APPENDICES

Appendix A. All candidate models for each species, showing AIC and ΔAIC values. Variation in detectability was first modelled as described in text. Conditional on the best detection model, carnivore occupancy was modelled using all covariates individually (see Table 2 for details of covariates), then using the combinations of important covariates as presented below.

	Model	ΔAIC	AIC weight
Banded civet	p(effort)psi(**UVD** + **d_access** + CH)	0.00	0.143
	p(effort)psi(**UVD** + **d_access** + TH)	0.24	0.127
	p(effort)psi(**UVD** + **d_access** + TH + Disturbance)	0.41	0.117
	p(effort)psi(**UVD** + **d_access**)	0.68	0.102
	p(effort)psi(**UVD** + **d_access** + TPI)	1.20	0.079
	p(effort)psi(**UVD** + d_access + Kerangas)	1.30	0.075
	p(effort)psi(**UVD** + d_access + Disturbance)	1.69	0.062
	p(effort)psi(**UVD** + **Disturbance** + CH)	1.91	0.055
	p(effort)psi(**UVD** + **Kerangas**)	2.05	0.052
	p(effort)psi(**UVD** + Disturbance + Kerangas)	2.08	0.051
	p(effort)psi(**UVD** + **d_access** + M)	2.22	0.047
	p(effort)psi(**UVD** + **Disturbance**)	2.40	0.043
	p(effort)psi(**UVD** + **Disturbance** + TPI)	3.21	0.029
	p(effort)psi(**UVD** + **M**)	4.44	0.016
	p(effort)psi(**UVD** + CH)	7.30	0.004
Malay civet	p(effort)psi(**d_road** + **CC** + *d_village*)	0.00	0.350
	p(effort)psi(**d_road** + **CC** + M)	1.96	0.131
	p(effort)psi(**d_road** + **CC**)	2.07	0.124
	p(effort)psi(**d_road** + **CC** + ruggedness)	2.48	0.101
	p(effort)psi(**d_road** + **CC** + Disturbance)	3.50	0.061
	p(effort)psi(**d_road** + **CC** + TH)	3.88	0.050
	p(effort)psi(**d_road** + **CC** + UVD)	4.02	0.047
	p(effort)psi(**M** + **CC**)	5.08	0.027
	p(effort)psi(ruggedness + **CC** + **M**)	5.63	0.021
	p(effort)psi(ruggedness + **CC**)	9.67	0.003

	p(effort)psi(ruggedness + **M**)	11.57	0.001
	p(effort)psi(ruggedness + **TH**)	14.84	0.000
Short-tailed mongoose	p(effort)psi(**CC** + **d_road** + ruggedness)	0.00	0.241
	p(effort)psi(**CC** + **d_road**)	0.74	0.167
	p(effort)psi(**CC** + **d_road** + TPI)	1.53	0.112
	p(effort)psi(**CC** + **d_road** + UVD)	2.38	0.073
	p(effort)psi(**CC** + **d_road** + d_village)	2.60	0.065
	p(effort)psi(**CC** + *d_road* + Disturbance)	2.66	0.064
	p(effort)psi(**CC** + **d_road** + TH)	2.67	0.063
	p(effort)psi(**CC** + **d_road** + M)	2.74	0.061
	p(effort)psi(**CC** + *logging*)	3.69	0.038
	p(effort)psi(**CC** + Kerangas)	4.21	0.029
	p(effort)psi(**CC** + Disturbance)	4.38	0.027
	p(effort)psi(**CC** + M)	5.38	0.016
	p(effort)psi(**CC** + M + ruggedness)	5.57	0.015
	p(effort)psi(**CC** + ruggedness)	5.68	0.014
Hose's civet	p(effort)psi(**M** + **Kerangas** + TH)	0.00	0.172
	p(effort)psi(**M** + **Kerangas** + CC)	0.44	0.138
	p(effort)psi(**M** + **Kerangas** + d_road)	0.65	0.124
	p(effort)psi(**M** + **Kerangas**)	0.84	0.113
	p(effort)psi(**M** + **Kerangas** + Disturbance)	1.57	0.079
	p(effort)psi(**M** + **Kerangas** + TPI)	1.93	0.066
	p(effort)psi(**M** + **Kerangas** + UVD)	2.17	0.058
	p(effort)psi(**M** + **Kerangas** + d_access)	2.33	0.056
	p(effort)psi(**M** + **Kerangas** + CH)	2.83	0.042
	p(effort)psi(**M** + **Kerangas** + ruggedness)	2.84	0.042
	p(effort)psi(**M** + **Kerangas** + d_village)	2.84	0.042
	p(effort)psi(**M** + *Disturbance*)	3.30	0.033
	p(effort)psi(**Disturbance** + **Kerangas**)	4.19	0.021
	p(effort)psi(**M** + logging)	5.01	0.014
Masked palm civet	p(effort)psi(**TH** + **d_road** + **d_village**)	0.00	0.806
	p(effort)psi(**TH** + **d_road** + CH)	5.54	0.051

	p(effort)psi(*TH* + **d_road**)	6.20	0.036
	p(effort)psi(**TH** + **d_road** + UVD)	7.07	0.023
	p(effort)psi(**TH** + **d_road** + logging)	7.31	0.021
	p(effort)psi(**TH** + *d_road* + CC)	7.72	0.017
	p(effort)psi(*TH* + **d_road** + ruggedness)	8.17	0.014
	p(effort)psi(**TH** + *d_village*)	9.36	0.008
	p(effort)psi(**TH** + *d_village* + CC)	9.98	0.005
	p(effort)psi(**TH** + TPI)	10.59	0.004
	p(effort)psi(*d_road* + d_village)	11.54	0.003
	p(effort)psi(*TH* + Disturbance)	11.54	0.003
	p(effort)psi(**TH** + CH)	11.77	0.02
	p(effort)psi(*TH* + logging)	12.13	0.002
	p(effort)psi(**TH** + UVD)	12.51	0.002
	p(effort)psi(**TH** + d_access)	12.8	0.001
	p(effort)psi(**TH** + d_access + M)	13.55	0.001
	p(effort)psi(d_road + logging)	14.88	0.000
	p(effort)psi(*Disturbance* + ruggedness)	15.79	0.000
Leopard cat	p(effort)psi(**UVD** + **d_village**)	0.00	0.429
	p(effort)psi(**d_village** + *d_road*)	1.65	0.188
	p(effort)psi(*UVD* + *TH*)	1.97	0.160
	p(effort)psi(d_village + TH)	3.28	0.083
	p(effort)psi(d_road + **TH**)	4.62	0.043
	p(effort)psi(**TH** + d_access)	5.53	0.027
	p(effort)psi(**d_village** + Disturbance)	5.79	0.024
	p(effort)psi(**d_village** + TPI)	5.81	0.023
	p(effort)psi(**TH** + Disturbance)	5.84	0.023
	p(effort)psi(*UVD* + Disturbance)	7.27	0.011
	p(effort)psi(**UVD** + d_access)	8.00	0.008
	p(effort)psi(UVD + TPI)	9.90	0.003
Yellow-throated marten	p(effort)psi(**CH** + *d_village*)	0.00	0.215
	p(effort)psi(**CH** + Disturbance)	0.68	0.153
	p(effort)psi(**CH** + d_road)	1.51	0.101

	p(effort)psi(**CH** + TH)	1.78	0.088
	p(effort)psi(CH + d_access)	2.27	0.069
	p(effort)psi(**CH** + logging)	2.32	0.067
	p(effort)psi(**CH** + UVD)	2.50	0.062
	p(effort)psi(**CH** + TPI)	2.55	0.060
	p(effort)psi(**CH**)	2.93	0.050
	p(effort)psi(**CH** + Kerangas)	3.08	0.046
	p(effort)psi(**CH** + M)	3.21	0.043
	p(effort)psi(**CH** + CC)	4.38	0.024
	p(effort)psi(**CH** + ruggedness)	4.59	0.022

Bold indicates 95% CI does not include 0 for this variable in this model
Italics indicates 90% CI does not include 0 for this variable in this model

Appendix B: Parameter estimates for top models as listed in Table 4 for each species.

	Model	Occupancy parameters	Estimate	S.E.	P value
Banded civet	p(effort)psi(**UVD** + **d_access** + CH)	Intercept	0.441	0.347	0.203
		UVD	0.790	0.331	0.011
		d_access	0.808	0.300	0.007
		CH	0.498	0.359	0.166
	p(effort)psi(**UVD** + **d_access** + TH)	Intercept	0.384	0.317	0.226
		UVD	0.779	0.298	0.009
		d_access	1.135	0.395	0.004
		TH	-0.540	0.366	0.140
	p(effort)psi(**UVD** + **d_access** + TH + Disturbance)	Intercept	0.846	0.542	0.119
		UVD	0.730	0.308	0.018
		d_access	0.869	0.432	0.043
		TH	-0.674	0.416	0.105
		Disturbance	-0.928	0.728	0.202
	p(effort)psi(**UVD** + **d_access**)	Intercept	0.411	0.314	0.191
		UVD	0.886	0.306	0.004
		d_access	0.834	0.314	0.008
	p(effort)psi(**UVD** + **d_access** + TPI)	Intercept	0.398	0.314	0.205
		UVD	0.903	0.303	0.003
		d_access	0.872	0.321	0.007
		TPI	0.325	0.276	0.239
	p(effort)psi(**UVD** + d_access + Kerangas)	Intercept	0.016	0.439	0.972
		UVD	0.896	0.313	0.004
		d_access	0.571	0.370	0.123
		Kerangas	0.721	0.616	0.241
	p(effort)psi(**UVD** + d_access + Disturbance)	Intercept	0.718	0.474	0.130
		UVD	0.869	0.314	0.006
		d_access	0.605	0.379	0.111
		Disturbance	-0.628	0.640	0.327

	p(effort)psi(**UVD** + **Disturbance** + CH)	Intercept	1.302	0.632	0.040
		UVD	0.752	0.326	0.021
		Disturbance	-1.444	0.603	0.016
		CH	0.579	0.482	0.230
Malay civet	p(effort)psi(**d_road** + **CC** + *d_village*)	Intercept	-0.815	0.386	0.035
		d_road	-0.782	0.310	0.012
		CC	1.294	0.568	0.023
		d_village	-0.649	0.343	0.059
	p(effort)psi(**d_road** + **CC** + M)	Intercept	-0.756	0.382	0.048
		d_road	-0.715	0.322	0.027
		CC	1.333	0.568	0.019
		M	-0.502	0.361	0.164
	p(effort)psi(**d_road** + **CC**)	Intercept	-0.773	0.368	0.036
		d_road	-0.918	0.301	0.002
		CC	1.421	0.554	0.010
	p(effort)psi(**d_road** + **CC** + ruggedness)	Intercept	-0.792	0.374	0.034
		d_road	-0.857	0.305	0.005
		CC	1.465	0.564	0.009
		ruggedness	-0.359	0.294	0.222
	p(effort)psi(**d_road** + **CC** + Disturbance)	Intercept	-0.969	0.449	0.031
		d_road	-0.765	0.357	0.032
		CC	1.404	0.567	0.013
		Disturbance	0.539	0.713	0.450
Short-tailed mongoose	p(effort)psi(**CC** + **d_road** + ruggedness)	Intercept	-1.167	0.356	0.001
		CC	1.602	0.614	0.009
		d_road	-0.776	0.310	0.012
		ruggedness	0.459	0.292	0.116
	p(effort)psi(**CC** + **d_road**)	Intercept	-1.116	0.345	0.001
		CC	1.579	0.600	0.008
		d_road	-0.625	0.275	0.023
	p(effort)psi(**CC** + **d_road** + TPI)	Intercept	-1.153	0.343	0.001
		CC	1.471	0.592	0.013

		d_road	-0.616	0.273	0.024
		TPI	0.295	0.271	0.276
	P(effort)psi(**CC** + **d_road** + UVD)	Intercept	-1.150	0.350	0.001
		CC	1.597	0.596	0.007
		d_road	-0.641	0.275	0.020
		UVD	0.173	0.291	0.552
	P(effort)psi(**CC** + **d_road** + d_village)	Intercept	-1.118	0.346	0.001
		CC	1.642	0.634	0.010
		d_road	-0.668	0.304	0.028
		d_village	0.115	0.315	0.714
Hose's civet	p(effort)psi(**M** + **Kerangas** + TH)	Intercept	-2.623	0.650	0.000
		M	1.445	0.525	0.006
		Kerangas	1.856	0.770	0.016
		TH	-0.549	0.343	0.101
	p(effort)psi(**M** + **Kerangas** + CC)	Intercept	-2.566	0.648	0.000
		M	1.246	0.470	0.008
		Kerangas	1.496	0.753	0.047
		CC	0.797	0.551	0.148
	p(effort)psi(**M** + **Kerangas** + d_road)	Intercept	-2.467	0.652	0.000
		M	0.895	0.412	0.030
		Kerangas	1.523	0.762	0.046
		d_road	0.444	0.300	0.138
	p(effort)psi(**M** + **Kerangas**)	Intercept	-2.490	0.633	0.000
		M	1.050	0.416	0.012
		Kerangas	1.640	0.747	0.028
	p(effort)psi(**M** + **Kerangas** + Disturbance)	Intercept	-2.022	0.738	0.006
		M	0.805	0.427	0.050
		Kerangas	1.459	0.773	0.051
		Disturbance	-0.921	0.826	0.265
	p(effort)psi(**M** + **Kerangas** + TPI)	Intercept	-2.596	0.638	0.000
		M	0.899	0.367	0.014
		Kerangas	1.802	0.764	0.018

		TPI	-0.334	0.329	0.309
Masked palm civet	p(effort)psi(**TH** + **d_road** + **d_village**)	Intercept	0.561	0.697	0.421
		TH	4.631	1.620	0.004
		d_road	1.427	0.638	0.025
		d_village	-1.945	0.916	0.033
	p(effort)psi(**TH** + **d_road** + CH)	Intercept	0.810	0.868	0.351
		TH	3.063	1.366	0.025
		d_road	1.114	0.536	0.038
		CH	-0.867	0.618	0.161
	p(effort)psi(*TH* + **d_road**)	Intercept	0.545	0.839	0.516
		TH	2.489	1.314	0.058
		d_road	0.891	0.435	0.041
	p(effort)psi(**TH** + **d_road** + UVD)	Intercept	0.333	0.656	0.612
		TH	2.318	1.012	0.022
		d_road	0.939	0.423	0.026
		UVD	-0.503	0.473	0.288
	p(effort)psi(**TH** + **d_road** + logging)	Intercept	0.194	0.833	0.816
		TH	2.764	1.262	0.029
		d_road	1.131	0.523	0.031
		logging	0.937	1.022	0.359
Leopard cat	p(effort)psi(**UVD** + **d_village**)	Intercept	-1.843	0.521	0.000
		UVD	0.868	0.407	0.033
		d_village	1.091	0.383	0.004
	p(effort)psi(**d_village** + *d_road*)	Intercept	-1.927	0.565	0.000
		d_village	1.479	0.458	0.001
		d_road	-0.942	0.532	0.076
	p(effort)psi(*UVD* + *TH*)	Intercept	-1.54	0.572	0.007
		UVD	1.01	0.530	0.057
		TH	1.13	0.684	0.098
	p(effort)psi(d_village + TH)	Intercept	-1.253	0.554	0.024
		d_village	0.843	0.566	0.137
		TH	1.081	0.699	0.122

	p(effort)psi(d_road + **TH**)	Intercept	-1.202	0.598	0.044
		d_road	-0.492	0.472	0.297
		TH	1.831	0.761	0.016
Yellow-throated marten	p(effort)psi(**CH** + *d_village*)	Intercept	-2.525	0.675	0.000
		CH	-1.927	0.737	0.009
		d_village	0.779	0.430	0.070
	p(effort)psi(**CH** + Disturbance)	Intercept	-1.79	0.835	0.032
		CH	-2.14	0.794	0.007
		Disturbance	-1.77	1.090	0.105
	p(effort)psi(**CH** + d_road)	Intercept	-2.594	0.689	0.000
		CH	-1.949	0.667	0.003
		d_road	0.739	0.454	0.104
	p(effort)psi(**CH** + TH)	Intercept	-2.401	0.632	0.000
		CH	-1.565	0.616	0.011
		TH	0.621	0.457	0.174
	p(effort)psi(**CH** + d_access)	Intercept	-2.467	0.677	0.000
		CH	-1.965	0.740	0.008
		d_access	0.588	0.436	0.178

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Italics indicates 90% CI does not include 0 for this variable in this model