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Wildlife Research

Supplementary Material

Is there a lizard down that spider burrow? Microhabitat influences spider burrow occupancy by the endangered pygmy bluetongue

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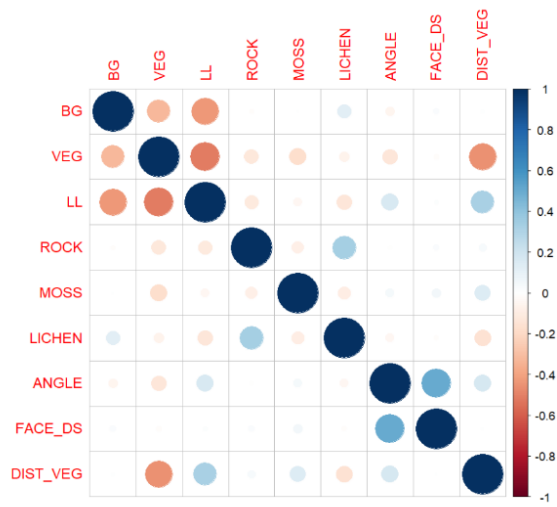


Fig S1. Pearson correlation matrix of microhabitat variables from pooled data (2022 + 2023). No microhabitat variable was found to have a high ($r > 0.80$) correlation value.

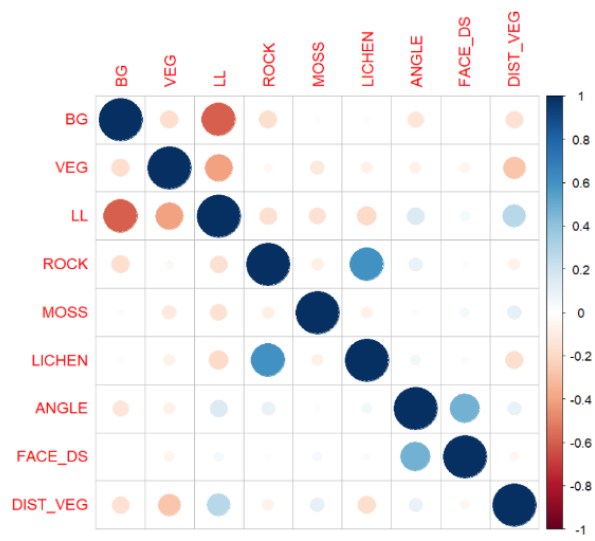


Fig S2. Pearson correlation matrix of microhabitat variables from 2022 data. No microhabitat variable was found to have a high ($r > 0.80$) correlation value.

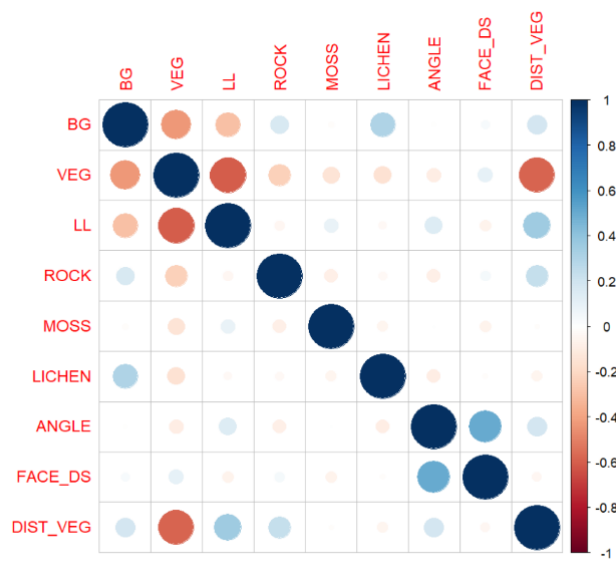


Fig S3. Pearson correlation matrix of microhabitat variables from 2023 data. No microhabitat variable was found to have a high ($r > 0.80$) correlation value.

Table S1. Microhabitat components used to model probability of pygmy bluetongue occupancy of a spider burrow from Kulpara 2022.

* $P = <0.05$; ** denotes 'best' model. bg, Bare ground; veg, Vegetation; ll, Leaf litter; rock, Rock; moss, Moss; lichen, Lichen, angle; Angle, face_ds, Face down slope; dist_veg, Distance to nearest vegetation

Model	Predictors	AIC
1	bg, veg, ll*, rock, moss, lichen, angle, face_ds, dist_veg*	-65.05
2	bg, veg, ll*, rock, moss, lichen, angle, dist_veg*	-66.95
3	bg, veg, ll*, rock, moss, lichen, dist_veg*	-67.86 **

Table S2. Metrics from the 'best' model (AIC = -67.86; Table S1) based on occupancy of a spider burrow by a pygmy bluetongue from Kulpara 2022 data.

s.e., standard error; t , t value; P , p value

Microhabitat variable	Estimate	s.e.	t	P
Intercept	2.339	0.696	3.361	<0.01
Bare ground	-0.137	0.091	-1.490	0.144
Vegetation	-0.184	0.105	-1.758	0.086
Leaf litter	-0.262	0.114	-2.298	0.027
Rock	-0.214	0.120	-1.780	0.083
Moss	-0.210	0.141	-1.489	0.144
Lichen	-0.193	0.119	-1.622	0.113
Distance to nearest vegetation	-0.002	0.0007	-2.275	0.028

Table S3. Microhabitat components used to model probability of pygmy bluetongue occupancy of a spider burrow from Kulpara 2023.

* $P = <0.05$; ** denotes 'best' model. bg, Bare ground; veg, Vegetation; ll, Leaf litter; rock, Rock; moss, Moss; lichen, Lichen, angle; Angle, face_ds, Face down slope; dist_veg, Distance to nearest vegetation

Model	Predictors	AIC
1	bg, veg, ll, rock, moss, lichen, angle*, face_ds, dist_veg	-65.73
2	bg, ll, rock, moss, lichen, angle*, face_ds, dist_veg	-67.65
3	bg, ll, rock, lichen, angle*, face_ds, dist_veg	-69.59
4	bg, ll, rock, angle*, face_ds, dist_veg	-71.19
5	bg, ll, angle*, face_ds, dist_veg	-72.15
6	bg, angle*, face_ds, dist_veg	-73.41
7	bg, angle*, face_ds	-74.5 **

Table S4. Metrics from the 'best' model (AIC = -74.5; Table S3) based on occupancy of a spider burrow by a pygmy bluetongue from Kulpara 2023 data.

s.e., standard error; t , t value; P , p value

Microhabitat variable	Estimate	s.e.	t	P
Intercept	0.319	0.176	1.812	0.078
Bare ground	-0.095	0.055	-1.724	0.093
Angle	0.556	0.151	3.673	<0.001
Face down slope	0.201	0.143	1.403	0.169

Table S5. Microhabitat components used to model probability of pygmy bluetongue occupancy of a spider burrow using pooled data from pooled Kulpara (2022 + 2023).
 * $P = <0.05$; ** denotes ‘best’ model. bg, Bare ground; veg, Vegetation; ll, Leaf litter; rock, Rock; moss, Moss; lichen, Lichen, angle; Angle, face_ds, Face down slope; dist_veg, Distance to nearest vegetation

Model	Predictors	AIC
1	bg, veg, ll, rock, moss, lichen*, angle*, face_ds, dist_veg	-128.62
2	bg, ll, rock, moss, lichen, angle*, face_ds, dist_veg	-130.01
3	bg, ll, rock, moss, lichen, angle*, dist_veg	-131.55
4	bg, rock, moss, lichen, angle*, dist_veg	-133.15
5	rock, moss, lichen, angle*, dist_veg	-134.69
6	moss, lichen*, angle*, dist_veg	-136.17 **

Table S6. Metrics from the ‘best’ model (AIC = -136.17; Table S5) based on occupancy of a spider burrow by a pygmy bluetongue from pooled Kulpara (2022 + 2023) data.
 s.e., standard error; t , t value; P , p value

Microhabitat variable	Estimate	s.e.	t	P
Intercept	0.243	0.129	1.879	0.064
Moss	-0.157	0.108	-1.456	0.149
Lichen	-0.191	0.076	-2.508	0.014
Angle	0.552	0.134	4.123	<0.001
Distance to nearest vegetation	-0.0009	0.0005	-1.695	0.094

Table S7. Microhabitat components used to model probability of pygmy bluetongue occupancy of a spider burrow Peterborough 2022.

* $P = <0.05$; ** denotes 'best' model. bg, Bare ground; veg, Vegetation; ll, Leaf litter; rock, Rock; moss, Moss; lichen, Lichen, angle; Angle, face_ds, Face down slope; dist_veg, Distance to nearest vegetation

Model	Predictors	AIC
1	bg, veg, ll, rock, moss, lichen, angle*, face_ds	-29.99
2	bg, veg, ll, moss, lichen, angle*, face_ds, dist_veg	-29.99
3	bg, veg, ll, moss, lichen, angle*, face_ds	-31.87
4	bg, veg, ll, lichen, angle*, face_ds	-33.71
5	bg, veg, ll, lichen, angle*	-34.62
6	bg, veg, lichen, angle*	-35.67
7	bg, lichen, angle*	-36.39
8	lichen, angle*	-36.84 **

Table S8. Metrics from the 'best' model (AIC = -36.84; Table S7) based on occupancy of a spider burrow by a pygmy bluetongue from Peterborough 2022 data.

s.e., standard error; t , t value; P , p value

Microhabitat variable	Estimate	s.e.	t	P
Intercept	0.245	0.129	1.904	0.078
Lichen	-0.359	0.180	-1.996	0.066
Angle	0.726	0.155	4.692	<0.001

Table S9. Microhabitat components used to model probability of pygmy bluetongue occupancy of a spider burrow from Peterborough 2023.

* $P = <0.05$; ** denotes 'best' model. bg, Bare ground; veg, Vegetation; ll, Leaf litter; rock, Rock; moss, Moss; lichen, Lichen, angle; Angle, face_ds, Face down slope; dist_veg, Distance to nearest vegetation

Model	Predictors	AIC
1	bg, veg, ll, rock, moss, lichen, angle, face_ds, dist_veg	-83.96
2	veg, ll, rock, moss, lichen, angle, face_ds, dist_veg	-85.96
3	veg, ll, rock, lichen, angle, face_ds, dist_veg	-87.94
4	veg, ll, rock, angle, face_ds, dist_veg	-89.65
5	veg, rock*, angle*, face_ds, dist_veg	-91.07
6	veg, rock*, angle*, dist_veg	-92.35
7	rock*, angle*, dist_veg	-92.67
8	rock*, angle*	-93.31

Table S10. Metrics from the 'best' model (AIC = -93.31; Table S9) based on occupancy of a spider burrow by a pygmy bluetongue from Peterborough 2023 data.

s.e., standard error; t , t value; P , p value

Microhabitat variable	Estimate	s.e.	t	P
Intercept	0.468	0.102	4.567	<0.001
Rock	-0.316	0.147	-2.159	0.035
Angle	0.343	0.123	2.794	0.007

Table S11. Microhabitat components used to model probability of pygmy bluetongue occupancy of a spider burrow using pooled data from pooled Peterborough (2022 + 2023). * $P = <0.05$; ** denotes 'best' model. bg, Bare ground; veg, Vegetation; ll, Leaf litter; rock, Rock; moss, Moss; lichen, Lichen, angle; Angle, face_ds, Face down slope; dist_veg, Distance to nearest vegetation

Model	Predictors	AIC
1	bg, veg, ll, rock, moss, lichen, angle*, face_ds, dist_veg	-119.64
2	bg, veg, rock, moss, lichen, angle*, face_ds, dist_veg	-121.64
3	bg, veg, rock, lichen, angle*, face_ds, dist_veg	-123.63
4	bg, veg, rock, angle*, face_ds, dist_veg	-125.16
5	bg*, rock, angle*, face_ds, dist_veg	-126.16
6	bg, rock, angle*, dist_veg	-126.72
7	bg, rock, angle*	-127.14

Table S12. Metrics from the 'best' model (AIC = -127.14; Table S11) based on occupancy of a spider burrow by a pygmy bluetongue from pooled Peterborough (2022 + 2023) data. s.e., standard error; t , t value; P , p value

Microhabitat variable	Estimate	s.e.	t	P
Intercept	0.520	0.120	4.311	<0.001
Bare ground	-0.056	0.035	-1.609	0.112
Rock	-0.213	0.136	-1.569	0.121
Angle	0.434	0.102	4.240	<0.001

Table S13. Microhabitat components used to model probability of pygmy bluetongue occupancy of a spider burrow using pooled data at Burra, Kulpara and Peterborough in 2022. * $P = <0.05$; ** denotes 'best' model. bg, Bare ground; veg, Vegetation; ll, Leaf litter; rock, Rock; moss, Moss; lichen, Lichen, angle; Angle, face_ds, Face down slope; dist_veg, Distance to nearest vegetation

Model	Predictors	AIC
1	bg, veg, ll, rock, moss, lichen*, angle, face_ds, dist_veg*	-187.15
2	bg, ll, rock, moss, lichen*, angle, face_ds, dist_veg*	-189.06
3	bg, ll, moss, lichen*, angle, face_ds, dist_veg*	-190.68
4	bg, ll, moss, lichen*, angle, dist_veg*	-192.19
5	ll, moss, lichen*, angle, dist_veg*	-193.63
6	ll, lichen*, angle, dist_veg*	-195.19
7	lichen*, angle, dist_veg*	-196.84

Table S14. Metrics from the 'best' model (AIC = -196.84; Table S13) based on occupancy of a spider burrow by a pygmy bluetongue from pooled 2022 data. s.e., standard error; t , t value; P , p value

Microhabitat variable	Estimate	s.e.	t	P
Intercept	0.607	0.090	6.773	<0.001
Lichen	-0.246	0.076	-3.237	0.001
Angle	0.171	0.096	1.793	0.075
Distance to nearest vegetation	-0.001	0.0005	-2.733	0.007

Table S15. Microhabitat components used to model probability of pygmy bluetongue occupancy of a spider burrow using pooled data at Kulpara, Jamestown and Peterborough in 2023.

* $P = <0.05$; ** denotes ‘best’ model. bg, Bare ground; veg, Vegetation; ll, Leaf litter; rock, Rock; moss, Moss; lichen, Lichen, angle; Angle, face_ds, Face down slope; dist_veg, Distance to nearest vegetation

Model	Predictors	AIC
1	bg, veg, ll, rock, moss, lichen, angle*, face_ds, dist_veg	-242.74
2	bg*, veg, ll, rock, lichen, angle*, face_ds, dist_veg	-244.74
3	bg*, veg, rock*, lichen, angle*, face_ds, dist_veg	-246.71
4	bg*, veg, rock*, angle*, face_ds, dist_veg	-248.64
5	bg*, rock*, angle*, face_ds, dist_veg	-249.46
6	bg*, rock*, angle*, face_ds	-250.91
7	bg*, rock*, angle*	-251.13

Table S16. Metrics from the ‘best’ model (AIC = -251.13; Table S14) based on occupancy of a spider burrow by a pygmy bluetongue from pooled 2023 data.

s.e., standard error; t , t value; P , p value

Microhabitat variable	Estimate	s.e.	t	P
Intercept	0.733	0.069	10.637	<0.001
Bare ground	-0.113	0.026	-4.341	<0.001
Rock	-0.109	0.055	-1.988	0.049
Angle	0.275	0.070	3.925	<0.001