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Wildlife Research

Supplementary Material

Space use and daily movement patterns in an arid zone agamid lizard

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Table S1: Measurements of body characteristics, activity area and core area sizes, number of locational fixes and number of days tracked for all *Pogona vitticeps* used in the study.

Dragon ID	Study Period	Site	Sex	SVL	Mass (g)	Head Length (mm)	Jaw Width (mm)	Tail Length (mm)	Tail Width (mm)	Resident?	MCP Area (ha)	Core Area (ha)	No. Successful Fixes	No. Days Tracked
A	mid-spring	2	M	223	395	52.5	51.6	259	26.3	Y	4.15	0.12	238	16
B	mid-spring	2	M	218	380	54	53.1	259	29.7	N	NA	NA	464	17
C	mid-spring	2	M	230	420	55.1	53.8	275	27.6	Y	3.68	0.21	551	17
D	mid-spring	2	M	207	217	44.8	49.5	244	27.5	NA	NA	NA	124	3
E	mid-spring	2	M	239	410	55.9	52.6	283	29.2	Y	5.98	0.23	283	12
F	mid-spring	1	F	188	282	43.7	45.9	226	24	Y	1.66	0.029	136	13
G	mid-spring	1	F	180	180	39.4	36.7	232	21.8	Y	0.59	0.050	125	8
H	mid-spring	1	M	192	425	57.7	52.2	255	28.9	Y	1.55	0.12	63	8
I	mid-spring	1	M	210	335	47.2	52.2	260	27.4	Y	3.07	0.29	147	9
J	mid-spring	1	F	165	255	42	47	218	24.6	Y	4.69	0.39	131	10
K	mid-spring	1	M	210	305	49.3	49.9	260	25.3	Y	3.53	0.31	105	9
L	mid-spring	2	M	205	410	51.1	54.5	247	29.6	Y	4.85	0.18	149	9
C[a]	late-spring	2	M	235	404	55.3	55.9	275	26.6	Y	5.04	1.46	221	13
F[a]	late-spring	1	F	195	232	44.7	45.9	215	20.9	Y	4.61	0.34	413	13
M	late-spring	2	M	196	300	53.8	47.7	262	25.7	Y	2.49	0.53	295	15
N	late-spring	2	M	230	370	55.3	51.9	276	27.3	Y	1.48	0.43	409	15
O	late-spring	2	M	236	410	55.9	55.3	175B	27.9	N	NA	NA	381	15
P	late-spring	2	M	226	377	52.6	52.9	294	27.8	Y	1.76	0.34	253	14
Q	late-spring	2	M	235	457	55.9	56.4	188B	31.9	N	NA	NA	333	13
R	late-spring	2	M	180	254	45.4	45.9	258	22.9	Y	1.29	0.19	227	14
S	late-spring	2	F	174	200	41.9	39.3	228	20.4	N	NA	NA	279	14
T	late-spring	2	F	177	221	40.4	42.1	231	22.1	N	NA	NA	216	12
U	late-spring	2	F	202	296	45.2	44.2	239	23.7	N	NA	NA	310	14
V	late-spring	2	F	215	396	42.6	48.6	236	29	NA	NA	NA	45	2
X	late-spring	2	M	205	354	51.7	51.1	236	26.2	NA	NA	NA	48	2
SU1	mid-summer	1	M	226	359	47.3	43.6	244	23.5	Y	3.02	0.40	82	9
SU2	mid-summer	2	M	235	435	52.2	51.3	292	27	Y	0.33	0.042	32	8
SU3	mid-summer	3	F	205	251	39.45	45.09	233	22.24	N	NA	NA	75	12
SU4	mid-summer	5	M	209	287	49.4	47.5	246	24.8	Y	5.16	0.74	154	20
SU5	mid-summer	5	M	221	335	51.8	47.5	260	28.27	N	11.39	5.43	71	19
SU6	mid-summer	5	M	217	290	52.74	48.78	269	25.7	Y	3.51	0.27	123	19
SU7	mid-summer	2	F	195	250	45.03	47.54	255	20.7	NA	NA	NA	30	4 - deceased
SU8	mid-summer	3	F	235	460	54.49	51.66	255	33.45	Y	6.09	1.13	89	16
SU9	mid-summer	3	F	195	269	47.01	46.72	255	23.71	N	16.52	1.13	108	16
SU10	mid-summer	1	F	239	275	48.8	48.9	215	28.16	Y	0.65	0.11	42	9
SU11	mid-summer	2	M	207	273	48	44.4	247	24.1	Y	0.75	0.090	64	16
SU12	mid-summer	6	M	220	292	49.3	40.5	224	21.2	Y	1.75	0.35	48	10
SU13	mid-summer	2	F	210	289	-	-	251	-	Y	0.66	0.15	78	9

[a] recaptured individual, SVL = snout-vent length, MCP = minimum convex polygon. B in tail length represents part of tail noticeably missing. NA = no MCP calculated as individual was not tracked for enough days

Table S2 Results of linear regression analysis for body measurements versus minimum convex polygon (MCP) area and core area of *Pogona vitticeps* used in the study. Analysis was run for separate periods with both sexes, as well as for males and females separate with all periods combined, and both sexes and all periods combined. All analyses were found to be non-significant, based on sequential Bonferroni correction (Holm 1979).

Minimum Convex Polygon (MCP)																					
Body Measurement	**Mid-Spring**						**Late-Spring**			**Mid-Summer**						**All Periods**					
	M (df=1,5)			**Both (df=1,8)**			**M (df=1,3)**			**M (df=1,4)**			**Both (df=1,7)**			**M (df=1,14)**			**F (df=1,3)**		
	F	***R^2***	***P***	***F***	***R^2***	***P***	***F***	***R^2***	***P***	***F***	***R^2***	***P***	***F***	***R^2***	***P***	***F***	***R^2***	***P***	***F***	***R^2***	***P***
SVL	6.10	0.69	0.04	2.81	0.26	0.13	0.83	0.27	0.43	0.81	0.17	0.42	0.01	0.00	0.98	0.62	0.04	0.45	0.00	0.00	0.97
Mass	0.08	0.02	0.78	2.52	0.21	0.25	1.29	0.01	0.98	0.87	0.18	0.40	0.10	0.02	0.76	0.33	0.02	0.57	3.88	0.58	0.24
Head Length	0.01	0.00	0.95	1.44	0.15	0.26	1.02	0.25	0.39	0.01	0.00	0.92	1.11	0.18	0.34	0.28	0.02	0.60	1.12	0.25	0.50
Head Width	0.41	0.08	0.55	5.36	0.40	0.05	2.23	0.43	0.23	0.00	0.00	0.96	0.02	0.00	0.91	1.66	0.10	0.22	1.83	0.40	0.37
Tail Length	1.20	0.19	0.32	1.76	0.11	0.41	0.01	0.00	0.93	0.33	0.08	0.60	0.07	0.00	1.00	0.09	0.01	0.77	0.31	0.07	0.61
Tail Width	0.03	0.05	0.63	3.76	0.26	0.20	0.16	0.05	0.72	0.01	0.00	0.93	0.88	0.14	0.40	1.98	0.11	0.17	1.99	0.37	0.40
Core Area																					
SVL	0.18	0.04	0.70	0.01	0.00	0.93	0.34	0.15	0.62	0.73	0.15	0.44	0.00	0.00	0.94	0.03	0.00	0.86	0.73	0.15	0.39
Mass	8.62	0.71	0.04	0.01	0.01	0.82	0.37	0.16	0.60	0.73	0.15	0.44	0.85	0.11	0.39	3.07	0.17	0.10	11.47	0.79	0.04
Head Length	3.52	0.45	0.15	0.00	0.00	0.95	6.59	0.77	0.12	0.36	0.08	0.57	1.44	0.19	0.28	0.17	0.01	0.68	4.17	0.58	0.24
Head Width	0.73	0.15	0.44	1.17	0.13	0.31	0.18	0.08	0.72	0.16	0.04	0.71	0.38	0.06	0.56	1.10	0.07	0.31	1.96	0.46	0.33
Tail Length	0.39	0.09	0.56	0.14	0.02	0.72	0.00	0.01	0.88	1.31	0.25	0.32	0.08	0.01	0.81	0.71	0.05	0.41	1.76	0.24	0.26
Tail Width	0.85	0.15	0.45	0.38	0.45	0.56	0.94	0.32	0.43	0.35	0.08	0.54	1.18	0.16	0.32	1.09	0.01	0.31	7.63	0.72	0.07

Table S3 The number and sex of *Pogona vitticeps* individuals overlapping and percent overlap of the MCP and 95% KDE home ranges of individual dragons. The last measure calculates percent overlap of each animal's core areas with neighbouring animal 95% KDE's

Mid Spring		Minimum Convex Polygon		95% Kernel Density		Core Areas	
Dragon ID	Sex	Overlapping Individuals and Sex	Percent Overlap	Overlapping Individuals and Sex	Percent Overlap	Overlapping Individuals and Sex	Percent Overlap
F	F	1M	21.30%	2M, 1F	56.70%	1M, 1F	87.60%
G	F	1M	29.30%	1M, 1F	61.57%	1M, 1F	23.92%
H	M	2M, 1F	47.50%	3M	65.47%	2M	76.76%
I	M	2M, 1F	65.50%	2M, 1F	35.52%	1M, 1F	6.82%
J	F	3M	60.60%	1M	25.20%	2M	14.02%
K	M	2M, 3F	60.30%	2M, 3F	58.33%	2M, 2F	33.62%
Male Average		3.67	57.70%	3.67	53.11%	2.67	39.07%
Female Average		1.67	37.10%	2.67	47.82%	2	41.85%
Grand Average		2.67	47.40%	3.00	50.46%	2.33	40.46%
Late-Spring							
C	M	1M, 1F	10.40%	2M, 1F	16.63%	1M, 1F	28.24%
M	M	1F	0.00%	1F	0.00%	1F	0.00%
N	M	2F	0.00%	2F	0.00%	1F	0.00%
P	M	1M	29.81%	2M, 1F	29.81%	1M	83.27%
R	M	1M	0.00%	1M	0.00%	1M	0.00%
Average		1.4	8.04%	2	7.45%	1.2	20.82%

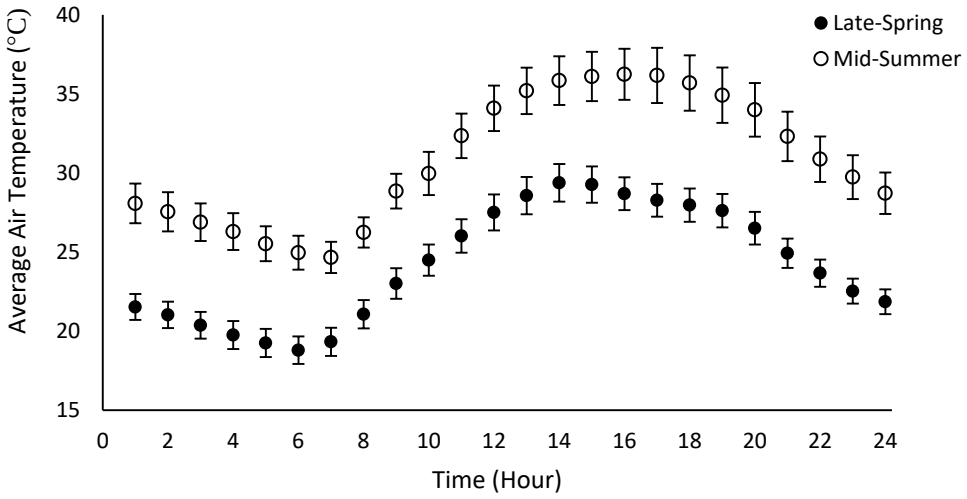

Figure S1: The average (±SE) air temperatures recorded for each hour during two tracking periods at Fowlers Gap Arid Zone Research Station.

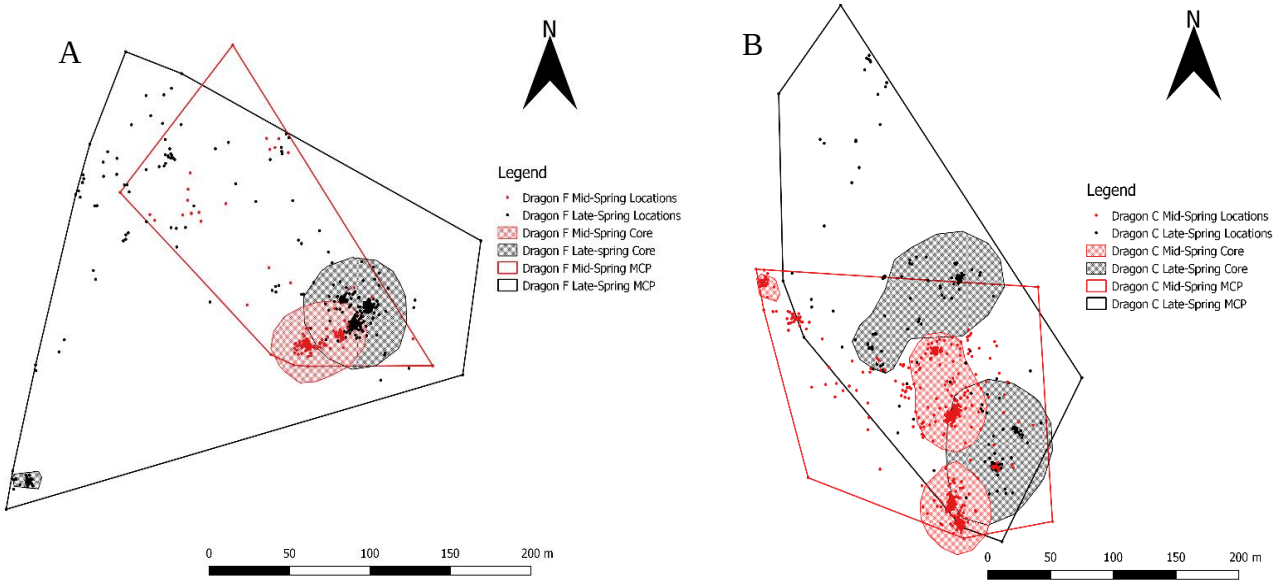

Figure S2: Change in home ranges and core areas between two tracking periods for two dragons. Points represent locational fixes taken with GPS tags, hatched areas represent core areas and lines represent minimum convex polygons (MCP) home ranges. Points and polygons in red are from mid-spring and points and polygons in black are from late-spring. **A)** The MCP home range and core area for dragon F. **B)** The MCP home range and core area for dragon C.

Table S4: Parameter estimates from generalised linear model (GAM) to analyse the influence of temperature on the occurrence of movement in *Pogona vitticeps* tracked in two different time periods.

Tracking period	Parameter	Estimate	Standard Error	χ^2	Effective d.f.	Relative d.f.	*P*
Late-spring	Intercept	-2.3517	0.1845				<0.001
	Temperature			541.2	8.77	8.96	<0.001
	Dragon Identity			314.3	9.69	10.00	<0.001
Mid-summer	Intercept	-2.097	0.149				<0.001
	Temperature			368.4	8.85	8.98	<0.001
	Dragon Identity			123.2	9.41	10.00	<0.001