

## Supplementary Material

**Table S1 – Kernel Density Home Range Estimates. KDE was set at 95%. Units are in km<sup>2</sup>**

species	region	age	count	mean	median	sd	min	max
cv	south	adult	18	58339	15827	97249	878	396682
cv	south	imm	24	174748	87600	192409	761	623804
rv	east	adult	15	159138	77830	199061	15848	741265
rv	east	imm	4	839568	675468	968673	26250	1981087
wb	east	adult	46	41687	15568	65713	2739	394785
wb	east	imm	13	126332	22647	264341	2697	975083
wb	south	adult	30	108501	19601	195714	790	875607
wb	south	imm	13	329716	193193	317619	6982	892097

**Table S2 – Minimum Convex Polygon Home Range Estimates. Polygon was set at 95%. Units are in km<sup>2</sup>**

species	region	age	count	mean	median	sd	min	max
cv	south	adult	18	55170	12988	92546	574	378442
cv	south	imm	24	146715	86905	158142	248	542838
rv	east	adult	15	125422	71033	153677	10967	582529
rv	east	imm	4	659299	533117	755287	26091	1544869
wb	east	adult	46	39784	18817	49348	2650	223958
wb	east	imm	13	111905	21324	236675	2282	863473
wb	south	adult	30	123748	22871	199947	879	697135
wb	south	imm	13	217723	165477	183490	6948	527635

**Table S3 – Results of posthoc comparisons from model 1. Results are averaged over breeding status and study. Significant values are highlighted in bold. The estimates are on the log scale.**

contrast	estimate	SE	df	t.ratio	p.value
cv-rv	-0.713	0.419	146	-1.702	0.3265
cv-wb	-0.236	0.283	146	-0.834	0.8381
cv-wbe	0.256	0.371	146	0.69	0.9008
rv-wb	0.477	0.414	146	1.152	0.6581
<b>rv-wbe</b>	<b>0.969</b>	<b>0.278</b>	<b>146</b>	<b>3.484</b>	<b>0.0036</b>
wb-wbe	0.492	0.36	146	1.367	0.522

**Table S4 – Results of posthoc comparisons from model 2. Results are averaged over breeding status and study. Significant values are highlighted in bold. The estimates are on the log odds scale.**

contrast	estimate	SE	df	t.ratio	p.value
cv-rv	-1.1605	0.467	146	-2.483	0.0668
<b>cv-wb</b>	<b>-0.7678</b>	<b>0.284</b>	<b>146</b>	<b>-2.708</b>	<b>0.0376</b>
<b>cv-wbe</b>	<b>-1.2501</b>	<b>0.433</b>	<b>146</b>	<b>-2.887</b>	<b>0.023</b>
rv-wb	0.3926	0.46	146	0.854	0.8283
rv-wbe	-0.0897	0.253	146	-0.355	0.9846
wb-wbe	-0.4823	0.422	146	-1.142	0.6641

**Table S5 – The proportion of overlap of tracks (Brownian bridge estimates 95%) with protected areas according to country where they were tagged. Counts refer to the number of individual birds.**

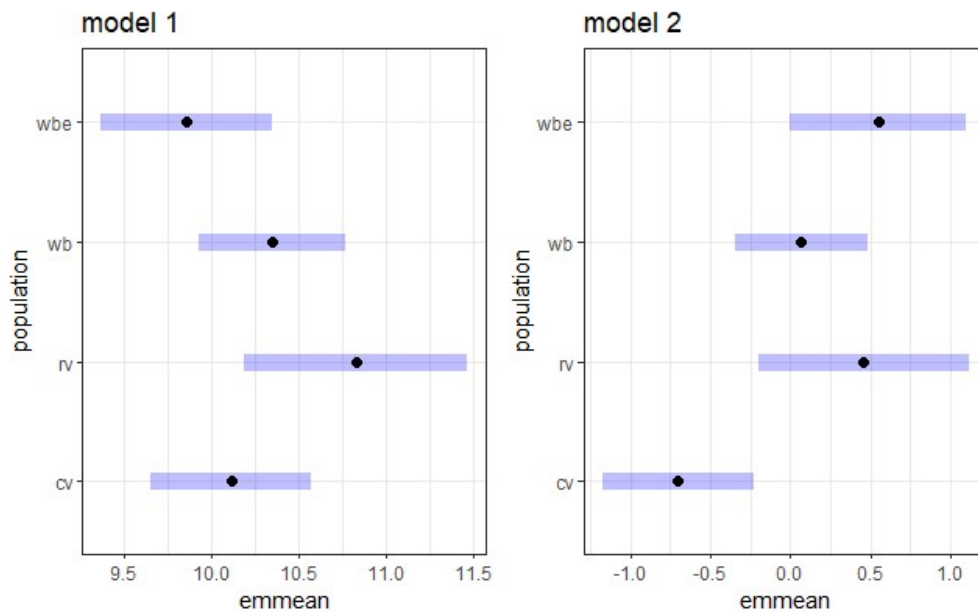
species	country	count	mean	median	sd
cv	Namibia	1	0.098	0.098	NA
cv	South Africa	41	0.236	0.143	0.235
rv	Ethiopia	1	0.189	0.189	NA
rv	Kenya	18	0.585	0.568	0.218
wb	Ethiopia	5	0.36	0.296	0.23
wb	Kenya	21	0.62	0.597	0.183
wb	Mozambique	9	0.654	0.677	0.274
wb	Namibia	18	0.489	0.459	0.222
wb	South Africa	11	0.471	0.323	0.364
wb	Swaziland	2	0.454	0.454	0.317
wb	Tanzania	33	0.797	0.823	0.128
wb	Zambia	3	0.577	0.601	0.055

**Table S6. Breakdown of studies used in our annual home range analysis showing the regions, species and number of individuals.**

<b>species</b>	<b>region</b>	<b>count</b>
wb	south	3
rv	east	1
wb	east	5
wb	south	2
wb	south	10
rv	east	13
wb	east	11
wb	east	30
cv	south	13
wb	south	5
cv	south	8
wb	south	5
wb	south	10
cv	south	1
cv	south	7
rv	east	2
wb	east	7
rv	east	3
wb	east	6
cv	south	13
wb	south	8

**Table S7. Breakdown of studies used in our monthly home range analysis showing the regions, species and number of individuals.**

<b>region</b>	<b>species</b>	<b>count</b>
wb	south	2
rv	east	1
wb	east	5
wb	south	2
wb	south	10
rv	east	13
wb	east	11
wb	east	32
cv	south	10
wb	south	5
cv	south	8
wb	south	6
wb	south	10
cv	south	6
cv	south	7
rv	east	2
wb	east	8
rv	east	3
wb	east	6
wb	south	2
cv	south	13
wb	south	10



**Figure S1. Posthoc comparisons of the four vulture populations for models 1-2. Model 1 concerns overall home range; model 2 overlap of overall home range with protected areas. Models 1 and 2 are averaged over breeding status and study variables. The x axis for model 1 is on the log scale; 2 is on the log odds ratio scale.**

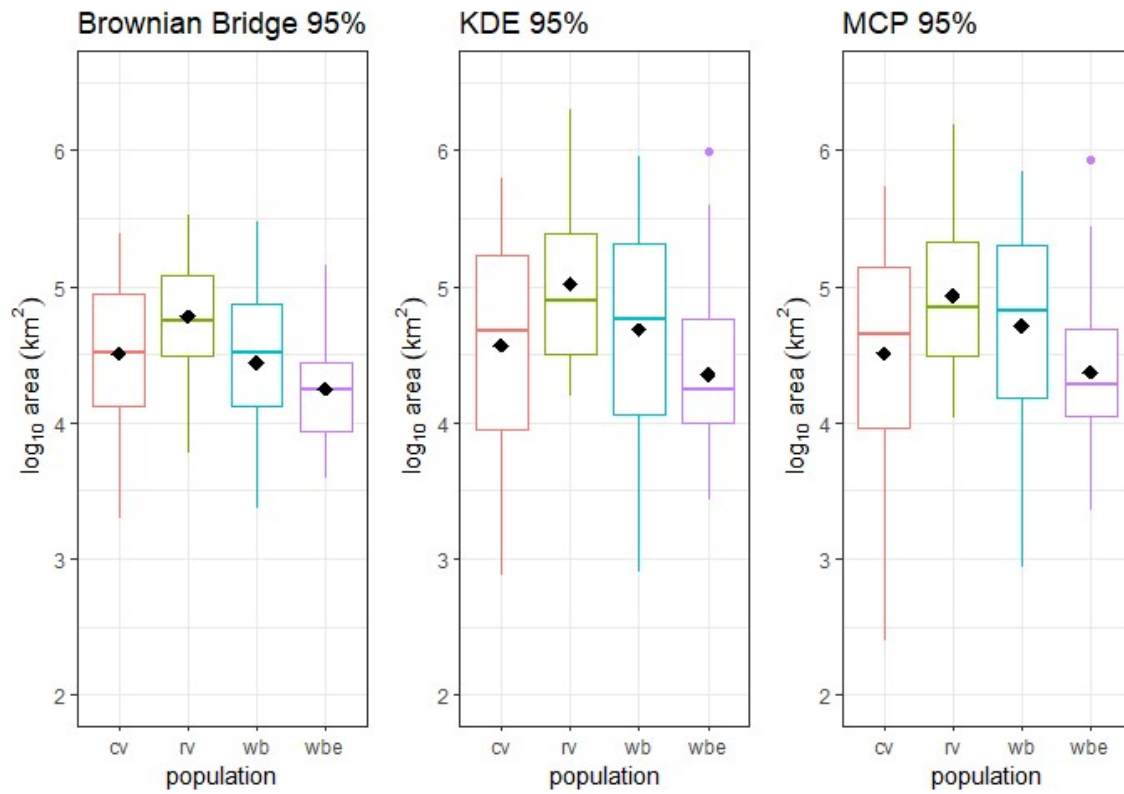


Figure S2. Home range comparison among populations and split by method. They represent the 95% estimates. Diamonds represent mean values. Y axis is on the  $\log_{10}$  scale so, for example, 4 = 10,000 km<sup>2</sup>.