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SUPPLEMENTARY MATERIAL

Habitat associations of zoophagic bat ensembles in north-western Australia

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Table S1. Site codes, locations and descriptions, environmental attributes used in analysis (see Table 2) and survey methods (S, SM2BAT; A, Anabat2; N, mistnets; C, spotlight shooting or searching caves). Site numbers (Site #) are mapped in Figure 1, and correspond to the site codes in Figure 3 where they are prefixed 'M' if they are in mangrove forest and 'T' and 'C' if they are either transitional sites in landward environments within 0.6 km of mangroves, or on the coast between mangrove patches. Latitude and longitude values are WMG.

site #	Latitude (°S)	Long. (°E)	MANGd	MANGdP	CAVEcD	RUGGED	FWd	RIPd	RIPdP	Pseas	PwetQ	PwmQ
62	15.1056	128.1564	1.1	1	0.1	3	3.0	0.1	2	119	660	286
60	15.0831	128.1411	1.4	0	0.3	3	0.7	0.7	3	119	665	287
106	18.0383	127.8036	265.7	0	0.5	3	0.0	0.0	4	121	458	252
2	14.0857	126.4400	1.3	0	0.7	2	0.2	0.2	2	115	895	450
108	16.7119	128.4017	133.4	0	0.7	2	0.7	1.2	1	119	511	226
109	16.7428	128.3992	136.8	0	3.5	2	0.0	0.5	1	119	508	224
21	15.3461	124.5307	4.0	0	0.1	4	0.0	0.0	5	126	971	420
23	15.3886	124.5927	2.7	0	0.1	4	0.0	0.0	5	126	970	421
125	17.2642	124.7271	86.6	0	0.0	4	0.0	0.0	5	133	625	235
103	17.0602	125.2547	79.4	0	0.3	3	0.0	0.0	5	127	646	267
102	17.0058	125.2174	72.1	0	0.8	4	0.0	0.0	5	126	658	271
52	14.4919	127.8217	2.0	0	0.3	4	0.2	0.0	2	116	791	345
50	14.4856	127.8194	1.3	0	0.1	4	0.0	0.0	4	116	789	341
51	14.4864	127.8200	1.4	0	0.1	4	0.1	0.1	4	116	789	341
17	15.0726	125.1853	0.9	0	0.3	4	0.0	0.0	5	121	941	387
155	17.8608	122.4269	15.4	0	29.4	1	5.6	19.1	1	139	565	385
78	15.6092	128.6525	35.6	0	0.9	3	0.0	0.0	4	119	595	272
121	18.8847	128.9388	372.5	0	0.4	2	35.5	43.5	1	120	359	230
122	18.9732	128.9215	375.3	0	1.5	2	37.8	47.8	1	120	353	225
81	15.6653	128.6656	39.3	0	0.5	3	3.3	3.3	2	118	586	269
47	14.4561	127.8606	0.5	2	0.1	4	4.6	4.8	2	116	799	349
14	14.9643	124.9239	1.1	1	0.0	4	0.0	2.3	3	123	966	377
20	15.2906	124.4004	1.3	2	0.1	4	15.3	15.2	2	126	967	414
151	17.5578	122.1492	11.0	2	87.0	1	0.0	0.1	2	137	591	391
77	15.5272	128.8350	46.5	0	0.0	4	0.0	14.3	2	118	635	292
95	16.6258	128.2589	115.8	0	0.0	4	6.8	7.0	1	113	551	253
90	15.8492	128.0915	27.3	0	0.0	4	0.0	0.0	5	117	573	254
147	17.3131	122.1728	7.3	0	90.8	1	0.0	0.0	4	135	613	404
148	17.3775	122.1773	14.4	0	91.3	1	0.0	0.0	3	135	610	402
160	18.4516	123.6863	95.4	0	35.9	1	0.0	8.1	2	133	441	244
167	18.5819	123.4397	110.3	0	6.1	2	1.5	22.0	1	132	438	239
162	18.4817	123.5461	98.2	0	21.6	1	10.0	15.4	1	133	443	244
169	18.6539	123.4361	118.1	0	3.5	2	0.0	5.4	3	131	432	235
88	15.8306	128.3114	32.6	0	1.0	3	0.7	0.7	2	119	552	243
96	15.7650	127.7158	21.5	0	0.8	3	0.0	0.0	5	119	590	250

93	16.3369	128.2825	88.5	0	0.0	4	0.0	0.0	5	120	541	221
57	14.7485	126.9531	62.1	0	0.0	4	0.0	0.0	5	113	779	361
55	14.6739	126.9967	61.0	0	0.1	4	0.0	0.0	5	114	785	360
61	15.0872	126.9199	93.0	0	0.0	4	0.0	0.0	5	113	742	346
97	15.9467	126.8328	112.3	0	32.6	1	0.0	0.0	5	116	641	277
98	15.9922	126.7750	119.9	0	23.4	1	3.2	3.2	2	115	637	276
92	15.9664	128.0033	32.8	0	0.7	3	0.0	0.0	5	116	578	253
53	14.6494	126.9419	56.7	0	0.1	4	0.0	0.0	5	114	790	362
54	14.6494	126.9444	56.8	0	0.1	4	0.2	0.2	5	114	790	362
161	18.4622	121.9200	11.2	1	124.0	1	13.4	13.1	1	137	479	454
168	18.6033	121.9650	19.2	0	118.0	1	4.1	6.9	1	135	471	447
164	18.4929	121.8478	3.2	0	132.0	1	10.9	10.8	1	136	475	467
135	18.1058	125.7011	203.5	0	0.1	4	0.0	0.0	5	133	482	185
32	16.0939	126.5128	146.1	0	6.7	3	0.0	0.0	5	117	625	265
105	17.4008	125.5803	128.8	0	0.2	3	0.0	0.0	5	126	572	240
175	17.9221	127.8354	299.1	0	26.2	1	2.0	1.5	1	122	464	257
115	18.2458	127.7042	288.6	0	1.9	2	0.0	11.3	1	120	443	240
100	16.5131	126.3550	150.9	0	3.9	2	0.0	0.0	5	118	574	240
101	16.8223	124.9163	42.0	0	0.6	3	0.0	0.0	4	129	698	272
149	17.5083	123.0000	47.1	0	3.0	2	0.0	0.0	4	136	605	348
150	17.5122	122.1611	15.8	1	88.0	1	5.3	5.4	1	137	596	394
4	14.2997	126.6444	6.6	0	1.0	3	0.0	0.0	5	115	849	435
3	14.2797	126.6253	4.1	0	0.0	4	0.1	0.1	3	115	855	438
99	16.3086	127.2167	100.2	0	7.1	2	0.0	0.0	4	120	604	243
85	15.7811	128.7399	51.5	0	0.3	4	0.0	0.0	5	119	569	261
87	15.8233	128.8569	65.7	0	1.4	2	6.6	6.6	1	118	581	269
89	15.8444	128.9050	71.2	0	1.0	3	4.6	1.5	1	118	585	273
86	15.8011	128.6733	48.0	0	1.0	3	0.0	0.0	5	119	562	256
91	15.8889	128.7686	61.9	0	1.7	2	0.0	0.0	5	119	562	255
84	15.7633	128.6439	43.3	0	0.0	3	4.7	4.7	1	118	569	261
159	18.4096	123.0897	82.7	0	0.1	3	0.0	0.0	3	132	440	246
1	14.0753	126.3456	0.0	4	0.0	3	0.4	0.4	1	115	902	450
152	17.6640	122.1964	0.0	4	1.2	1	1.9	10.5	1	138	579	385
170	18.7117	121.6272	0.0	4	158.0	1	15.2	16.7	1	135	455	445
156	17.9542	122.2486	0.0	4	7.5	1	0.5	4.8	1	141	542	362
157	17.9618	122.2754	0.0	4	7.9	1	0.7	4.9	1	141	544	365
49	14.4628	127.8606	0.0	4	0.6	3	4.0	4.0	2	116	796	345
68	15.1996	128.2725	0.0	4	1.0	3	4.0	3.9	1	119	638	280
16	15.0309	124.9499	0.3	3	0.0	4	0.1	0.1	3	122	964	379
146	17.2661	122.1768	0.0	4	32.0	1	2.5	4.7	1	135	615	405
158	17.9889	122.3669	0.0	4	19.7	1	7.0	14.7	1	140	542	366
136	16.4533	123.0094	0.0	3	0.4	3	3.4	7.4	2	127	605	358
144	16.6853	123.0328	0.0	4	1.0	2	0.7	12.2	1	129	613	359
126	17.2911	123.6096	0.0	4	3.7	1	2.4	40.8	1	138	614	293
63	14.8003	128.4682	0.0	4	4.7	2	5.5	15.3	1	118	744	321
66	15.0657	128.5571	0.0	4	4.8	2	0.1	0.3	1	119	694	303
165	18.5126	121.8064	0.0	4	135.0	1	12.2	12.1	1	136	471	462
163	18.4917	121.8183	0.0	4	134.0	1	12.8	12.7	1	136	473	464

35	16.1594	123.5167	0.0	3	0.2	4	8.0	18.5	1	130	740	425
15	15.0067	125.4019	0.0	4	0.5	4	1.4	1.4	1	121	919	394
31	16.0844	123.5426	0.1	3	0.1	4	0.0	16.0	1	129	761	439
43	16.4252	123.1047	0.0	4	0.1	3	5.7	10.9	1	128	627	368
33	16.1145	124.0959	0.0	4	0.2	3	21.4	19.6	1	127	706	366
34	16.1458	123.7797	0.1	4	0.1	4	0.5	9.4	1	130	784	386
46	16.6241	123.4712	0.0	4	0.1	4	0.0	16.5	2	132	679	334
58	14.7485	128.3030	0.0	3	0.1	3	0.6	0.6	1	118	737	319
39	16.2593	123.9078	0.0	4	0.1	4	9.2	15.3	1	131	780	387
40	16.2634	123.9002	0.0	4	0.1	4	8.7	15.3	1	130	784	391
79	15.6100	128.1054	0.0	4	0.0	4	0.7	0.7	3	119	557	249
5	14.3098	126.0275	0.0	4	0.2	3	0.1	0.1	2	114	922	456
7	14.5739	125.8360	0.0	4	0.2	4	0.1	0.3	1	116	920	369
37	16.2411	123.8403	0.0	4	0.0	4	9.5	10.0	1	131	774	382
80	15.6447	127.8781	0.0	4	8.0	2	1.9	12.0	1	121	571	243
138	16.5619	122.8081	0.1	4	1.2	1	4.8	5.2	3	128	598	353
137	16.5282	122.8718	0.0	4	6.5	1	3.6	12.2	1	127	593	352
140	16.5706	122.8011	0.0	4	1.0	2	3.5	3.9	1	128	599	353
24	15.4951	125.0600	0.0	4	0.1	4	0.2	0.2	1	124	908	355
42	16.3954	123.1534	0.0	4	0.2	4	10.8	41.3	1	129	639	374
44	16.4300	123.1768	0.0	4	0.2	3	13.0	37.5	1	129	643	376
36	16.2223	123.7988	0.0	4	0.1	4	5.1	5.4	1	131	773.6	381
124	17.1083	123.6753	0.0	4	22.1	1	5.5	39.4	1	137	643	312
123	17.0879	123.6588	0.0	4	25.2	1	4.0	43.1	1	136	645	313
28	15.9105	124.4612	0.0	4	0.1	4	5.6	5.6	1	129	870	372
19	15.2603	124.8001	0.0	4	0.1	4	1.6	1.6	1	124	958	358
41	16.3737	124.2317	0.0	4	0.1	3	4.8	7.7	1	131	779	329
76	15.4700	128.1446	0.0	4	0.5	2	1.0	13.0	1	118	575	263
104	17.1828	125.2550	91.6	0	0.2	4	0.0	0.0	5	128	623	252
118	18.6128	126.0853	271.9	0	0.0	4	0.0	0.0	5	130	432	161
172	17.2234	126.2741	168.9	0	8.0	2	0.1	0.0	5	126	524	230
12	14.8665	125.8303	17.6	0	8.3	2	0.0	0.0	5	114	919	382
13	14.8946	126.2018	34.7	0	0.3	3	0.0	0.0	5	112	847	390
9	14.6738	125.7338	7.8	0	0.0	4	0.0	0.0	5	116	931	369
6	14.4928	125.7906	1.2	0	0.0	4	0.0	0.0	5	116	929	369
10	14.8172	125.8425	12.3	0	0.8	3	0.0	0.0	5	113	928	388
11	14.8195	125.7206	15.6	0	0.0	4	0.0	0.0	5	116	930	372
18	15.1321	126.1429	49.0	0	2.7	2	0.0	0.0	5	112	828	373
174	16.9407	124.4494	41.0	0	0.6	3	1.7	0.0	1	132	684	246
119	18.7375	126.0933	285.4	0	0.1	4	4.5	5.9	2	128	425	160
65	14.9785	128.6004	5.5	0	0.1	4	0.0	0.6	2	118	726	319
67	15.0751	128.6210	5.9	0	0.4	4	0.0	0.0	3	118	703	310
64	14.9386	128.5830	4.2	0	0.0	4	0.2	0.2	2	118	728	317
70	15.2669	128.6738	21.9	0	0.0	4	0.0	0.0	3	118	669	301
71	15.2928	128.6647	25.1	0	0.5	3	0.0	0.0	3	118	659	296
134	17.9319	124.7861	141.6	0	5.4	2	0.0	39.6	2	131	497	196
133	17.9183	125.2833	170.3	0	0.1	4	0.6	1.8	2	131	514	203
132	17.9159	125.3002	170.1	0	0.1	4	0.0	0.5	3	131	514	202

130	17.6419	124.9550	132.6	0	0.0	4	4.2	5.4	1	131	554	215
82	15.6825	128.2747	18.4	0	2.1	2	0.3	0.2	4	120	555	247
83	15.7506	128.3061	27.3	0	1.5	3	0.0	0.0	4	119	554	246
145	16.7300	122.8756	5.2	0	14.4	1	0.2	0.0	3	129	609	356
142	16.5914	122.8311	1.7	0	4.2	2	2.5	4.8	1	128	599	354
120	18.7620	126.0456	292.1	0	0.5	3	0.0	0.0	5	130	420	155
72	15.4083	128.8875	28.7	0	1.0	3	0.0	0.0	5	119	662	298
22	15.3485	124.9679	0.9	1	0.0	4	0.0	0.0	5	124	934	359
114	17.7393	128.1466	248.1	0	0.2	3	12.6	2.9	1	121	454	255
111	17.4039	128.7714	215.3	0	4.0	1	3.3	3.4	1	122	440	255
112	17.4804	128.3735	218.1	0	0.0	3	0.0	23.1	2	119	467	270
110	17.2426	128.3040	192.0	0	0.1	2	0.0	0.0	4	115	512	271
113	17.5575	128.2550	225.8	0	0.1	2	0.0	0.0	5	121	461	261
45	16.4586	124.8458	1.9	0	0.1	4	0.0	0.0	5	130	752	280
94	16.3856	128.2350	90.4	0	2.4	2	1.1	1.1	1	120	541	223
173	16.7670	123.9694	18.1	0	0.8	4	0.6	0.6	4	133	715	298
117	18.4253	127.8194	307.8	0	0.1	4	0.0	0.0	5	121	421	221
73	15.4417	128.9636	29.9	0	0.8	3	0.0	6.9	2	119	661	296
75	15.4502	128.9572	31.2	0	0.8	3	1.2	7.0	1	118	664	301
107	16.4547	127.9503	90.2	0	0.8	4	0.0	0.0	4	119	549	228
171	17.6186	126.1530	185.1	0	0.5	3	0.0	0.0	5	130	500	202
131	17.7986	125.1192	154.1	0	0.1	4	0.4	0.1	4	131	531	209
29	15.9492	124.5606	0.5	1	0.1	4	0.4	0.4	2	127	871	310
30	15.9496	124.5552	0.9	0	0.2	4	0.0	0.0	5	127	872	382
153	17.6800	122.2111	1.2	1	1.9	1	0.0	9.1	1	138	579	386
8	14.5886	125.1856	0.2	2	0.2	4	0.0	0.0	4	120	973	410
48	14.4603	127.8594	0.3	3	0.4	4	4.3	4.3	2	116	796	346
27	15.8115	124.4108	0.6	1	0.2	4	0.0	0.0	5	128	892	379
166	18.5181	121.8139	0.6	3	135.0	1	11.2	11.2	1	136	472	463
56	14.7442	128.3003	0.4	2	0.5	3	0.2	0.2	3	118	740	320
38	16.2525	123.8236	0.3	2	0.2	4	8.0	8.4	1	131	771	380
141	16.5769	122.7822	0.4	3	0.3	2	2.4	3.0	1	128	600	353
143	16.6042	122.7869	0.5	3	2.3	2	0.6	0.1	4	128	602	354
139	16.5700	122.8494	0.6	2	4.9	1	0.0	7.8	3	128	597	353
116	18.3881	127.5472	305.8	0	4.0	2	2.1	7.7	1	119	438	237
128	17.6082	125.1458	130.3	0	0.0	4	0.0	0.0	4	132	555	214
129	17.6151	125.1242	128.8	0	1.6	3	2.0	0.1	3	133	553	212
74	15.4439	128.8938	43.2	0	0.9	3	3.0	3.0	3	119	652	292
154	17.7825	122.2839	4.9	0	8.4	1	0.0	1.2	2	139	570	383
127	17.4046	124.9639	117.4	0	0.0	4	0.0	0.0	5	133	595	227

site #	Tann	mnTclP	isoT	Effort	VEGc	S	A	N	C	>1 night	>1 sub-site	>1 season	Site description
62	28.9	16.4	0.56	10	4		Y			Y	Y	Y	Adolphus I. Dry creek & VT in tall euc woodl
60	28.9	16.4	0.56	10	3		Y			Y	Y	Y	Adolphus I. Paperbarks along salty creek pool
106	26.4	10.8	0.52	10	3	Y				Y			Amanda River
2	27.8	16.9	0.57	10	3	Y				Y		Y	Anjo Peninsula Truscott savanna woodland

108	27.9	14.0	0.53	10	3	Y				Y			Argyle Mine hill
109	28.0	13.9	0.53	10	3	Y				Y	Y		Argyle Mine water
21	27.6	16.3	0.58	10	4		Y			Y		Y	Augustus I. north. Riparian pool
23	27.5	15.6	0.58	10	4		Y			Y	Y	Y	Augustus I. south. Riparian pools
125	27.9	13.0	0.55	7	4		Y	Y	Y	Y	Y		Barker Gorge
103	26.5	10.7	0.54	10	4	Y		Y		Y	Y		Bell Creek east
102	26.5	10.9	0.54	7	4		Y	Y			Y		Bell Creek west
52	28.0	16.0	0.57	10	4	Y				Y			Berkley Catchment creek bed
50	28.2	16.2	0.57	10	3	Y				Y			Berkley Catchment pool
51	28.2	16.2	0.57	10	3	Y				Y			Berkley Catchment sandstone
17	27.1	13.3	0.56	10	4		Y	Y	Y	Y	Y	Y	Boongaree I. flowing creek riparian woodl
155	26.8	13.4	0.53	10	3	Y				Y			Pindan 21k east of Broome (2&3Sept2013)
78	28.4	15.2	0.56	10	3	Y				Y			EK site 7; Black Rock north
121	25.6	9.1	0.52	10	2	Y				Y	Y		Brown Range north, Tanami
122	25.6	9.1	0.52	10	2	Y				Y			Brown Range south, Tanami
81	28.3	15.0	0.56	10	3	Y				Y			EK site 5; Black Rock south
47	28.0	16.1	0.57	10	4	Y				Y			Buckle Head sandstone mesa
14	27.4	14.8	0.57	7	3		Y	Y		Y		Y	Coronation I. FW pool in Pkl creek
20	27.7	17.2	0.59	5	4		Y						Jungulu I. Ephem swamp near VT on scree
151	26.7	14.1	0.52	10	4	Y				Y	Y		Quondong Point pindan dune & breakaways
77	27.9	14.7	0.56	10	3		Y	Y	Y	Y	Y	Y	Cave Spring
95	26.3	12.5	0.53	10	3	Y				Y			March Fly Creek, Carr-Boyd Range south
90	28.0	14.8	0.55	10	4		Y	Y	Y	Y	Y		Cockburn Range
147	26.7	14.6	0.52	10	4	Y		Y	Y	Y	Y	Y	Coulomb Deep Ck
148	26.6	14.5	0.52	10	3	Y		Y	Y	Y			Coulomb paperbark swamp
160	27.8	12.8	0.55	10	3	Y				Y			Dampier Downs ephem swamp
167	27.4	12.6	0.55	10	1	Y				Y			Dampier Downs sandplain nr mill pool
162	27.7	12.8	0.55	10	3	Y				Y			Dampier Downs deep red sandplain
169	27.3	12.5	0.55	10	3	Y				Y			Dampier Downs riparian on ephem creek
88	28.8	15.6	0.55	10	2	Y				Y			EK site 9 Dead Horse Creek
96	28.5	14.7	0.55	10	4	Y				Y			Dimboola Creek riparian in savanna
93	28.3	14.6	0.54	10	5	Y				Y			Doon Doon riverine pool
57	27.3	13.5	0.57	7	5			Y	Y	Y	Y		Drysdale north
55	27.5	13.9	0.57	7	3			Y	Y	Y			Drysdale River Solea Falls
61	26.8	12.4	0.56	7	5			Y	Y	Y	Y		Drysdale south
97	26.0	10.6	0.54	10	4	Y				Y			Ellenbrae pool
98	25.8	10.2	0.54	10	3	Y				Y			Ellenbrae savanna
92	27.7	14.3	0.54	7	4		Y	Y			Y		El Questro
53	27.5	13.9	0.57	10	5		Y	Y	Y	Y			Drysdale Forest Ck pool&mouth
54	27.5	13.9	0.57	7	3		Y		Y	Y			Drysdale Forest Creek sandstone
161	26.9	13.3	0.55	10	2	Y				Y			Gourdon Bay coastal dune
168	26.8	13.0	0.55	10	2	Y				Y			Pindan on GNH nr Port Smith TO
164	26.8	13.3	0.55	10	2	Y				Y	Y		Gourdon Bay pindan
135	28.0	11.3	0.53	10	4	Y		Y		Y	Y		Geikie Gorge

32	25.8	9.7	0.54	10	5	Y				Y			Gibb River crossing on Kalumburu Rd
105	26.3	9.9	0.53	7	3		Y		Y	Y	Y		Mt Gladys camp on pool in Sandy Creek
175	26.6	10.9	0.52	10	2	Y				Y			gravel pit just E of GNH, NNE of Halls Creek
115	26.4	10.7	0.52	10	3	Y				Y			Halls Creek sewerage pond
100	25.4	9.0	0.54	10	4	Y	Y	Y	Y	Y	Y	Y	Hann River
101	27.1	12.5	0.55	7	4		Y	Y	Y	Y	Y		Mt Hart
149	27.0	14.1	0.55	10	3	Y				Y	Y		Mt Jowlaenga, Dampier Peninsula
150	26.6	14.1	0.52	10	3	Y				Y	Y		James Price Point pindan
4	27.7	14.6	0.58	10	4	Y					Y		Kalumburu river
3	27.7	14.7	0.58	10	3	Y					Y		Kalumburu sandstone
99	26.9	11.7	0.54	10	3	Y				Y			Karunjie Station: creek pool in savanna
85	28.3	14.7	0.56	10	5	Y		Y	Y	Y	Y	Y	Kununurra
87	28.1	14.4	0.55	10	3	Y				Y			15k east of Kununurra savanna
89	28.0	14.3	0.55	10	3	Y				Y			20k east of Kununurra savanna
86	28.5	14.9	0.56	10	4	Y		Y		Y	Y		Kununurra Dunham river
91	28.4	14.7	0.56	10	4	Y				Y			Kununurra south
84	28.3	14.9	0.56	10	3	Y	Y	Y	Y	Y	Y		west of Kununurra savanna
159	27.8	12.7	0.55	7	3			Y	Y	Y	Y		Logues Spring, Edgar Rangs
1	27.9	17.3	0.57	10	4	Y		Y		Y	Y		Anjo Peninsula mangroves
152	26.7	13.9	0.52	7	4			Y	Y	Y	Y		Barred Creek mangroves
170	27.0	13.2	0.55	5	4			Y	Y	Y			Cape Bossut mangal
156	26.7	13.2	0.52	7	4		Y	Y	Y	Y	Y	Y	Broome mangroves
157	26.7	13.2	0.53	10	4	Y		Y				Y	Broome mangroves east
49	28.1	16.2	0.57	10	4	Y				Y			Buckle Head mangroves
68	29.1	16.6	0.56	7	4		Y	Y	Y		Y		Mt Connection mangal
16	27.2	14.2	0.57	7	4		Y	Y			Y		Coronation I mangal adj FW pool
146	26.7	14.8	0.52	5	4			Y	Y		Y		Coulomb mangroves
158	26.9	13.3	0.53	7	3		Y	Y	Y	Y			Crab Creek mangroves
136	27.1	17.0	0.54	10	4	Y				Y			Cygnet Bay north mangrove
144	27.2	16.5	0.54	5	3			Y	Y		Y		Cygnet Bay south mangrove
126	28.0	14.6	0.55	10	4		Y	Y	Y	Y		Y	Derby mangroves
63	28.5	16.4	0.57	10	4	Y					Y		Cape Domet east mangal
66	28.7	16.2	0.57	10	4		Y	Y	Y	Y	Y	Y	False mouths of Ord mangal
165	26.9	13.4	0.55	5	3		Y		Y				Port Smith mangroves
163	26.9	13.4	0.55	10	3		Y		Y	Y	Y		Gourdon Bay mangroves GB-A3
35	27.8	20.2	0.56	10	3	Y	Y	Y	Y	Y	Y		Gibbings I, behind mangal
15	27.4	13.2	0.57	10	4	Y			Y	Y			Hunter River mangroves
31	27.5	20.2	0.56	7	3		Y		Y	Y	Y		Irvine I, pool in creek, 50-290m behind mangal
43	27.3	17.5	0.54	10	4	Y				Y			Jackson I. rear edge of large mangal patch
33	27.4	18.0	0.56	7	3	Y					Y		Kingfisher I. mangal edge
34	27.7	20.1	0.58	7	4		Y	Y					Koolan I mangal edge
46	27.7	17.5	0.56	10	4		Y			Y		Y	Lachlan Island, grassy beach 10m behind mangal
58	28.5	16.3	0.57	10	4	Y				Y			Lacrosse Island mangroves
39	28.0	19.2	0.58	10	4	Y				Y			Molema I. north coast mangal
40	27.6	18.9	0.57	10	3	Y					Y		Molema I. south coast mangal

79	29.4	16.4	0.56	10	4	Y		Y		Y	Y		Moochilabra Dam mangal
5	27.2	15.5	0.57	7	4		Y	Y				Y	Middle Osborne I, mangal edge
7	27.3	14.1	0.57	10	4		Y	Y	Y	Y	Y	Y	Mitchell Plateau mangroves
37	27.9	19.5	0.58	10	3		Y			Y		Y	NW Molema i. mangal
80	29.4	16.0	0.56	10	4	Y		Y	Y	Y	Y		Pentecost mangroves
138	27.0	16.5	0.54	7	4		Y			Y			Packer I strand VT behind mangal A3
137	27.0	16.6	0.54	10	4	Y	Y			Y	Y		Pender mangal A6 & VT houses A5
140	27.0	16.5	0.54	7	4		Y	Y	Y	Y	Y		Pender mangroves PI-A4
24	27.4	13.0	0.56	10	4		Y	Y	Y	Y	Y	Y	St George Basin mangroves
42	27.3	17.8	0.55	10	4	Y				Y	Y		Salural & Poolngin Is mangroves
44	27.3	17.8	0.55	10	4	Y		Y	Y	Y		Y	Sunday I south mangroves
36	27.8	19.7	0.58	10	3	Y				Y			Talbot Bay western end mangal
124	28.0	15.4	0.56	10	4		Y	Y	Y	Y	Y	Y	Point Torment east mangroves
123	28.0	15.4	0.55	10	4		Y	Y	Y	Y	Y	Y	Point Torment west mangroves
28	27.9	16.6	0.58	10	4		Y	Y	Y	Y	Y		Unnamed I, mangal edge
19	27.3	14.2	0.57	5	3		Y	Y					Uwins I, Pkw scree at mangal edge
41	28.1	17.2	0.57	5	3		Y						Wulalum I, mangal
76	29.1	16.5	0.56	10	3		Y	Y	Y	Y	Y		Wyndham mangroves
104	26.9	10.9	0.54	10	4	Y		Y		Y	Y		Lennard River crossing Milliwindi track
118	28.1	13.1	0.52	10	4	Y				Y	Y		Mimbi Cave area, near Lawford Range
172	26.8	9.9	0.53	10	4	Y				Y			Tableland Rd crossing Hann River, riparian
12	26.1	11.3	0.56	10	4		Y	Y	Y	Y	Y		Camp Creek, near Crusher
13	26.2	11.3	0.56	10	4		Y	Y	Y	Y	Y		Mitchell Plateau east
9	27.0	13.3	0.57	10	4		Y	Y	Y	Y	Y		Mitchell Plateau Surveyors pool
6	27.4	14.7	0.57	5	3		Y		Y		Y		Mitchell Plateau Crystal Creek
10	26.0	11.3	0.56	10	4		Y	Y		Y		Y	Mitchell Plateau near Camp Ck
11	26.5	12.1	0.56	10	4		Y	Y	Y	Y	Y		Mitchell Plateau south
18	25.7	10.3	0.55	7	4		Y	Y			Y		King Ed crossing Mitchell River HS track
174	27.7	14.3	0.56	10	3	Y				Y			Western end of Napier Range
119	27.9	13.1	0.52	10	2	Y					Y		Ngumban limestone hills
65	28.2	15.9	0.57	10	3		Y	Y	Y		Y		Ningbing Range 8-mile
67	28.4	15.9	0.57	10	3		Y	Y	Y		Y		Ningbing Range central
64	28.4	16.1	0.57	10	4	Y		Y	Y		Y		Ningbing Range north
70	28.2	15.5	0.56	10	4		Y	Y	Y		Y		Ningbing Range south
71	28.4	15.6	0.56	7	2		Y		Y	Y			Ninbing Range sandy creek
134	28.0	12.2	0.55	10	3	Y					Y		Nonkanbah turnoff, lake in savanna
133	27.4	11.0	0.54	10	3	Y			Y	Y			Oscar Range site 66
132	27.4	11.0	0.54	10	3	Y						Y	Oscar Range pool nr site66
130	27.5	11.7	0.54	7	3		Y	Y	Y		Y		Oscar Range west end
82	29.3	16.2	0.56	10	4	Y				Y			EK site 10; Parry Creek north
83	29.0	15.8	0.55	10	3	Y				Y			EK site 11; Parry Creek south
145	27.0	16.1	0.54	10	4	Y				Y			Pender FW swamp A9
142	26.9	16.4	0.54	7	3		Y				Y		Packer Island pindan sites A1 A2
120	28.3	13.6	0.52	10	4	Y					Y		Oscar Range, Pinnacle Bridge
72	28.2	15.1	0.56	7	5		Y	Y	Y	Y	Y		Point Spring
22	27.3	13.4	0.56	7	5		Y	Y	Y	Y	Y	Y	Prince Regent west

114	26.9	11.2	0.53	5	3			Y	Y	Y			Turner Area, Purnalulu
111	27.5	11.9	0.53	5	3			Y	Y	Y			Kittys' Knob, Purnalulu
112	27.0	11.5	0.53	5	3			Y	Y	Y			Cathedral Gorge, Purnalulu
110	26.3	11.3	0.52	7	4			Y	Y	Y	Y		Purnalulu Bream Gorge
113	27.4	11.6	0.53	5	3			Y			Y		Purnalulu Blue Holes
45	27.9	13.9	0.56	5	5			Y	Y		Y		Rainforest 19/2
94	28.1	14.4	0.54	10	3	Y				Y			Ragged Range savanna valley floor
173	27.9	16.5	0.56	10	4	Y				Y			Robinson River
117	26.6	10.8	0.52	10	4	Y					Y		Sawpit Gorge near Palm Springs.
73	28.3	15.0	0.56	10	3	Y				Y			Sorby Hills, savanna woodland
75	27.9	14.7	0.56	10	3	Y					Y		Sorby Hills south, savanna woodland
107	27.9	13.6	0.54	10	3	Y				Y			Speewah Valley
171	27.5	10.7	0.53	10	4	Y				Y			Spider Creek Mornington
131	27.3	11.2	0.54	5	3		Y						Oscar Range, Stumpy's Mill in savanna
29	27.4	15.6	0.57	10	4		Y	Y	Y	Y	Y	Y	Storr I camp. open forest in valley beside Pkl sheet
30	27.3	15.6	0.57	7	4		Y	Y		Y			Storr I. flowing ck pool on sandstone out of rainforest
153	26.7	13.8	0.52	5	3			Y	Y		Y		Barred Creek pindan nr coast
8	27.4	15.4	0.57	7	4		Y		Y	Y			Bigge I. Camp1, Pdh creek valley between Pkl ridges
48	28.1	16.2	0.57	10	3	Y				Y			Buckle Head alluvial flat
27	27.8	17.0	0.58	10	3	Y				Y			Freshwater Cove
166	26.9	13.3	0.55	10	3	Y				Y	Y		Gourdon Bay pindan edge
56	28.5	16.4	0.57	10	4	Y				Y			Lacrosse I. beach dune swamp
38	27.9	19.5	0.58	10	3		Y			Y		Y	NW Molema I. woolybut woodl on sandstone
141	27.0	16.5	0.54	7	4		Y		Y	Y			Packer Island coastal dune A7
143	27.0	16.4	0.54	7	4		Y			Y			Packer Island VT edge A8
139	27.0	16.5	0.54	7	3			Y	Y	Y			Pender Martin's Well
116	26.3	10.7	0.52	10	2	Y				Y	Y		savanna along Tanami Road
128	27.5	11.4	0.54	10	4	Y		Y	Y	Y	Y		Tunnel Creek
129	27.5	11.5	0.54	10	4	Y				Y			Tunnel Creek south of range
74	28.4	15.1	0.56	10	3		Y	Y		Y	Y		Weber Plain
154	26.7	13.5	0.53	10	3	Y				Y			Pindan 5 km East of Willie Creek (9&10Sept2013)
127	27.7	12.1	0.55	10	4	Y		Y		Y	Y		Winjana Gorge & adjacent savanna

Table S2. Species attributes used in analysis (see Tables 1 and 3).

Species	*Aa*	*Cg*	*Cj*	*Cn*	*Ha*	*Hs*	*Ma*	*Mg*	*Ms*	*Na*	*Nd*	*Ng*	*Nw*	*Oc*	*Ol*	*Pw*	*Ra*	*Sc*	*Sf*	*Sg*	*Ss*	*Tg*	*Vc*	*Vd*	*Vf*
Clim	1	2	3	5	5	5	5	4	5	4	4	2	6	4	3	5	4	5	3	3	5	4	5	5	1
Roost	0	0	1	0	3	2	2	3	3	0	0	0	0	0	0	0	3	0	0	0	0	3	2	3	2
MANGsp	2	2	2	2	2	2	2	2	2	2	1	2	1	3	1	3	2	2	2	1	3	2	2	1	2
RIPsp	1	1	1	1	3	1	3	1	1	2	2	1	2	1	3	1	1	1	1	1	1	1	1	3	1
TEAR	3.2	23.5	3.9	25.3	2.8	4.1	10.1	3.5	40.4	5.3	4.2	3.9	9.3	6.0	4.7	15.2	16.6	13.9	10.2	14.4	15.8	9.6	15.8	13.2	18.5
Microhab	1.1	2.9	1.3	3.1	4.5	4.4	3.6	3.3	3.5	4.5	4.1	4.2	3.8	2.3	2.0	3.8	4.0	1.1	1.1	3.0	3.4	1.1	4.0	3.8	3.7
Strat	2	7	2	8	1	1	5	1	8	3	3	3	4	5	2	6	7	4	4	6	6	5	7	6	7
V_{ae}	8.7	6.9	7.4	5.6	2.9	4	6.3	7.2	5.8	5.3	5.7	5.0	5.3	6.7	7.6	5.8	5.8	8.1	8.2	6.1	6.1	7.1	4.2	5.8	4.6
AR	8.3	6.7	8.4	6.5	5.9	6.0	6.3	6.2	7.0	5.8	6.0	5.8	6.2	6.8	7.5	6.1	6.4	8.7	8.2	6.2	6.3	7.5	6.3	6.2	6.2
WL	13.50	6.72	10.10	4.94	4.30	4.03	6.76	12.68	5.98	4.48	5.55	4.79	4.34	8.29	11.02	3.95	5.64	12.10	10.36	6.84	6.42	8.88	3.99	4.54	3.90
F_{peak}	12.0	31.5	18.0	39.4	154.0	96.3	43.4	41.3	49.5	50.7	53.9	47.4	61.0	32.0	27.6	49.0	116.5	19.8	17.2	38.2	41.1	24.7	61.3	51.2	55.8
Q_{Anabat}	6.7	8.7	5.4	13.8	37.9	60.6	2.5	3.5	12.1	2.3	3.1	2.5	3.7	11.8	6.4	18.1	33.4	15.2	13.5	10.9	9.3	15.3	16.3	16.4	14.5
PHYLOd	112	72	116	72	1000	1000	70	1220	130	92	92	92	94	106	106	102	980	300	300	104	104	306	100	100	100
FMf	15.0	19.3	10.6	16.4	14.5	15.5	13.3	14.6	22.5	14.7	14.0	14.6	16.5	10.8	10.3	10.6	16.5	14.9	14.9	17.5	17.1	14.3	14.3	12.6	14.5
Hf	0.60	0.56	0.50	0.63	0.34	0.46	0.57	0.46	0.47	0.38	0.50	0.65	0.44	0.45	0.48	0.47	0.35	0.32	0.30	0.55	0.54	0.23	0.63	0.48	0.52
MANGdP	0.38	0.55	0.92	0.86	0.75	1.28	0.52	0.72	1.14	2.06	0.15	1.47	0.72	3.55	0.09	3.54	0.59	0.68	1.19	0.15	3.73	1.32	1.02	0.16	0.06
RUGGED	2.00	2.49	2.68	2.93	3.67	3.72	3.42	3.54	3.06	2.85	2.69	1.84	3.48	2.10	2.83	2.74	3.49	2.95	2.72	2.75	2.35	3.32	3.50	3.53	2.83
MANGd	105.2	94.5	62.1	47.9	54.1	22.5	68.1	50.9	57.8	34.4	77.8	74.9	37.1	0.5	77.9	0.1	51.1	61.5	52.2	87.7	0.1	49.6	57.2	83.1	192.9
CAVEcD	48.4	14.6	11.0	5.8	0.4	0.2	3.6	1.2	2.9	7.0	9.7	29.3	1.1	20.3	9.3	13.6	0.6	7.3	11.5	11.3	14.6	1.3	1.3	0.8	9.3
FWd	2.81	2.58	2.18	1.66	1.30	2.47	0.07	1.62	1.86	2.99	0.28	4.65	1.03	4.17	1.29	4.27	0.96	0.95	2.16	2.14	4.49	2.08	1.64	0.55	5.85
RIPd	7.64	5.67	4.93	3.97	2.75	4.43	0.82	3.11	4.64	7.01	2.53	8.51	2.03	13.12	1.97	10.63	2.73	1.93	5.02	3.86	11.62	4.83	3.43	0.66	11.47
RIPdP	2.13	2.75	2.94	3.03	3.19	3.06	4.13	3.50	2.86	2.56	3.77	2.12	3.86	1.48	3.60	1.54	3.10	3.27	2.71	3.17	1.35	2.87	3.04	3.91	2.67
Pseas	131	125	124	124	124	123	121	123	123	125	123	128	120	130	122	127	122	123	125	124	129	123	122	124	129
PwetQ	493	565	637	655	692	778	718	702	670	670	639	565	753	635	647	704	696	675	659	615	666	693	696	671	462
PwmQ	302	286	308	307	299	344	323	303	308	335	311	327	325	366	301	362	300	314	321	296	359	310	312	290	226
Tann	27.5	27.4	27.4	27.6	27.8	27.4	27.2	27.6	27.6	27.4	27.1	27.1	27.5	27.4	27.4	27.7	27.8	27.4	27.4	27.3	27.6	27.7	27.6	27.5	27.3
mnTclP	13.5	13.2	13.8	14.4	14.6	15.0	13.1	14.4	14.5	14.7	13.3	13.5	14.2	15.9	13.4	16.2	14.4	13.6	14.1	13.3	16.1	14.8	14.6	13.4	11.8
isoT	0.54	0.54	0.55	0.55	0.56	0.56	0.55	0.56	0.55	0.55	0.55	0.54	0.56	0.55	0.55	0.56	0.56	0.55	0.55	0.55	0.55	0.56	0.56	0.55	0.54
Effort	10.00	9.19	9.14	9.24	9.17	8.84	9.39	9.39	9.16	8.52	9.15	9.35	9.10	8.74	9.47	8.66	9.39	9.55	9.04	9.17	8.30	9.12	8.97	9.27	9.83
VEGc	2.75	3.36	3.53	3.61	3.67	3.66	3.94	3.78	3.54	3.86	3.77	3.44	3.93	3.71	3.49	3.64	3.57	3.64	3.53	3.40	3.65	3.63	3.60	3.71	3.00

Table S3. Variance partitioning of grouped habitat and climate variables, and sampling effort. Geographic distance was included in all cases.

Partitions	% Deviance explained	% Deviance partitioning
Habitat + Climate + Effort	47.88	8.80
Habitat	44.58	25.18
Climate	20.59	2.02
Effort	10.91	1.28
Habitat + Climate	46.6	9.77
Habitat + Effort	45.86	0.83
Climate + Effort	22.70	0.00
Unexplained		52.12

Fig. S1. Partial regression fits of all candidate variables in the full GDM model.