Supplementary Material

Habitat use strategies of African elephants under different seasonal and ecological constraints

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Table S1. Information on collared elephants.

Study area	ID	Name	Sex	Age class
APNR	*Cla*	Classic	M	Adult
	Gow	Gower	M	Adult
	Pro	Proud	M	Adult
	Lap	Lapajuma	F	Adult
	Umb	Umbabat	F	Adult
	Yvo	Yvonne	F	Adult
ENP	*AG004*		M	Adult
	AG006		M	Adult
	AG009		M	Adult
	AG193		M	Adult
	AG195		M	Adult
	AG005		F	Adult
	AG010		F	Adult
	AG012		F	Adult
	AG013		F	Adult
	AG189		F	Young adult
	AG190		F	Young adult
	AG191		F	Young adult
	AG192		F	Adult

Table S2. Individual-specific resource selection function (RSF) results of the APNR elephants in wet and dry season.

Season	Sex	ID	Best-fitted model/ Confidence model(s)^	acc *w*	intercept (SE)	river_ldist (SE)	wtpt_ldist (SE)	road_ldist (SE)	ndvi_median (SE)	ndvi_var (SE)
								Predictor variables		
Wet	Male	*Cla*	1	1.00	-2.317 (0.016) ***	-0.018 (0.016)	-0.134 (0.016) ***	-0.079 (0.017) ***	-0.041 (0.016) *	-0.037 (0.016) *
		Gow	1	1.00	-2.316 (0.016) ***	0.101 (0.017) ***	-0.128 (0.016) ***	-0.098 (0.016) ***	-0.031 (0.016)	-0.026 (0.016)
		Pro	1	1.00	-2.325 (0.017) ***	0.013 (0.016)	-0.182 (0.015) ***	-0.118 (0.016) ***	0.007 (0.016)	-0.020 (0.017)
	Female	*Lap*	1	1.00	-2.322 (0.017) ***	-0.198 (0.015) ***	0.010 (0.017)	-0.073 (0.017) ***	0.007 (0.017)	0.021 (0.017)
		Umb	3, 2, 1	0.96	-2.319 (0.021) ***	-0.053 (0.021) **	-0.183 (0.022) ***	-0.027 (0.024)	0.064 (0.024) **	-0.031 (0.024)
		Yvo	1, 2	1.00	-2.319 (0.018) ***	-0.165 (0.017) ***	-0.003 (0.018)	-0.044 (0.018) *	0.098 (0.019) ***	0.050 (0.018) **
Dry	Male	*Cla*	1	1.00	-2.422 (0.019) ***	-0.036 (0.016) *	-0.386 (0.017) ***	-0.121 (0.020) ***	0.419 (0.026) ***	-0.388 (0.027) ***
		Gow	1	1.00	-2.378 (0.017) ***	-0.217 (0.015) ***	-0.257 (0.016) ***	-0.092 (0.018) ***	0.204 (0.024) ***	-0.110 (0.026) ***
		Pro	1	0.99	-2.325 (0.016) ***	-0.138 (0.016) ***	-0.102 (0.016) ***	-0.056 (0.016) ***	0.082 (0.023) ***	-0.035 (0.023)
	Female	*Lap*	2, 1	1.00	-2.334 (0.017) ***	-0.261 (0.015) ***	-0.046 (0.016) **	0.002 (0.017)	0.001 (0.026)	0.103 (0.025) ***
		Umb	2, 1, 3	1.00	-2.330 (0.022) ***	-0.113 (0.020) ***	-0.182 (0.020) ***	-0.010 (0.022)	0.176 (0.048) ***	-0.106 (0.044) *
		Yvo	2, 1	0.99	-2.313 (0.019) ***	-0.082 (0.018) ***	-0.081 (0.019) ***	0.020 (0.019)	0.132 (0.035) ***	-0.106 (0.034) **

^ Confidence model(s) was arranged in descending order of Akaike weight (*w*) until acc *w* reaches 0.95.
Significant *p*-value < 0.001 '***'; < 0.01 '**'; < 0.05 '*'.

Table S3. Individual-specific resource selection function (RSF) results of the ENP elephants in wet and dry season.

Season	Sex	ID	Best-fitted model/ Confidence model(s)^	acc *w*	intercept (SE)	pans_ldist (SE)	wtpt_ldist (SE)	road_ldist (SE)	ndvi_median (SE)	ndvi_var (SE)
								Predictor variables		
Wet	Male	AG004	1	1	-2.448 (0.050) ***	-0.190 (0.057) ***	0.430 (0.055) ***	-0.240 (0.041) ***	0.124 (0.041) **	0.209 (0.045) ***
		AG006	1	0.97	-2.332 (0.031) ***	0.020 (0.043)	-0.014 (0.038)	-0.109 (0.030) ***	0.073 (0.039)	-0.082 (0.040) *
		AG009	1, 2	1	-2.443 (0.038) ***	0.249 (0.049) ***	-0.158 (0.049) **	-0.104 (0.040) **	0.274 (0.042) ***	0.129 (0.036) ***
		AG193	1, 3, 2	1	-2.342 (0.038) ***	0.089 (0.038) *	0.252 (0.042) ***	-0.075 (0.037) *	0.196 (0.047) ***	0.063 (0.042)
		AG195	1	1	-2.471 (0.034) ***	-0.312 (0.042) ***	0.364 (0.043) ***	-0.163 (0.033) ***	-0.080 (0.041)	-0.040 (0.039)
	Female	AG005	1, 3	0.98	-2.408 (0.047) ***	0.621 (0.070) ***	-0.320 (0.056) ***	0.155 (0.053) **	0.179 (0.042) ***	0.020 (0.044)
		AG010	1, 5	0.97	-2.255 (0.037) ***	-0.008 (0.039)	0.006 (0.040)	-0.106 (0.034) **	0.204 (0.040) ***	-0.112 (0.036) **
		AG012	1	1	-2.382 (0.044) ***	0.252 (0.058) ***	0.341 (0.050) ***	-0.170 (0.040) ***	-0.149 (0.045) ***	-0.096 (0.055)
		AG013	2, 1, 3	0.99	-2.272 (0.034) ***	0.109 (0.039) **	-0.083 (0.036) *	-0.040 (0.035)	0.289 (0.038) ***	-0.065 (0.034)
		AG189	1, 2, 3	1	-2.518 (0.032) ***	-0.065 (0.030) *	0.306 (0.035) ***	-0.055 (0.031)	0.186 (0.036) ***	0.072 (0.030) *
		AG190	2, 1	0.99	-2.522 (0.032) ***	-0.026 (0.030)	0.197 (0.034) ***	-0.039 (0.031)	0.321 (0.039) ***	0.104 (0.028) ***
		AG191	1	0.97	-2.295 (0.020) ***	0.065 (0.023) **	-0.018 (0.022)	0.072 (0.022) ***	0.089 (0.021) ***	-0.005 (0.021)
		AG192	1	1	-2.514 (0.054) ***	0.071 (0.044)	0.225 (0.060) ***	0.230 (0.053) ***	0.724 (0.077) ***	0.004 (0.057)
Dry	Male	AG004	2, 1	1.00	-2.597 (0.052) ***	0.566 (0.103) ***	-0.663 (0.053) ***	-0.051 (0.043)	0.328 (0.067) ***	0.403 (0.065) ***
		AG006	1, 2	1.00	-2.383 (0.043) ***	-0.164 (0.055) **	-0.142 (0.057) *	-0.089 (0.044) *	0.211 (0.061) ***	0.317 (0.060) ***
		AG009	1	1.00	-2.613 (0.054) ***	-0.367 (0.039) ***	-0.230 (0.042) ***	-0.375 (0.042) ***	-0.177 (0.055) **	-0.391 (0.057) ***
		AG193	1, 2, 3	0.99	-2.354 (0.031) ***	-0.007 (0.031)	-0.427 (0.036) ***	0.055 (0.036)	0.247 (0.037) ***	0.064 (0.038)
		AG195	3, 1, 2	1.00	-2.339 (0.031) ***	0.003 (0.040)	-0.443 (0.033) ***	-0.048 (0.031)	0.365 (0.034) ***	0.029 (0.045)
	Female	AG005	-	-	-	-	-	-	-	-
		AG010	3, 2, 1	0.99	-2.349 (0.043) ***	-0.057 (0.042)	-0.141 (0.044) **	0.054 (0.050)	-0.307 (0.052) ***	0.067 (0.049)
		AG012	1	1.00	-2.360 (0.043) ***	0.092 (0.056)	0.094 (0.059)	0.365 (0.060) ***	-0.189 (0.050) ***	0.113 (0.047) *
		AG013	2, 1	1.00	-2.342 (0.042) ***	0.050 (0.049)	-0.216 (0.041) ***	-0.062 (0.046)	-0.037 (0.048)	0.184 (0.041) ***
		AG189	2, 1	1.00	-2.388 (0.026) ***	0.118 (0.028) ***	-0.148 (0.025) ***	-0.034 (0.027)	0.508 (0.029) ***	-0.225 (0.033) ***
		AG190	1, 2	1.00	-2.359 (0.024) ***	0.069 (0.027) **	-0.169 (0.024) ***	-0.041 (0.025)	0.522 (0.028) ***	-0.230 (0.030) ***
		AG191	2, 1	1.00	-2.333 (0.022) ***	-0.015 (0.023)	-0.318 (0.021) ***	-0.001 (0.024)	0.052 (0.024) *	0.117 (0.026) ***
		AG192	-	-	-	-	-	-	-	-

^ Confidence model(s) was arranged in descending order of Akaike weight (*w*) until acc *w* reaches 0.95.
Significant *p*-value < 0.001 '***'; < 0.01 '**'; < 0.05 '*'.

Table S4. The results of population-level resource selection functions (RSF) constructed with '*averaged*', '*combined*' and '*glmm*' approach of the APNR elephants.

Season	n	Approach	Best-fitted model/ Confidence models^	acc w	intercept (SE)	river_ldist (SE)	wtpt_ldist (SE)	road_ldist (SE)	ndvi_median (SE)	ndvi_var (SE)
						Predictor variables				
Wet	6	averaged#	-	-	-2.320 (0.001)	-0.060 (0.047)	-0.103 (0.034)	-0.079 (0.013)	0.009 (0.021)	-0.006 (0.014)
	6	combined	1	1.00	-2.312 (0.007) ***	-0.531 (0.007) ***	-0.094 (0.007) ***	-0.077 (0.007) ***	0.007 (0.007)	0.009 (0.007)
	6	glmm	1	1.00	-2.330 (0.015) ***	-0.0526 (0.043)	-0.099 (0.031) **	-0.076 (0.014) ***	0.018 (0.021)	-0.005 (0.013)
Dry	6	averaged#	-	-	-2.350 (0.017)	-0.152 (0.036)	-0.175 (0.053)	-0.043 (0.022)	0.169 (0.063)	-0.098 (0.070)
	6	combined	1	1.00	-2.335 (0.007) ***	-0.137 (0.007) ***	-0.176 (0.007) ***	-0.052 (0.008) ***	0.123 (0.010) ***	-0.071 (0.011) ***
	6	glmm	1	1.00	-2.363 (0.038) ***	-0.143 (0.033) ***	-0.173 (0.043) ***	-0.042 (0.020) *	0.184 (0.071) **	-0.111 (0.065)

^ Confidence model(s) was arranged in descending order of Akaike weight (*w*) until acc *w* reaches 0.95.
# Statistical *p*-value was not calculated in the '*averaged*' approach, as the coefficient estimate and standard error for each predictor variable were calculated as the weighted average of the individual-specific RSF results (Murtaugh 2007).
Significant *p*-value < 0.001 '***'; < 0.01 '**'; < 0.05 '*'.

Table S5. The results of population-level resource selection functions (RSF) constructed with '*averaged*', '*combined*' and '*glmm*' approach of the ENP elephants.

Season	n	Approach	Best-fitted model/ Confidence models^	acc w	intercept (SE)	pans_ldist (SE)	wtpt_ldist (SE)	road_ldist (SE)	ndvi_median (SE)	ndvi_var (SE)
							Predictor variables			
Wet	13	averaged#	-	-	-2.381 (0.027)	0.030 (0.044)	0.096 (0.055)	-0.051 (0.031)	0.149 (0.042)	0.019 (0.024)
	13	combined	1	1.00	-2.345 (0.009) ***	0.026 (0.009) **	0.109 (0.010) ***	-0.050 (0.009) ***	0.109 (0.010) ***	0.052 (0.009) ***
	13	glmm	1	1.00	-2.386 (0.080) ***	0.169 (0.136)	0.131 (0.062) *	-0.053 (0.033)	0.214 (0.066) **	0.040 (0.044)
Dry	11	averaged#	-	-	-2.372 (0.021)	-0.001 (0.044)	-0.258 (0.045)	-0.034 (0.037)	0.220 (0.083)	0.002 (0.062)
	11	combined	1	0.95	-2.322 (0.009) ***	0.051 (0.010) ***	-0.228 (0.010) ***	-0.032 (0.010) **	0.228 (0.010) ***	-0.011 (0.011)
	11	glmm	1	1.00	-2.272 (0.060) ***	0.022 (0.078)	-0.258 (0.050) ***	-0.024 (0.050)	0.145 (0.097)	0.159 (0.151)

^ Confidence model(s) was arranged in descending order of Akaike weight (*w*) until acc *w* reaches 0.95.
# Statistical *p*-value was not calculated in the '*averaged*' approach, as the coefficient estimate and standard error for each predictor variable were calculated as the weighted average of the individual-specific RSF results (Murtaugh 2007).
Significant *p*-value < 0.001 '***'; < 0.01 '**'; < 0.05 '*'.