Appendix

Table S1. Temporal overlap in waterhole visitation between years

Species	$\widehat{O_{est}}$	Mean of null (O_{rand})	p-value	Number of photos (2015)	Number of photos (2022)	Abundance per photo (2015)	Abundance per photo (2022)
Impala	**0.73**	**0.90**	**<0.001**	**1013**	**62**	**5.99**	**7.10**
Giraffe	0.78	0.78	0.418	184	9	1.83	1.11
Elephant	**0.83**	**0.87**	**0.251**	**574**	**38**	**3.77**	**2.05**
Kudu	**0.00**	**0.76**	**<0.001**	**30**	**14**	**3.53**	**1.00**
White Rhinoceros	**0.06**	**0.68**	**0.001**	**35**	**6**	**1.89**	**1.00**
Buffalo	**0.39**	**0.78**	**<0.001**	**77**	**20**	**3.31**	**8.70**
Zebra	**0.69**	**0.82**	**0.060**	**488**	**13**	**4.30**	**2.38**
Hyena	**0.14**	**0.72**	**<0.001**	**95**	**8**	**1.40**	**1.63**
Lion	0.54	0.47	0.266	8	2	2.13	1.00
Warthog	0.86	0.71	0.065	101	4	1.68	1.00
Baboon	**0.57**	**0.80**	**0.021**	**17**	**13**	**5.00**	**1.92**

Estimated temporal overlap ($\widehat{O_{est}}$) between 2015 and 2022, and associated p-value from null randomisations. Bold text indicate species with less overlap in activity cycles between 2015 and 2022 than the mean from null randomisations.

Table S2. Temporal overlap among species pairs across all sites between years

Species A	Species B	$\widehat{O_{est2015}}$	$\widehat{O_{est2022}}$	$\triangle\widehat{O_{est}}$	*p*-value
Giraffe	**Kudu**	**0.82**	**0.00**	**0.82**	**<0.001**
	Elephant	**0.68**	**0.50**	**0.18**	**0.175**
	Impala	0.58	0.73	-0.14	0.227
	White Rhino	**0.51**	**0.00**	**0.51**	**<0.001**
	Buffalo	**0.55**	**0.23**	**0.32**	**0.001**
	Baboon	**0.68**	**0.62**	**0.06**	**0.100**
	Zebra	**0.66**	**0.43**	**0.23**	**0.021**
	Hyena	**0.13**	**0.00**	**0.13**	**0.001**
	Lion	**0.13**	**0.00**	**0.13**	**<0.001**
	Warthog	**0.85**	**0.72**	**0.13**	**0.316**
Kudu	**Elephant**	**0.56**	**0.02**	**0.54**	**<0.001**
	Impala	**0.50**	**0.00**	**0.50**	**<0.001**
	White Rhino	**0.47**	**0.36**	**0.11**	**0.455**
	Buffalo	**0.54**	**0.00**	**0.54**	**<0.001**
	Baboon	**0.66**	**0.00**	**0.66**	**<0.001**
	Zebra	**0.56**	**0.00**	**0.56**	**<0.001**
	Hyena	0.03	0.81	-0.78	<0.001
	Lion	0.05	0.34	-0.29	0.133
	Warthog	**0.82**	**0.00**	**0.82**	**<0.001**

Elephant	**Impala**	**0.49**	**0.48**	**0.00**	**0.150**
	White Rhino	**0.73**	**0.05**	**0.68**	**<0.001**
	Buffalo	**0.54**	**0.29**	**0.24**	**0.002**
	Baboon	0.53	0.66	-0.13	0.246
	Zebra	**0.56**	**0.37**	**0.18**	**0.041**
	Hyena	**0.38**	**0.11**	**0.27**	**0.004**
	Lion	**0.40**	**0.24**	**0.16**	**0.373**
	Warthog	0.62	0.66	-0.04	0.155
Impala	**White Rhino**	**0.37**	**0.08**	**0.29**	**0.004**
	Buffalo	**0.33**	**0.19**	**0.14**	**<0.001**
	Baboon	**0.65**	**0.52**	**0.13**	**0.009**
	Zebra	**0.81**	**0.50**	**0.31**	**0.003**
	Hyena	**0.07**	**0.04**	**0.03**	**0.080**
	Lion	**0.08**	**0.06**	**0.02**	**0.498**
	Warthog	**0.63**	**0.61**	**0.02**	**0.433**
White Rhino	**Buffalo**	**0.56**	**0.00**	**0.56**	**<0.001**
	Baboon	**0.41**	**0.00**	**0.41**	**<0.001**
	Zebra	**0.42**	**0.00**	**0.42**	**<0.001**
	Hyena	0.31	0.41	-0.10	0.233
	Lion	**0.45**	**0.31**	**0.14**	**0.333**

	Warthog	**0.52**	**0.00**	**0.52**	**0.002**
Buffalo	**Baboon**	**0.39**	**0.36**	**0.03**	**0.122**
	Zebra	**0.45**	**0.14**	**0.31**	**0.001**
	Hyena	**0.17**	**0.00**	**0.17**	**<0.001**
	Lion	**0.20**	**0.00**	**0.20**	**0.265**
	Warthog	**0.59**	**0.39**	**0.20**	**0.112**
Baboon	**Zebra**	**0.60**	**0.51**	**0.10**	**0.057**
	Hyena	**0.03**	**0.03**	**-0.01**	**0.092**
	Lion	**0.04**	**0.04**	**0.00**	**0.395**
	Warthog	0.65	0.82	-0.16	0.211
Zebra	**Hyena**	**0.12**	**0.00**	**0.12**	**<0.001**
	Lion	**0.15**	**0.00**	**0.14**	**0.221**
	Warthog	**0.72**	**0.36**	**0.36**	**0.088**
Hyena	Lion	0.49	0.50	0.00	0.202
	Warthog	**0.08**	**0.04**	**0.04**	**0.207**
Lion	**Warthog**	**0.10**	**0.04**	**0.06**	**0.348**

Estimated temporal overlap coefficients for every species pair across all sites between 2015 ($\widehat{O_{est2015}}$) and 2022 ($\widehat{O_{est2022}}$), and the difference between the estimated overlaps ($\triangle\widehat{O_{est}}$). Last column indicates statistical significance. Bold text indicates greater overlap in activity cycles between 2015 and 2022 than the mean from null randomisations.

Table S3. Temporal overlap in waterhole visitation for the overlapping sites (DLP, KWA & NWA) between years

Species	Estimated Temporal Overlap	Mean of Null Distribution	*p*-value	Number of photos in 2015	Number of photos in 2022	Abundance per photo 2015	Abundance per photo 2022
Impala	0.62	0.94	<0.001	510	37	4.90	9.68
Giraffe	0.77	0.73	0.166	129	8	2.00	1.13
Elephant	0.79	0.83	0.317	237	29	5.65	2.21
Kudu	0.00	0.78	<0.001	19	14	3.74	1.00
White Rhinoceros	0.06	0.69	0.001	35	6	1.89	1.00
Buffalo	0.39	0.84	<0.001	46	20	3.13	8.70
Zebra				77	3	3.01	1.00
Hyena	0.13	0.66	<0.001	11	8	1.09	1.63
Lion	0.24	0.45	0.446	4	2	1.75	1.00
Warthog	0.73	0.67	0.396	43	3	1.21	1.00
Baboon				12	0	5.75	0.00

Estimated species temporal overlap ($\widehat{O_{est}}$) at overlapping sites (DLP, KWA & NWA) between 2015 and 2022, and associated *p*-value from null randomisations. Blue cells indicate less overlap in activity cycles between 2015 and 2022 than the mean from null randomisations. Grey cells indicate insufficient data to generate overlap coefficients.

Table S4. Temporal overlap in waterhole visitation between years (DLP)

Species	Estimated Temporal Overlap	Mean of Null Distribution	*p*-value	Number of photos in 2015	Number of photos in 2022	Abundance per photo 2015	Abundance per photo 2022
Impala				66	0	2.41	0.00
Giraffe				106	0	2.10	0.00
Elephant	0.62	0.78	<0.001	130	13	7.47	2.54
Kudu	0.0	0.79	0.002	5	14	8.00	1.00
White Rhinoceros				0	0	0.00	0.00
Buffalo	0.75	0.76	0.057	8	10	1.50	10.80
Zebra				29	3	4.21	1.00
Hyena	0.16	0.46	0.462	2	8	1.00	1.63
Lion				1	0	4.00	0.00
Warthog				1	2	1.00	1.00
Hippopotamus				0	1	0.00	1.00
Baboon				3	0	17.33	0.00

Estimated species temporal overlap ($\widehat{O_{est}}$) at DLP between 2015 and 2022, and associated *p*-value from null randomisations. Blue cells indicate less overlap in activity cycles between 2015 and 2022 than the mean from null randomisations. Grey cells indicate insufficient data to generate overlap coefficients.

Table S5. Temporal overlap in waterhole visitation between years (KWA)

Species	Estimated Temporal Overlap	Mean of Null Distribution	*p*-value	Number of photos in 2015	Number of photos in 2022	Abundance per photo 2015	Abundance per photo 2022
Impala	0.11	0.90	<0.001	58	2	8.93	2.00
Giraffe				5	0	2.00	0.00
Elephant	0.48	0.78	0.001	81	7	3.69	1.71
Kudu				1	0	1.00	0.00
White Rhinoceros	0.06	0.70	<0.001	35	6	1.00	1.00
Buffalo	0.03	0.90	<0.001	38	10	3.47	6.60
Zebra				48	0	2.29	0.00
Hyena				9	0	1.11	0.00
Lion				3	0	1.00	0.00
Warthog				41	1	1.20	1.00
Baboon				0	0	0.00	0.00

Estimated species temporal overlap ($\widehat{O_{est}}$) at KWA between 2015 and 2022, and associated *p*-value from null randomisations. Blue cells indicate less overlap in activity cycles between 2015 and 2022 than the mean from null randomisations. Grey cells indicate insufficient data to generate overlap coefficients.

Table S6. Temporal overlap in waterhole visitation between years (NWA)

Species	Estimated Temporal Overlap	Mean of Null Distribution	*p*-value	Number of photos in 2015	Number of photos in 2022	Abundance per photo 2015	Abundance per photo 2022
Impala	0.59	0.88	<0.001	402	35	4.58	10.11
Giraffe	0.72	0.78	0.460	18	8	1.39	1.13
Elephant	0.42	0.73	0.001	26	9	2.65	2.11
Kudu				13	0	2.31	0.00
White Rhinoceros				0	0	0.00	0.00
Buffalo				0	0	0.00	0.00
Zebra				0	0	0.00	0.00
Hyena				0	0	0.00	0.00
Lion				0	2	0.00	1.00
Warthog				1	0	2.00	0.00
Baboon				9	0	1.89	0.00

Estimated species temporal overlap ($\widehat{O_{est}}$) at NWA between 2015 and 2022, and associated *p*-value from null randomisations. Blue cells indicate less overlap in activity cycles between 2015 and 2022 than the mean from null randomisations. Grey cells indicate insufficient data to generate overlap coefficients.

Table S7. Temporal overlap among species pairs across overlapping sites (DLP, KWA & NWA) between years

Species A	Species B	Estimated Temporal Overlap in 2015	Estimated Temporal Overlap in 2022	Differences in Temporal Overlap Between Years	*p*-value
Giraffe	Kudu	0.74	0.00	0.74	0.001
	Elephant	0.54	0.49	0.05	0.314
	Impala	0.57	0.79	-0.21	0.193
	White Rhino	0.50	0.00	0.50	<0.001
	Buffalo	0.41	0.24	0.17	0.004
	Baboon	0.47			
	Zebra	0.75			
	Hyena	0.16	0.00	0.16	0.002
	Lion	0.03	0.00	0.03	0.006
	Warthog	0.82	0.87	-0.05	0.029
Kudu	Elephant	0.43	0.01	0.42	<0.001
	Impala	0.41	0.00	0.40	<0.001
	White Rhino	0.44	0.36	0.08	0.478
	Buffalo	0.46	0.00	0.46	<0.001
	Baboon	0.48			

	Zebra	0.70			
	Hyena	0.08	0.81	-0.73	<0.001
	Lion	0.00	0.34	-0.34	0.149
	Warthog	0.73	0.00	0.73	0.963
Elephant	Impala	0.46	0.40	0.06	0.056
	White Rhino	0.70	0.03	0.67	<0.001
	Buffalo	0.35	0.28	0.08	0.002
	Baboon	0.35			
	Zebra	0.53			
	Hyena	0.44	0.09	0.34	0.001
	Lion	0.21	0.24	-0.03	0.358
	Warthog	0.56	0.54	0.03	0.370
Impala	White Rhino	0.42	0.00	0.41	<0.001
	Buffalo	0.26	0.19	0.07	<0.001
	Baboon	0.39			
	Zebra	0.51			
	Hyena	0.16	0.01	0.16	<0.001
	Lion	0.04	0.01	0.03	0.208
	Warthog	0.58	0.70	-0.13	0.219
White Rhino	Buffalo	0.40	0.00	0.40	<0.001
	Baboon	0.37			
	Zebra	0.57			

	Hyena	0.32	0.41	-0.10	0.314
	Lion	0.21	0.31	-0.10	0.252
	Warthog	0.56	0.00	0.56	0.042
Buffalo	Baboon	0.24			
	Zebra	0.52			
	Hyena	0.14	0.00	0.14	<0.001
	Lion	0.02	0.00	0.02	0.184
	Warthog	0.54	0.30	0.23	0.074
Baboon	Zebra	0.51			
	Hyena	0.04			
	Lion	0.00			
	Warthog	0.46			
Zebra	Hyena	0.23			
	Lion	0.06			
	Warthog	0.82			
Hyena	Lion	0.25	0.50	-0.24	0.255
	Warthog	0.18	0.01	0.18	0.159
Lion	Warthog	0.04	0.01	0.03	0.331

Estimated temporal overlap coefficients across species pairs between 2015 and 2020 ($\triangle\widehat{O_{est}}$) for the overlapping sites (DLP, KWA and NWA). Last column shows the *p*-value from randomisations. Yellow indicates greater overlap in activity cycles between 2015 and 2022 than the mean from null randomisations, blue indicates less overlap in activity cycles between 2015

and 2022 than the mean from randomisations. Grey cells indicate insufficient data to generate overlap coefficients.

Table S8. Temporal overlap among species pairs between years (DLP)

Species A	Species B	Estimated Temporal Overlap in 2015	Estimated Temporal Overlap in 2022	Differences in Temporal Overlap Between Years	*p*-value
Giraffe	Kudu	0.17			
	Elephant	0.46			
	Impala	0.73			
	White Rhino				
	Buffalo	0.46			
	Baboon	0.09			
	Zebra	0.59			
	Hyena	0.00			
	Lion				
	Warthog				
Kudu	Elephant	0.08	0.01	0.07	<0.001
	Impala	0.19			
	White Rhino				
	Buffalo	0.06	0.00	0.06	<0.001

	Baboon	0.01			
	Zebra	0.05			
	Hyena	0.00	0.81	-0.81	<0.001
	Lion				
	Warthog				
Elephant	Impala	0.44			
	White Rhino				
	Buffalo	0.39	0.08	0.31	<0.001
	Baboon	0.06			
	Zebra	0.31			
	Hyena	0.18	0.10	0.08	0.038
	Lion				
	Warthog				
Impala	White Rhino				
	Buffalo	0.61			
	Baboon	0.13			
	Zebra	0.53			
	Hyena	0.00			
	Lion				
	Warthog				

White Rhino	Buffalo				
	Baboon				
	Zebra				
	Hyena				
	Lion				
	Warthog				
Buffalo	Baboon	0.11			
	Zebra	0.31			
	Hyena	0.00	0.00	0.00	0.011
	Lion				
	Warthog				
Baboon	Zebra	0.20			
	Hyena	0.00			
	Lion				
	Warthog				
Zebra	Hyena	0.06			
	Lion				
	Warthog				
Hyena	Lion				
	Warthog				
Lion	Warthog				

Estimated temporal overlap coefficients across species pairs between 2015 and 2020 ($\triangle\widehat{O_{est}}$) at DLP. Last column shows the *p*-value from randomisations. Yellow indicates greater overlap in activity cycles between 2015 and 2022 than the mean from null randomisations, blue indicates less overlap in activity cycles between 2015 and 2022 than the mean from randomisations. Grey cells indicate insufficient data to generate overlap coefficients.

Table S9. Temporal overlap among species pairs between years (KWA)

Species A	Species B	Estimated Temporal Overlap in 2015	Estimated Temporal Overlap in 2022	Differences in Temporal Overlap Between Years	*p*-value
Giraffe	Kudu				
	Elephant				
	Impala				
	White Rhino				
	Buffalo				
	Baboon				
	Zebra				
	Hyena				
	Lion				
	Warthog				
Kudu	Elephant				
	Impala				
	White Rhino				
	Buffalo				

	Baboon				
	Zebra				
	Hyena				
	Lion				
	Warthog				
Elephant	Impala	0.37	0.68	-0.32	0.066
	White Rhino	0.74	0.00	0.74	<0.001
	Buffalo	0.39	0.00	0.38	<0.001
	Baboon				
	Zebra	0.52			
	Hyena	0.34			
	Lion	0.10			
	Warthog	0.60			
Impala	White Rhino	0.33	0.13	0.20	0.402
	Buffalo	0.14	0.01	0.13	0.157
	Baboon				
	Zebra	0.29			
	Hyena	0.09			
	Lion	0.01			
	Warthog	0.48			

White Rhino	Buffalo	0.34	0.00	0.34	<0.001
	Baboon				
	Zebra	0.45			
	Hyena	0.34			
	Lion	0.15			
	Warthog	0.54			
Buffalo	Baboon				
	Zebra	0.76			
	Hyena	0.13			
	Lion	0.01			
	Warthog	0.49			
Baboon	Zebra				
	Hyena				
	Lion				
	Warthog				
Zebra	Hyena	0.17			
	Lion	0.00			
	Warthog	0.68			
Hyena	Lion	0.26			
	Warthog	0.19			
Lion	Warthog	0.02			

Estimated temporal overlap coefficients across species pairs between 2015 and 2020 ($\triangle\widehat{O_{est}}$) at KWA. Last column shows the *p*-value from randomisations. Yellow indicates greater overlap in activity cycles between 2015 and 2022 than the mean from null randomisations, blue indicates less overlap in activity cycles between 2015 and 2022 than the mean from randomisations. Grey cells indicate insufficient data to generate overlap coefficients.

Table S10. Temporal overlap among species pairs between years (NWA)

Species A	Species B	Estimated Temporal Overlap in 2015	Estimated Temporal Overlap in 2022	Differences in Temporal Overlap Between Years	*p*-value
Giraffe	Kudu	0.62			
	Elephant	0.53	0.62	-0.09	0.429
	Impala	0.75	0.78	-0.03	0.203
	White Rhino				
	Buffalo				
	Baboon	0.12			
	Zebra				
	Hyena				
	Lion		0.00		
	Warthog				
Kudu	Elephant	0.59			
	Impala	0.48			
	White Rhino				
	Buffalo				
	Baboon	0.14			
	Zebra				

	Hyena				
	Lion				
	Warthog				
Elephant	Impala	0.38	0.52	-0.15	0.356
	White Rhino				
	Buffalo				
	Baboon	0.31			
	Zebra				
	Hyena				
	Lion		0.04		
	Warthog				
Impala	White Rhino				
	Buffalo				
	Baboon	0.10			
	Zebra				
	Hyena				
	Lion		0.00		
	Warthog				
White Rhino	Buffalo				
	Baboon				
	Zebra				
	Hyena				

	Lion				
	Warthog				
Buffalo	Baboon				
	Zebra				
	Hyena				
	Lion				
	Warthog				
Baboon	Zebra				
	Hyena				
	Lion				
	Warthog				
Zebra	Hyena				
	Lion				
	Warthog				
Hyena	Lion				
	Warthog				
	Hippopotamus				
Lion	Warthog				

Estimated temporal overlap coefficients across species pairs between 2015 and 2020 ($\triangle\widehat{O_{est}}$) at NWA. Last column shows the *p*-value from randomisations. Yellow indicates greater overlap in activity cycles between 2015 and 2022 than the mean from null randomisations, blue indicates

less overlap in activity cycles between 2015 and 2022 than the mean from randomisations. Grey cells indicate insufficient data to generate overlap coefficients.

Table S11. Comparison between pairwise species estimated temporal overlap and observed spatial co-occurrence for 2022

Species A	Species B	Estimated Temporal Overlap in 2022	Number of times species seen together	Co-occurrence index
Giraffe	Kudu	0.00	0	0.00
	Elephant	0.50	1	0.11
	Impala	0.73	0	0.00
	White Rhino	0.00	0	0.00
	Buffalo	0.23	0	0.00
	Baboon	0.62	0	0.00
	Zebra	0.43	0	0.00
	Hyena	0.00	0	0.00
	Lion	0.00	0	0.00
	Warthog	0.72	0	0.00
Kudu	Elephant	0.02	0	0.00
	Impala	0.00	0	0.00
	White Rhino	0.36	0	0.00
	Buffalo	0.00	0	0.00
	Baboon	0.00	0	0.00
	Zebra	0.00	0	0.00

	Hyena	0.81	7	0.88
	Lion	0.34	0	0.00
	Warthog	0.00	0	0.00
Elephant	Impala	0.48	0	0.00
	White Rhino	0.05	0	0.00
	Buffalo	0.29	0	0.00
	Baboon	0.66	0	0.00
	Zebra	0.37	0	0.00
	Hyena	0.11	0	0.00
	Lion	0.24	0	0.00
	Warthog	0.66	0	0.00
Impala	White Rhino	0.08	0	0.00
	Buffalo	0.19	1	0.05
	Baboon	0.52	0	0.00
	Zebra	0.50	7	0.54
	Hyena	0.04	0	0.00
	Lion	0.06	0	0.00
	Warthog	0.61	0	0.00
White Rhino	Buffalo	0.00	0	0.00
	Baboon	0.00	0	0.00
	Zebra	0.00	0	0.00
	Hyena	0.41	0	0.00
	Lion	0.31	0	0.00

	Warthog	0.00	0	0.00
Buffalo	Baboon	0.36	0	0.00
	Zebra	0.14	0	0.00
	Hyena	0.00	0	0.00
	Lion	0.00	0	0.00
	Warthog	0.39	0	0.00
Baboon	Zebra	0.51	0	0.00
	Hyena	0.03	0	0.00
	Lion	0.04	0	0.00
	Warthog	0.82	0	0.00
Zebra	Hyena	0.00	0	0.00
	Lion	0.00	0	0.00
	Warthog	0.36	0	0.00
Hyena	Lion	0.50	0	0.00
	Warthog	0.04	0	0.00
Lion	Warthog	0.04	0	0.00

Pairwise species estimated temporal overlap coefficients and the number of times a species-pair was recorded in the same photograph. The last column reports the number of photographs of species pair seen together/the total number of photographs of the species that was seen less often (see Methods).

Table S12. Comparison between pairwise species estimated temporal overlap and observed spatial co-occurrence for 2015

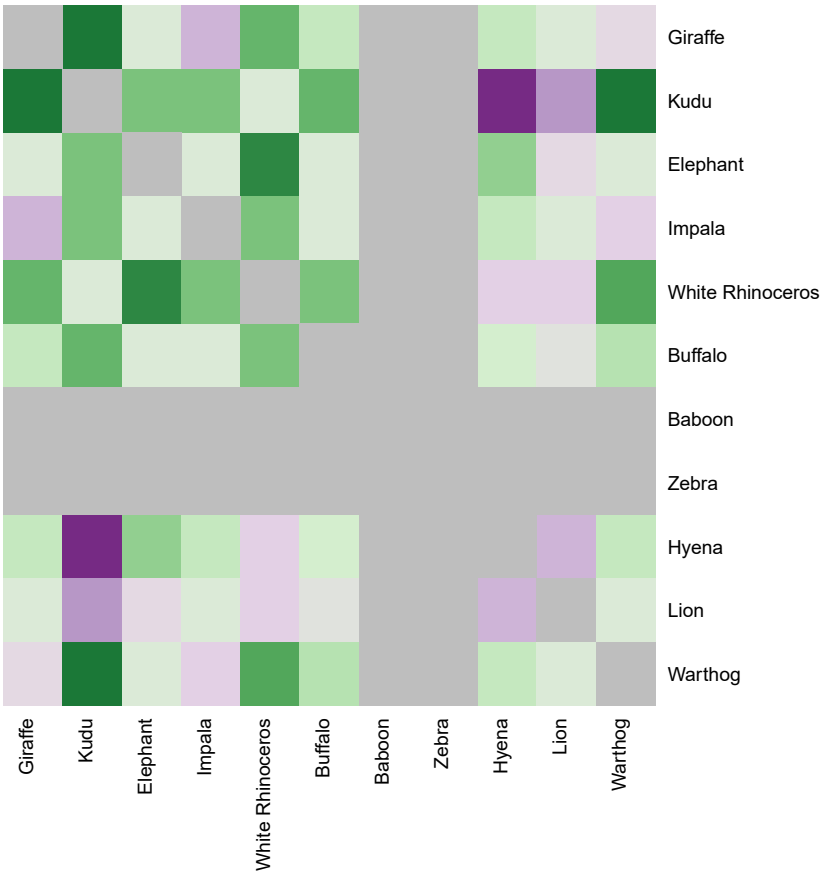
Species A	Species B	Estimated Temporal Overlap in 2015	Number of times species seen together	Co-occurrence index
Giraffe	Kudu	0.82	2	0.07
	Elephant	0.68	10	0.05
	Impala	0.58	31	0.17
	White Rhino	0.51	0	0.00
	Buffalo	0.55	4	0.05
	Baboon	0.68	0	0.00
	Zebra	0.66	29	0.16
	Hyena	0.13	0	0.00
	Lion	0.13	0	0.00
	Warthog	0.85	0	0.00
Kudu	Elephant	0.56	0	0.00
	Impala	0.50	26	0.87
	White Rhino	0.47	0	0.00
	Buffalo	0.54	2	0.07
	Baboon	0.66	0	0.00
	Zebra	0.56	11	0.37

	Hyena	0.03	0	0.00
	Lion	0.05	0	0.00
	Warthog	0.82	0	0.00
Elephant	Impala	0.49	62	0.11
	White Rhino	0.73	7	0.20
	Buffalo	0.54	9	0.12
	Baboon	0.53	0	0.00
	Zebra	0.56	24	0.05
	Hyena	0.38	2	0.02
	Lion	0.40	0	0.00
	Warthog	0.62	4	0.04
Impala	White Rhino	0.37	1	0.03
	Buffalo	0.33	15	0.19
	Baboon	0.65	5	0.29
	Zebra	0.81	205	0.42
	Hyena	0.07	0	0.00
	Lion	0.08	1	0.13
	Warthog	0.63	32	0.32
White Rhino	Buffalo	0.56	0	0.00
	Baboon	0.41	0	0.00
	Zebra	0.42	0	0.00
	Hyena	0.31	2	0.06
	Lion	0.45	0	0.00

	Warthog	0.52	0	0.00
Buffalo	Baboon	0.39	0	0.00
	Zebra	0.45	0	0.00
	Hyena	0.17	0	0.00
	Lion	0.20	0	0.00
	Warthog	0.59	1	0.01
Baboon	Zebra	0.60	1	0.06
	Hyena	0.03	0	0.00
	Lion	0.04	0	0.00
	Warthog	0.65	0	0.00
Zebra	Hyena	0.12	0	0.00
	Lion	0.15	0	0.00
	Warthog	0.72	18	0.18
Hyena	Lion	0.49	0	0.00
	Warthog	0.08	0	0.00
Lion	Warthog	0.10	0	0.00

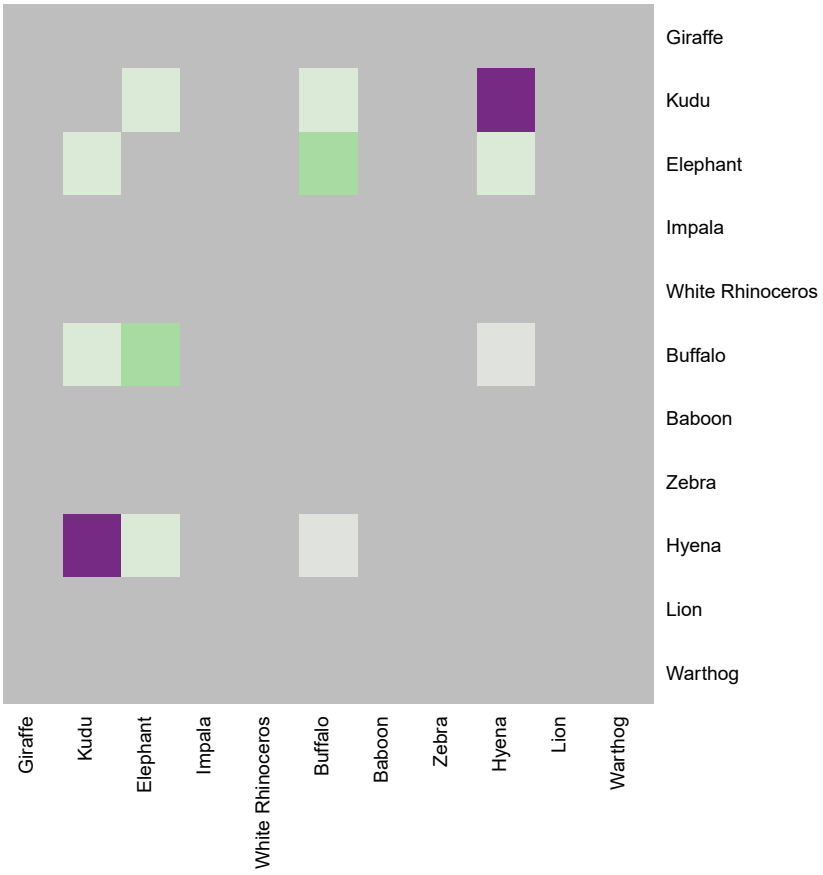
Pairwise species estimated temporal overlap coefficients and the number of times a species-pair was recorded in the same photograph. The last column reports the number of photographs of species pair seen together/the total number of photographs of the species that was seen less often (see Methods).

Figure S1. Species pairwise temporal overlap for all overlapping sites between years



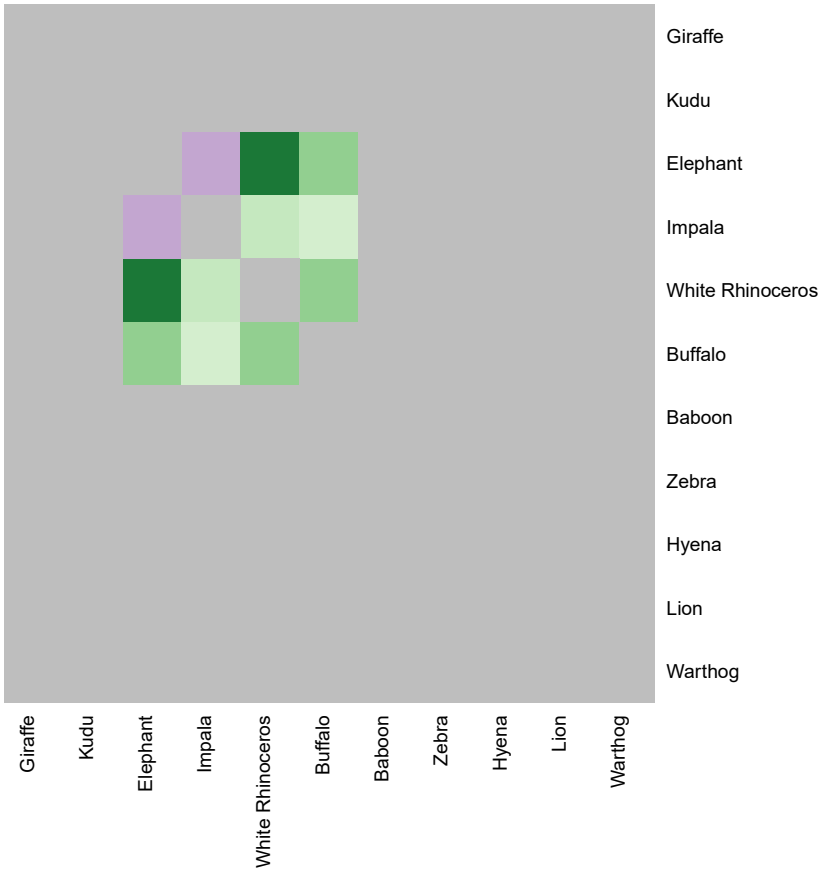
Pairwise species heatmap showing the difference in estimated overlap probabilities between 2015 and 2022 ($\triangle\widehat{O_{est}}$) for the overlapping sites (DLP, KWA and NWA). Negative values (purple shading) indicate a larger overlap between species pairs in 2022 vs 2015. Positive values (green shading) indicate a larger overlap between species pairs in 2015 vs 2022. Intensity of shading reflects magnitude of change in overlap. Grey cells indicate insufficient data to generate overlap coefficients.

Figure S2. Species pairwise temporal overlap between years (DLP)



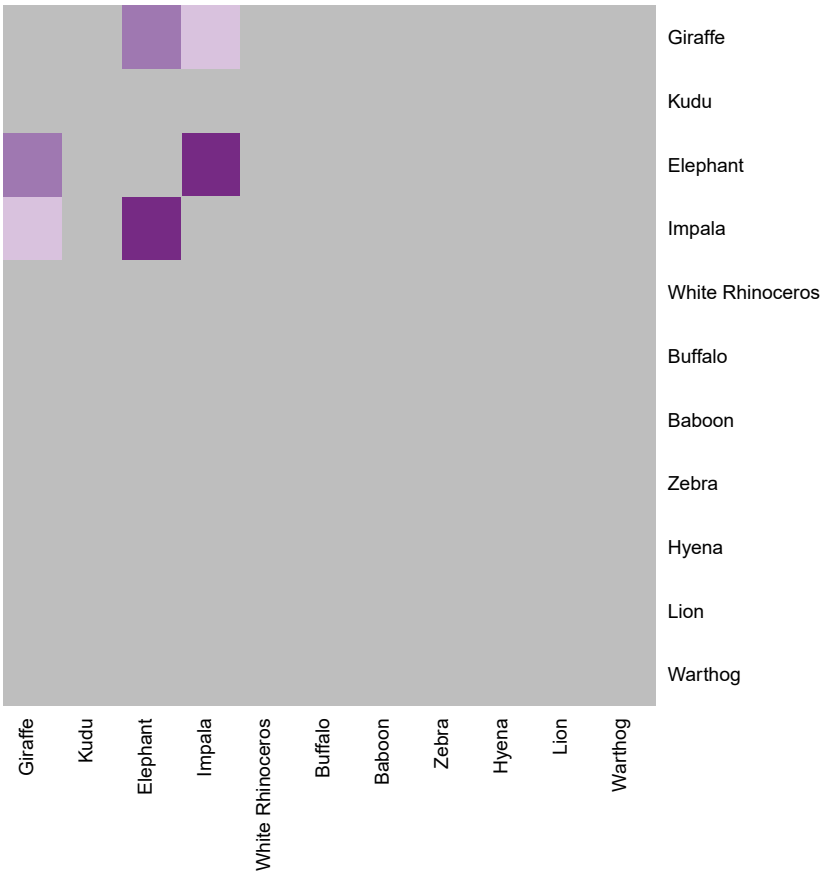
Pairwise species heatmap showing the difference in estimated overlap probabilities between 2015 and 2022 ($\triangle\widehat{O_{est}}$) at DLP. Negative values (purple shading) indicate a larger overlap between species pairs in 2022 vs 2015. Positive values (green shading) indicate a larger overlap between species pairs in 2015 vs 2022. Intensity of shading reflects magnitude of change in overlap. Grey cells indicate insufficient data to generate overlap coefficients.

Figure S3. Species pairwise temporal overlap between years (KWA)



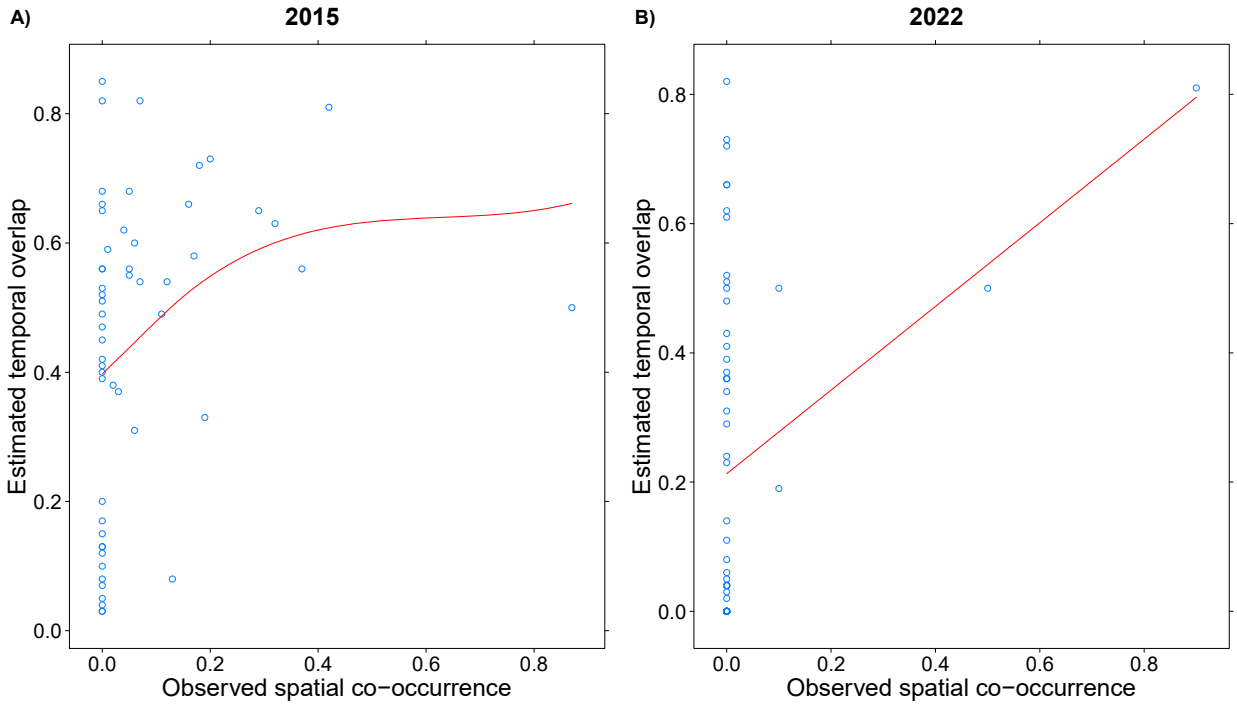
Pairwise species heatmap showing the difference in estimated overlap probabilities between 2015 and 2022 ($\triangle\widehat{O_{est}}$) at KWA. Negative values (purple shading) indicate a larger overlap between species pairs in 2022 vs 2015. Positive values (green shading) indicate a larger overlap between species pairs in 2015 vs 2022. Intensity of shading reflects magnitude of change in overlap. Grey cells indicate insufficient data to generate overlap coefficients.

Figure S4. Species pairwise temporal overlap between years (NWA)



Pairwise species heatmap showing the difference in estimated overlap probabilities between 2015 and 2022 ($\triangle\widehat{O_{est}}$) at NWA. Negative values (purple shading) indicate a larger overlap between species pairs in 2022 vs 2015. Intensity of shading reflects magnitude of change in overlap. Grey cells indicate insufficient data to generate overlap coefficients.

Figure S5. Comparison between estimated temporal overlap and observed spatial co-occurrence



(A) Scatterplot showing the correlation between estimated temporal overlap and observed spatial co-occurrence between species pairs in 2015 (Spearman correlation: 0.43). (B) Scatterplot showing the correlation between estimated temporal overlap and observed spatial co-occurrence between species pairs in 2022 (Spearman correlation: 0.27). Lines show LOESS polynomial fits.