

Ecography

**ECOG-03039**

Kaszta, Ž., Cushman, S. A., Sillero-Zubiri, C., Wolff, E. and Marino, J. 2017. Where buffalo and cattle meet: modelling interspecific contact risk using cumulative resistant kernels. – Ecography doi: 10.1111/ecog.03039

**Supplementary material**

## Appendix 1

Table A1. Data used in the study with the data source

Data	Source
Vegetation N content and biomass maps based on RapidEye imagery	Ramoelo A, Skidmore AK, Cho M a., et al (2012) Regional estimation of savanna grass nitrogen using the red-edge band of the spaceborne RapidEye sensor. <i>Int J Appl Earth Obs Geoinf</i> 19:151–162
Vegetation N content and biomass maps based on WorldView-2 imagery	Ramoelo A, Cho M a., Mathieu R, et al (2015) Monitoring grass nutrients and biomass as indicators of rangeland quality and quantity using random forest modelling and WorldView-2 data. <i>Int J Appl Earth Obs Geoinf</i> 43:43–54
Altitude data from Digital Elevation Model (DEM) based on SRTM 4.1	Jarvis A, Reuter HI, Nelson A, Guevara E (2008) Hole-filled SRTM for the globe Version 4, International Centre for Tropical Agriculture (CIAT), Available at: <a href="http://srtm.csi.cgiar.org">http://srtm.csi.cgiar.org</a> .
Land cover from WorldView-2 image classification	Kaszta Ź, Van De Kerchove R, Ramoelo A, Cho MA, Madonsela S, Mathieu R, Wolff E (submitted for publication) Seasonal separation of African savanna components using WorldView-2 imagery: a comparison of pixel- and object-based approaches and selected classification algorithms
Map of vegetation types based on geological substrate and soil	Mucina L, Rutherford MC (2006) The vegetation of South Africa, Lesotho and Swaziland. Strelitzia, Cape Town

Table A2. Composition and buffalo movement costs for stray buffalo for each land cover class in communal areas during the wet season.

Land cover class	Protected areas (%)	Available in communal areas (%)	Used by stray buffalo (%)	Used to available ratio	Scenarios of maximum cost		
					50	100	200
Bare soil	6.14	5.61	0.02	0.36	45	90	180
Crops	0	7.37	0.2	2.71	1	1	1
Grassland	18	28.60	0.03	0.10	50	100	200
Open woodland	44.10	21.57	0.55	2.55	4	7	13
Forest	17.96	8.42	0.04	0.48	43	86	171
Thickets	2.93	8.56	0.09	1.05	32	64	128
Urban	0.04	16.08	0.02	0.12	50	99	198
Water	1.16	0.28	0	0	50	100	100
Water 100m buffer	9.69	3.52	0.05	1.42	25	50	99

Table A3. Composition and buffalo movement costs for stray buffalo for each land cover class in communal areas during the dry season.

Land cover class	Protected areas (%)	Available in communal areas (%)	Used by stray buffalo (%)	Used to available ratio	Scenarios of maximum cost		
					50	100	200
Bare soil	6.54	10.57	0.02	0.19	49	98	197
Crops	0	7.37	0.20	2.71	22	43	85
Grassland	8.5	26.91	0.03	0.11	50	100	200
Open woodland	58.14	23.48	0.55	2.34	26	51	102
Forest	6.61	9.17	0.04	0.44	46	93	186
Thickets	10.93	5.21	0.09	1.73	32	65	129
Urban	0.04	16.08	0.02	0.12	50	100	199
Water	0.97	0.13	0	0	50	100	200
Water 100m buffer	8.28	1.08	0.05	4.62	1	1	1

Table A4. Number of cattle herds per village and season in the study area from census data (data source: Mpumalanga Veterinary Services).

Village	Cattle herds	
	Dry season 2012	Wet season 2013
Belfast	73	75
Huntington	80	81
Justicia	97	101
Lillydale	126	128
Somerset	79	79



















Figure A5. Buffalo-cattle contact risk map for scenarios with different buffalo behaviour inside and outside the protected areas in dry season and for various maximum resistance values.

Figure A6. Matrix of averaged relative differences and correlation between each scenario.

*N-null, F-fence, NF-no fence, DB-different behaviour, SB-same behaviour, W-wet, D-dry, number indicates the maximum resistance value.*

