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Supplementary Material

Distribution, composition and environmental correlates of high-altitude gravelly pavement herbfields in north-eastern Victoria, Australia

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Table S1. Abiotic features of gravelly pavement herbfields from across the Bogong High Plains, Victoria.

Site	Size (m ²)	Slope (°)	Aspect	Altitude	Elevation (m ASL)	Catchment	Long term Data
NSG Lwr	40	14	SW	Subalpine	1633	Middle Ck	X
Cope Creek Lwr	1014	3	S	Subalpine	1689	Cope Ck	X
Harm's Plot	400	2	E	Subalpine	1693	Cope Ck	X
Sister Species	1015	8	SE	Subalpine	1687	Middle Ck	X
New Species	1285	6	SE	Subalpine	1689	Middle Ck	X
Middle Creek	70	15	N	Subalpine	1699	Middle Ck	
Shannons	315	9	W	Subalpine	1704	Middle Ck	
Ruined Castle	525	21	N	Subalpine	1701	Ruined Castle	
Cope Hut	1295	13	N	Subalpine	1697	Middle Ck	X
WRC C	148	4	E	Alpine	1764	White Rocks Ck	X
WRC B	509	3	N	Alpine	1783	White Rocks Ck	X
WRC BP	262	3	NW	Alpine	1773	White Rocks Ck	
Spion Kopje	574	12	SE	Alpine	1782	White Rocks Ck	
WRC A	279	3	SE	Alpine	1783	White Rocks Ck	X
WRC Z1	702	6	S	Alpine	1790	White Rocks Ck	
Nelse A	1148	11	E	Alpine	1843	Nelse	X
WRC SP	853	7	E	Alpine	1836	White Rocks Ck	
Nelse B	471	18	NE	Alpine	1847	Nelse	X
Nelse D	610	20	NE	Alpine	1818	Nelse	

Table S2. Key species identified in NMDS ordination analysis of floristic variation between all gravelly pavement herbfield sites across the Bogong High Plains, Victoria using percent cover data. Species show significant correlation in the separation of sites floristically.

Species	R² value	p value
<i>Agrostis sp. 2</i>	0.463	0.006
<i>Algae 1</i>	0.487	0.005
<i>Blindia robusta</i>	0.571	0.001
<i>Isolepis crassiuscula</i>	0.470	0.006
<i>Oreomyrrhis pulvinifica</i>	0.485	0.001
<i>Psychrophilia introloba</i>	0.627	0.001
<i>Rytidosperma sp.</i>	0.604	0.001
<i>Rytidosperma nivicola</i>	0.586	0.001

Table S3. Key species identified in NMDS ordination analysis of floristic variation between all gravelly pavement herbfield sites across the Bogong High Plains using presence/absence data. Species show significant correlation in the separation of sites floristically.

Species	R² Value	p value
<i>Campylopus bicolor</i>	0.697	0.001
<i>Celmisia sericophylla</i>	0.437	0.007
<i>Diplaspis nivis</i>	0.455	0.006
<i>Diplophyllum verrucosum</i>	0.593	0.001
<i>Epacris glacialis</i>	0.560	0.001
<i>Empodisma minus</i>	0.498	0.001
<i>Isolepis crassiuscula</i>	0.679	0.001
<i>Oreomyrrhis pulvinifica</i>	0.661	0.003
<i>Plantago glacialis</i>	0.661	0.003
<i>Rytidosperma</i> sp.	0.682	0.001
<i>Rytidosperma nivicola</i>	0.634	0.001
<i>Sphagnum cristatum</i>	0.712	0.001

Table S4. Summary table of within-site NMDS ordination results of floristic variation at each gravelly pavement herbfield site. Sig. of groupings is the results of ANOSIM analysis of variation between zones, bold values are significant ($p < 0.05$). R^2 values represent the maximum correlation between ordination and environmental vectors. Darker shading denotes a stronger correlation of the environmental variable.

Site	NMDS Stress	Sig. of grouping (P value)	Rock r ²	Water r ²	Aspect r ²	Slope r ²
Nelse D	0.12	0.112	0.097	0.317	0.201	0.201
Nelse B	0.13	0.001	0.468	0.386	0.323	0.126
WRC SP	0.16	0.001	0.207	0.196	0.238	
Nelse A	0.18	0.001	0.158	0.493		0.121
WRC Z1	0.12	0.001	0.630	0.332	0.433	0.286
WRC A	0.15	0.052	0.315	0.211	0.065	0.051
Spion Kopje	0.20	0.06	0.060	0.089	0.128	0.372
WRC BP	0.12	0.028	0.023	0.052	0.059	0.009
WRC B	0.18	0.001	0.442	0.397	0.155	0.103
Cope Hut	0.19	0.001	0.324	0.560	0.288	0.455
Ruined Castle	0.15	0.001	0.571	0.266	0.204	0.380
Shannons Herbland	0.18	0.137	0.261	0.039	0.178	0.178
New Species	0.21	0.001	0.272	0.092	0.125	0.316
Sister Species	0.20	0.001	0.485	0.022	0.293	0.081
Harm's Plot	0.16	0.005	0.417	0.214	0.000	0.083
Cope Creek	0.17	0.001	0.139	0.239	0.210	0.153

Table S5. Summary table of indicator species for each within-site ordination of gravelly pavement herbfields on the Bogong High Plains, Victoria. Species that were significant at only one site are not shown. Cell values represent the R^2 value from fitting vectors of maximum correlation. Darker shading denotes a stronger correlation.

Site	<i>Algae 1</i>	<i>Agrostis sp. 1</i>	<i>C. gaudichaudiana</i>	<i>C. nivicola</i>	<i>C. sericophylla</i>	<i>D. arcturi</i>	<i>D. verrucosum</i>	<i>Laucklandia</i>	<i>I. crassiuscula</i>	<i>M. pedunculatum</i>	<i>O. pulvinifera</i>	<i>O. pumilo</i>	<i>P. intraloba</i>	<i>P. uniceps</i>	<i>Riccardia sp</i>	<i>R. nivicola</i>	<i>S. cristatum</i>	<i>U. monanthos</i>
Nelse D											0.568	0.409	0.588		0.370	0.391		
Nelse B		0.476	0.411		0.397			0.250			0.501	0.495	0.664				0.269	
WRC SP					0.320	0.425			0.440			0.356						
Nelse A		0.252		0.329	0.399		0.421	0.356			0.358		0.413					0.418
WRC Z1	0.666			0.340								0.458	0.454					0.313
WRC A			0.446						0.494	0.418		0.406						
Spion Kopje					0.384													
WRC BP	0.582																	
WRC B	0.334		0.428			0.605				0.265		0.581	0.716					0.312
Cope Hut				0.328		0.358						0.761		0.247	0.295			0.319
Ruined Castle			0.393	0.506	0.429	0.614						0.629						
Shannons Herbland							0.784		0.520				0.661					
New Species						0.429	0.252			0.365		0.373	0.345	0.294				
Sister Species	0.430				0.359				0.328			0.590			0.276			0.309
Harm's Plot			0.591			0.363			0.393	0.485								0.486
Cope Creek	0.352					0.539			0.350			0.629	0.473					0.459