Female reproductive competition explains variation in prenatal investment in wild banded mongooses

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Supplementary Information

Table S1: Factors affecting prenatal investment

	Fetus cross-sectional area (fetus size)					Number of fetuses					Total prenatal investment (fetus size x number of fetuses)				
Model terms	**Effect size ± SE**			**χ^2**	***P***	**Effect size ± SE**			**χ^2**	***P***	**Effect size ± SE**			**χ^2**	***P***
Female age (months)	-0.12	±	0.38	0.10	0.75	**0.12**	**±**	**0.038**	**10.36**	**0.0013**	1.8	**±**	1.5	1.34	0.25
Female age^2 (months)	-0.0018	±	0.0042	0.087	0.77	**-0.053**	±	**0.025**	**4.81**	**0.028**	0.021	±	0.016	1.56	0.21
Female weight (g)	0.30	±	0.10			0.036	±	0.033	1.19	0.27	**0.58**	**±**	**0.16**	**12.60**	**<0.001**
Rainfall during pregnancy (ml)	1.81	±	0.70			-0.0079	±	0.031	0.068	0.80	-0.68	**±**	0.85	0.64	0.42
Number of females	-53	±	57			-0.0094	±	0.031	0.09	0.76	**38**	**±**	**15**	**5.65**	**0.017**
Female weight x number of females	**-0.029**	**±**	**0.014**	**4.23**	**0.040**										
Total rainfall x number of females	**-0.24**	**±**	**0.11**	**4.91**	**0.027**										
Group size	1.8	±	2.6	0.089	0.77	0.0012	±	0.03	0.0015	0.97	-9.9	**±**	10	0.85	0.36
Fetus age (days)	-45	±	20												
Fetus age^2 (days)	0.64	±	0.29												
Sample	360 ultrasounds from 59 females in 41 litters from 8 groups.					361 observations from 127 females in 130 litters from 11 groups					360 ultrasounds from 59 females in 41 litters from 8 groups.				

Random effects: female ID, litter ID and group ID. Model terms were scaled in GLMM analysis on number of fetuses.

Table S2: Within- and between- female variation in fetus size

Model terms	Effect size	±	SE	χ^2	*P*
Female age (months)	0.78	±	0.35	0.045	0.83
Female age^2 (months)	0.00061	±	0.0041	0.021	0.89
Female weight at conception (g)	0.064	±	0.043	2.00	0.16
Rainfall during pregnancy (ml)	-0.094	±	0.23	0.17	0.68
Within-female effects	**12.24**	±	**5.63**	**4.51**	**0.034**
Between-female effects	9.55	±	4.76	3.38	0.066
Fetus age (days)	2.88	±	1.20		
Fetus age^2 (days)	-0.048	±	0.093		
Sample	360 ultrasounds from 59 females in 41 litters from 8 groups.				

Random effects: female ID, litter ID and group ID.

Table S3: Consequences of prenatal investment – female reproductive success

	Number of emergent pups assigned to female					Proportion of pups in a group litter assigned to female				
Model terms	**Effect size ± SE**			χ^2	*P*	**Effect size ± SE**			χ^2	*P*
Mean fetus size (mm^2)	0.0022	±	0.0017	1.66	0.20					
Relative fetus size						0.0023	±	0.0022	1.14	0.29
Number of fetuses	0.28	±	0.12	5.44	0.020					
Fetus age (days)	0.05	±	0.03			0.0025	±	0.0017		
Sample	153 observations from 78 females in 51 litters from 10 groups.					153 observations from 78 females in 51 litters from 10 groups.				

Random effects: female ID, litter ID and group ID.

Table S4: Consequences of prenatal investment – Pup survival and growth to independence

	Pup survival to 3 months					Pup growth (age<=90 days)				
Model terms	**Effect size ± SE**			χ^2	*P*	**Effect size ± SE**			χ^2	*P*
Mean fetus size (mm^2)	0.0014	±	0.0041	0.12	0.72	0.04	±	0.06	0.34	0.56
Relative fetus size (mm^2)	0.0063	±	0.0023	1.09	0.30					
Number of fetuses	0.02	±	0.27	0.0058	0.94	-7.0	±	5.5	1.59	0.21
Total number of pups in a group litter	-0.05	±	0.10	0.23	0.63	-0.94	±	1.55	0.37	0.54
Sex of pup						9.68	±	10.30	0.87	0.35
Pup age (days)						4.0	±	1.1		
Fetus age (days)	0.02	±	0.06			4.1	±	1.0		
Sample	131 pups from 29 litters from 8 groups.					116 pups from 26 litters from 8 groups.				

Random effects: litter ID and group ID.

Table S5: Consequences of prenatal investment– female survival

Female post-reproductive survival (months). Cox regression with backward selection of terms (Wald).

Model terms	Effect size	±	SE	Wald χ^2	*P*
Number of females	- 0.081	±	0.0052	2.23	0.14
Total prenatal investment	**-0.001**	**±**	**0.0001**	**6.57**	**0.010**
Number of fetuses	-0.009	±	0.121	0.006	0.94
Mean fetus size (mm^2)	**-0.005**	**±**	**0.001**	**12.68**	**<0.001**
Relative fetus size (mm^2)	0.001	±	0.003	0.16	0.69
Sample	109 females in 47 litters from 10 groups.				

Table S6: Consequences of prenatal investment – female participation in next litter (y/n)

Model terms	Effect size	±	SE	χ^2	*P*
Female age (months)	-0.01	±	0.02	0.17	0.68
Female age^2 (months)	-0.0015	±	0.0029	0.28	0.60
Female weight at conception (g)	0	±	0.0031	0.012	0.91
Number of females	0.19	±	0.48	0.16	0.69
Mean fetus size (mm^2)	-0.0012	±	0.0072	0.030	0.86
Number of fetuses	-0.87	±	0.52	3.50	0.061
Fetus age (days)	0.06	±	0.14		
Sample	105 observations from 46 females in 34 litters from 7 groups.				

Random effects: female ID, litter ID and group ID.