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Appendix 1

Table A1. A compilation of studies on the environmental and behavioral characteristics of different populations of *Rhabdomys* with their known mitochondrial lineage identity, where available, assigned from genotyping or geographical location. All South African localities unless mentioned otherwise.

Species	Locality	Habitat	Nest-site type	Social behavior (methods used)	Note on predation	Remark	References
<i>R. pumilio</i>	Goegap Nature Reserve.	Succulent Karoo.	Large bushes.	Social group composed of multiple adults sharing one nest and territory, communal nesting, (radiotracking, direct observation & experimentation).	Aerial predators, snakes and small carnivores.	Limited nest-sites and population density influences group-living; grouping can also reduce predation risk through vigilance and the dilution effect.	(Schradin and Pillay 2005, Schradin 2013)
<i>R. pumilio</i>	Great Namaqualand.	Bushes and dry river beds.	Single burrow under bushes, with usually one nest.	/	/	/	(Shortridge 1934)
<i>R. bechuanae</i>	Kgalagadi Transfrontier Park	Semi-desert area, dunes with short grass thorn tree savanna-like habitat.	Clustered solitary burrows under shrubs.	Social tolerance, co-habitation in pockets of cover, (trapping and direct observations).	Predation mainly aerial.	Distribution and availability of suitable shelter in presence of predation favor grouping.	(Nel 1975)
<i>R. bechuanae</i>	Sandveld, Soetdoring, Gariep Dam, Tussen die Riviere and Benfontein Nature Reserves.	Open savanna with grass, Karoo shrubland, riverine with dense cover.	Burrows network beneath woody cover.	Social tolerance and nest-site sharing (trapping and direct observations).	/	/	(Ganem et al. 2012)
<i>R. d. dilectus</i>	Bloemhof, Sandveld, Soetdoring Nature Reserves	Riverine, patches of grass with Karoo shrubs, grassland	/	Social tolerance, multiple capture of several adults in same trap, (trapping).	/	/	(Ganem et al. 2012)
<i>R. d. dilectus</i>	Zimbabwe.	Densely vegetated savanna.	Surface grass nests in dense grass; crevices and burrows rarely observed.	Solitary, territorial males (trapping); some tolerance among females in captivity (direct observations).	/	/	(Choate TS 1972)
<i>R. d. dilectus</i>	Lajuma Nature Reserve, Southpansberg mountains.	Dense grass cover with woody patches.	/	/	/	/	(Abu Baker and Brown 2010, 2011)
<i>R. dilectus</i> *	Rietvlei Nature Reserve.	Open savanna mixed with grass.	Clumps of grass on or slightly above the ground.	Solitary, territorial (trapping).	/	/	(Brooks 1974)
<i>R. d. chakae</i>	Kamberg Nature Reserve. KwaZulu-Natal.	Grassland.	/	Solitary, territorial. Association among individuals restricted to mating, (radiotracking).	/	/	(Schradin and Pillay 2005)
<i>R. d. chakae</i>	Andries Vosloo Kudu Nature Reserve.	Moist upland grassland, mist belt grassland.	/	/	/	/	(Perrin 1980)
<i>R. d. chakae</i>	Dargle Valley, KwaZulu-Natal.	Moist upland grassland, mist belt grassland.	Nests in dense grass.	Solitary, territorial (trapping)	/	Pup defense results in female territoriality.	(Willan 1982)

* mice not genotyped and occurred in geographical locations where both *R. d. chakae* and *R. d. dilectus* could occur.

References of the Table A1

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Table A2. Results of Wilcoxon tests on nest-site distances. Comparison between 1) average distance between nest-sites used by a given individual versus between all available nest-sites (study site); and 2) between species comparison when in sympatry (only study sites with at least five radiotracked mice). Bold p-values are those still significant after the Bonferroni sequential correction of α values.

Nest-site distance		Reserve	Study site id	Year	Sample size (number of individuals)	Wilcox p-value individual versus study site	Wilcox p-value species comparison within study site
Parapatry	<i>R. bechuanae</i>	SA	SA2	2012	11	p < 0.001	NA
		TDR	TDR2	2013	8	p < 0.001	
		TDR	TDR1	2012	11	p < 0.001	
	<i>R. d. dilectus</i>	BLH	BL1	2012	7	p < 0.001	
		BLH	BL2	2012	12	p < 0.001	
		BLH	BL3	2012	9	p < 0.001	
		SO	SO4	2012	9	p < 0.001	
Sympatry	<i>R. bechuanae</i>	SA	SA2	2011	9	p < 0.001	p < 0.001
	<i>R. d. dilectus</i>	SA	SA2	2011	5	p < 0.001	
	<i>R. bechuanae</i>	SA	SA1	2011	4	p < 0.001	P = 0.70
	<i>R. d. dilectus</i>	SA	SA1	2011	3	p = 0.02	

Table A3. Statistical results from the comparison of the linear mixed-effect models for the distance (log transformed) between nest sites used by the individuals, nest-site fidelity, group association strength (AS), home range overlap (VI) and variation in radiotracked “group” sex ratio (SR). The full models (model 1) considered all the variables and their interactions: species and context (for all models), sex (for nest-site distance and fidelity), group size (for AS), and group state (i.e. intragroup versus intergroup for VI). The site identity was set as a random factor (included in the intercept). The best-fitted models are highlighted in bold and were selected based on the Akaike information criterion (ΔAICc and weight). The models highlighted in yellow (corresponding to the best-fitted model for distance to nest-site, AS and SR) were used in Table 5 (main text). To account for pseudo-replication in nest-site fidelity and VI analyses, we presented the models with the random effect in the Table 5, even when the best-fitted model did not include the random effect (still the ΔAICc between models with and without the random effect was inferior than two). The marginal R^2 considers only the variance for the fixed effects, and the conditional R^2 for both the fixed and random effects.

Trait	Fixed effects								Random	Model selection													
	Model	species	context	sex	species: sex	species: context	context:sex	species:context:sex	site indiv	d.f.	AIC	BIC	logLik	deviance	Test	L.Ratio	p-value	R2 marginal	R2 conditional	K	AICc	ΔAICc	weight
Distance between nest sites used by individuals log distance~	1	x	x	x	x	x	x	x	x	11	1368.95	1415.46	-673.47	1346.95				0.13	0.37	11	1369.48	4.57	0.06
	2	x	x	x	x	x	x		x	10	1368.10	1410.39	-674.05	1348.10	1vs2	1.16	0.28	0.12	0.37	10	1368.55	3.64	0.09
	3	x	x	x	x	x			x	9	1366.35	1404.41	-674.17	1348.35	2vs3	0.25	0.62	0.12	0.37	9	1366.71	1.81	0.22
	4	x	x	x	x				x	8	1364.62	1398.44	-674.31	1348.62	3vs4	0.27	0.61	0.11	0.36	8	1364.90	0	0.55
	5	x	x	x					x	7	1368.40	1398.00	-677.20	1354.40	4vs5	5.78	0.02	0.09	0.37	7	1368.62	3.72	0.09
	6	x	x	x		x				6	1432.07	1457.44	-710.04	1420.07	6vs4	71.46	<0.001	0.21	NA	6	1432.24	67.34	0.00
Nest site fidelity ~	Model	species	context	sex	species: context	sex: context	species: sex	species:context:sex	site	d.f.	AIC	BIC	logLik	deviance	Test	L.Ratio	p-value	R2 marginal	R2 conditional	K	AICc	ΔAICc	weight
	1	x	x	x	x	x	x	x	x	10	-51.13	-23.51	35.57	-71.13				0.32	0.36	10	-49.06	9.42	0.01
	2	x	x	x	x	x	x	x	x	9	-52.81	-27.95	35.41	-70.81	1vs2	0.32	0.57	0.32	0.36	9	-51.13	7.35	0.02
	3	x	x	x	x	x			x	8	-54.81	-32.71	35.40	-70.81	2vs3	0.00	0.95	0.32	0.36	8	-53.47	5.00	0.05
	4	x	x	x	x				x	7	-56.55	-37.22	35.28	-70.55	3vs4	0.25	0.61	0.32	0.35	7	-55.52	2.95	0.13
	5	x	x	x					x	6	-52.17	-35.59	32.08	-64.17	4vs5	6.39	0.01	0.24	0.30	6	-51.40	7.07	0.02
	6	x	x		x				x	6	-57.26	-40.69	34.63	-69.26	4vs6	1.29	0.26	0.31	0.33	6	-56.50	1.98	0.21
7	x	x		x					5	-59.02	-45.21	34.51	-69.02	6vs7	0.24	0.62	0.31	NA	5	-58.48	0	0.57	
AS ~	Model	species	context	group size	species: context				site	d.f.	AIC	BIC	logLik	deviance	Test	L.Ratio	p-value	R2 marginal	R2 conditional	K	AICc	ΔAICc	weight
	1	x	x	x	x				x	7	-88.33	-67.44	51.16	-102.33				0.15	0.29	7	-87.52	2.14	0.14
	2	x	x	x					x	6	-86.18	-68.28	49.09	-98.18	1vs2	4.15	0.04	0.08	0.24	6	-85.58	4.08	0.05
	3	x	x		x				x	6	-90.26	-72.36	51.13	-102.26	1vs3	0.07	0.80	0.15	0.28	6	-89.66	0	0.41
4	x	x		x					5	-90.05	-75.13	50.02	-100.05	3vs4	2.21	0.14	0.13	NA	5	-89.62	0.04	0.40	
VI ~	Model	species	context	group state	species: context	context: group state	species: group state	species:context: group state	site	d.f.	AIC	BIC	logLik	deviance	Test	L.Ratio	p-value	R2 marginal	R2 conditional	K	AICc	ΔAICc	weight
	1	x	x	x	x	x	x	x	x	10	1244.34	1274.18	-612.17	1224.34				0.63	0.64	10	1245.97	5.57	0.03
	2	x	x	x	x	x	x		x	9	1243.21	1270.06	-612.60	1225.21	1vs2	0.87	0.35	0.63	0.64	9	1244.53	4.14	0.06
	3	x	x	x	x	x			x	8	1241.75	1265.62	-612.88	1225.75	2vs3	0.55	0.46	0.63	0.64	8	1242.80	2.41	0.13
	4	x	x	x	x				x	7	1241.26	1262.14	-613.63	1227.26	3vs4	1.50	0.22	0.63	0.63	7	1242.07	1.67	0.19
	5	x	x	x					x	6	1241.79	1259.69	-614.89	1229.79	4vs5	2.53	0.11	0.62	0.63	6	1242.39	2.00	0.16
6	x	x	x						5	1239.97	1254.88	-614.98	1229.97	5vs6	0.18	0.67	0.62	NA	5	1240.39	0	0.44	
SR ~	Model	species	context	species: context					site	d.f.	AIC	BIC	logLik	deviance	Test	L.Ratio	p-value	R2 marginal	R2 conditional	K	AICc	ΔAICc	weight
	1	x	x	x					x	6	7.16	25.06	2.42	-4.84				0.03	0.16	6	7.77	2.12	0.25
	2	x	x						x	5	5.21	20.13	2.39	-4.79	1vs2	0.05	0.82	0.03	0.16	5	5.64	0	0.71
3	x	x							4	11.15	23.08	-1.57	3.15	2vs3	7.93	0.00	0.04	NA	4	11.43	5.79	0.04	

Table A4. Statistical results from the best-fitted linear mixed-effect models (A, without the random effect) analyzing nest-site fidelity and home rang overlap (VI). The full models considered all the variables and their interactions (Table A3): species and context (for all models), sex (for nest-site fidelity), and group state (i.e. intragroup versus intergroup for VI). When an interaction was significant, Tukey post hoc tests were performed (B). Bold p-values highlight significant effects of the variable.

A.

Trait	Variable	Fixed/random	ndf	ddf	Value	SE	F	p-value
Nest site fidelity	species	F	1	113	-0.25	0.04	37.97	<0.001
	context	F	1	113	-0.22	0.06	6.26	0.014
	species:context	F	1	113	0.20	0.08	6.33	0.013
VI	species	F	1	142	-4.39	2.79	2.62	0.108
	context	F	1	142	1.64	4.21	0.40	0.526
	group state	F	1	142	41.30	2.74	226.50	<0.001

B.

Trait	Tukey test (lower; upper confident interval 95%)		estimate	SE	df	t.ratio	p-value
Nest site fidelity	<i>R.d.dilectus.</i> parapatry (0.64; 0.76)	<i>R.bechuanae.</i> parapatry (0.39; 0.50)	0.25	0.04	113	6.43	<0.001
	<i>R.d.dilectus.</i> parapatry (0.64; 0.76)	<i>R.d.dilectus.</i> sympatry (0.37; 0.59)	0.22	0.06	113	3.53	0.003
	<i>R.bechuanae.</i> parapatry(0.39; 0.50)	<i>R.bechuanae.</i> sympatry (0.34; 0.51)	0.02	0.05	113	0.35	0.986
	<i>R.d.dilectus.</i> sympatry (0.37; 0.59)	<i>R.bechuanae.</i> sympatry (0.34; 0.51)	0.05	0.07	113	0.71	0.894