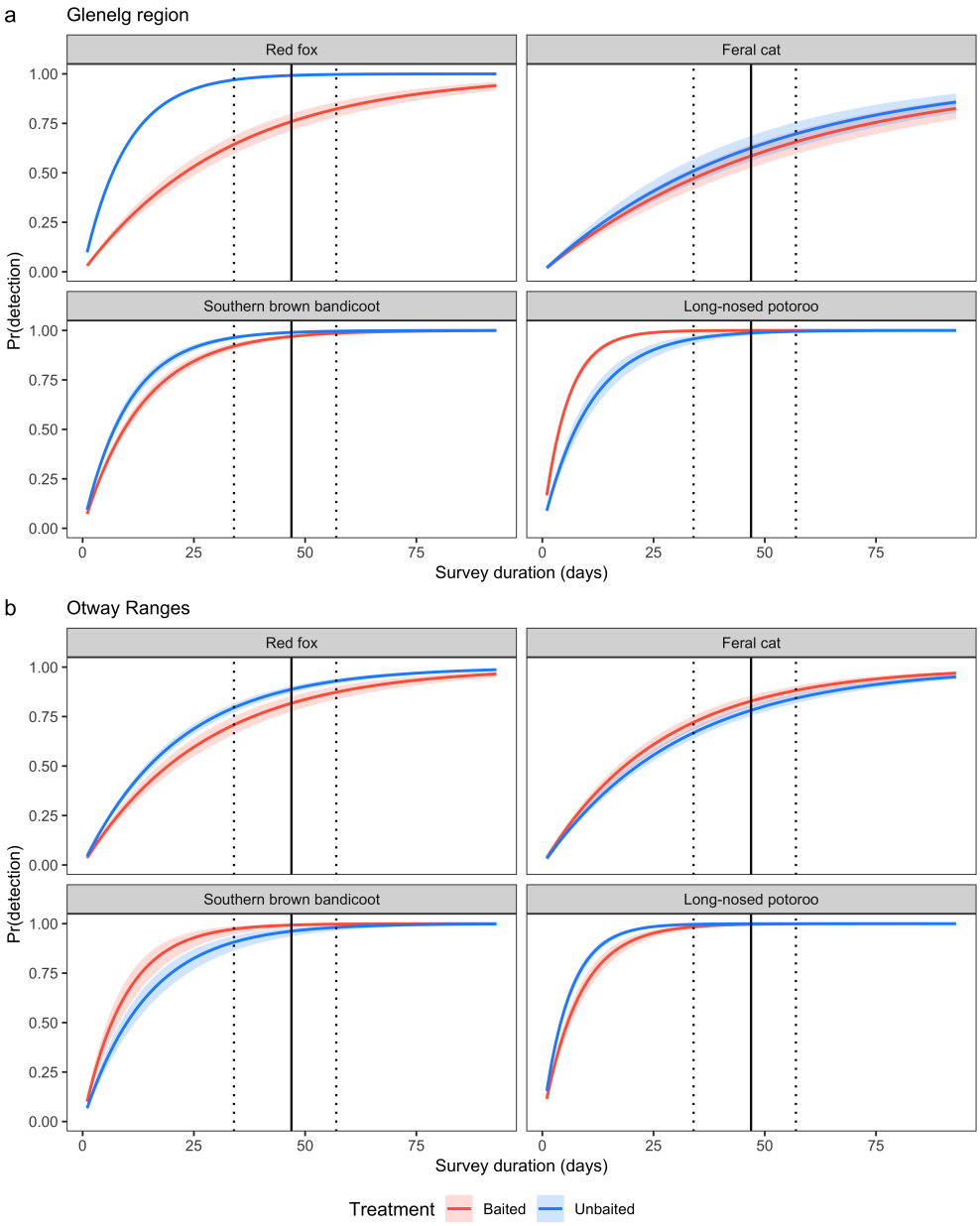

Figure S3: Cumulative detection probabilities of species in landscapes with fox control (red) and without fox control (blue) in the Glenelg region (a) and (b) Otway Ranges, south-west Victoria, Australia. Fox control had occurred in the Glenelg region for 8 - 13 years and was monitored with a control-impact design. The Otway Ranges was monitored using a before-after-control-impact experimental design; surveyed approximately 1 year prior and 2 years following the commencement of fox-baiting. Vertical grey lines represent mean (solid) as well as 25% and 75% quantiles (dotted) of days camera-traps were active for. Shaded bands represent 95% Bayesian credible intervals. Estimates were derived from Bayesian occupancy-detection models.

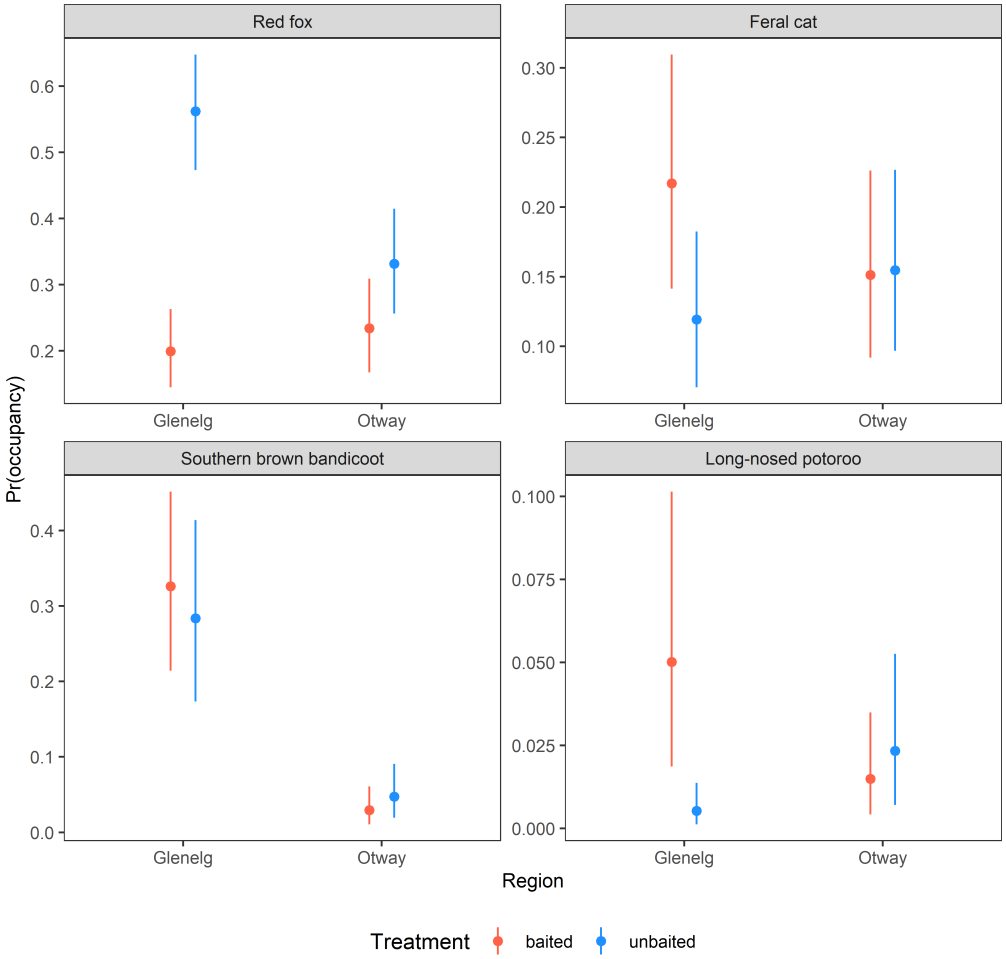

Figure S4: Occupancy estimates of species in landscapes with fox control (red) and without fox control (blue) in the Glenelg region and Otway Ranges, south-west Victoria, Australia. Fox control had occurred in the Glenelg region for 8 - 13 years and was monitored with a control-impact design. The Otway Ranges was monitored using a before-after-control-impact experimental design; surveyed approximately 1 year prior and 2 years following the commencement of fox-baiting. Occupancy was also modelled as a function of vegetation type (Ecological Vegetation Class groups; here we used 'Heathy Woodlands' as a reference level). Error bars represent 95% Bayesian credible intervals. Estimates were derived from Bayesian occupancy-detection models.

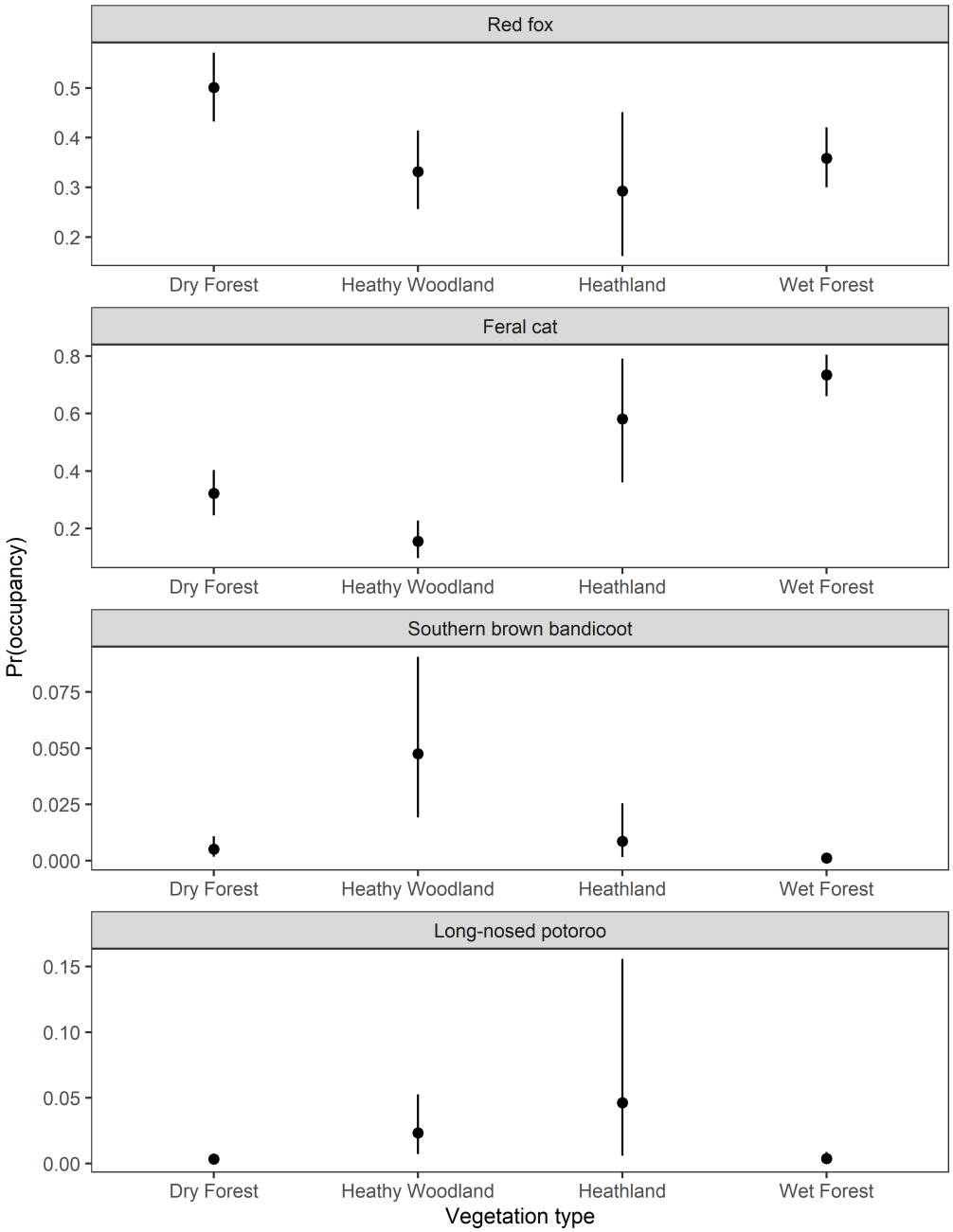

Figure S5: Occupancy estimates of species across different vegetation types (Ecological Vegetation Class groups) in south-west Victoria, Australia. Error bars represent 95% Bayesian credible intervals. Estimates were derived from Bayesian occupancy-detection models.

Table S4: Akaike's Information Criterion values for generalised additive models with different rainfall periods.

Species	Months	AIC	dAIC
Red fox	6	4150.14	0.00
Red fox	18	4151.57	1.43
Red fox	24	4156.49	6.35
Red fox	12	4158.20	8.06
Feral cat	6	3732.68	0.00
Feral cat	12	3733.39	0.71
Feral cat	18	3733.39	0.71
Feral cat	24	3733.39	0.71
Southern brown bandicoot	6	1868.55	0.00
Southern brown bandicoot	24	1868.56	0.00
Southern brown bandicoot	18	1874.10	5.54
Southern brown bandicoot	12	1877.49	8.94
Long-nosed potoroo	12	1577.71	0.00
Long-nosed potoroo	18	1581.19	3.48
Long-nosed potoroo	24	1581.34	3.62
Long-nosed potoroo	6	1582.96	5.25

Note:

AIC - Akaike's Information Criterion score

dAIC - difference between AIC of this model and the model with smallest AIC

Table S5: Generalised additive model summary statistics for models with 'full' set of explanatory variables relative to a 'null model' with only a site random effect.

Species	Model	EDF	dev.expl	r.sq	AIC
Red fox	null	420.65	0.28	0.27	4392.19
Red fox	full	240.21	0.26	0.27	4150.14
Feral cat	null	300.15	0.24	0.22	3901.10
Feral cat	full	214.76	0.24	0.24	3732.68
Southern brown bandicoot	null	242.65	0.36	0.27	2079.84
Southern brown bandicoot	full	185.37	0.40	0.32	1868.55
Long-nosed potoroo	null	280.29	0.50	0.45	1671.09
Long-nosed potoroo	full	256.45	0.53	0.47	1577.71

Note:

EDF - estimated degrees of freedom of all model terms.

dev.expl - proportion of the null deviance explained by the model.

r.sq - adjusted r-squared value.

AIC - Akaike's Information Criterion score

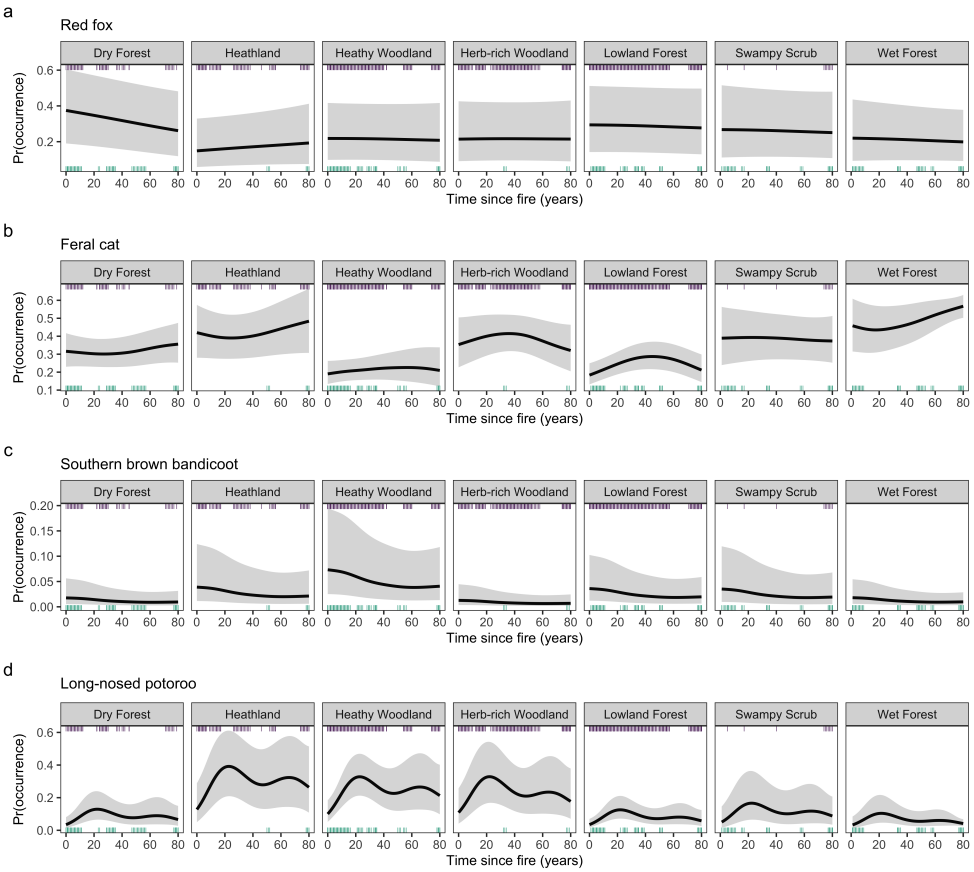

Figure S6: Predicted effects of time since fire on occupancy probabilities of the (a) red fox, (b) feral cat, (c) southern brown bandicoot and (d) long-nosed potoroo, across Ecological Vegetation Class groups in south-west Victoria, Australia. Estimates were derived from generalised additive models (assuming perfect detection). Shaded regions indicate 95% confidence intervals. Rug ticks representing the distribution of time since fire data for the Glenelg region (purple) is shown on the inside of the top axis, Otway Ranges distribution shown on the inside of the bottom axis (green).