

Title: Species-Specific Responses of Medium and Large Mammals to Fire Regime Attributes in a Fire-Prone Neotropical Savanna

Supplementary material

Table S1. Model selection evaluating the effect of spatial scale on medium and large-sized mammal detection (p) and occupancy (ψ) in Cerrado. K represents the number of parameters in the model, AICcWt and Cum.Wt indicate the relative weight of the model and the accumulated weight, respectively, and -2LL is the log-likelihood. Numbers 50, 250, and 500 represent the spatial scales in which the variables were measured. Spatial scales used in the analysis are in bold. Occupancy (Ψ) was fitted using the fire regime variables at 250-m scale (div-freq + div-age + burned<2 + unburned>10, indicated as “fire regime”) for the NDVI spatial scale analysis. To compare the spatial scales of fire-related variables for ψ , we fitted detection (p) using NDVI at the spatial scale previously selected.

	K	AICc	ΔAICc	AICcWt	Cum. Wt	-2LL
<i>O. bezoarticus</i>						
NDVI						
ψ(fire regime), p(NDVI50)	7	809.05	0	0.99	0.99	-394.98
ψ(fire regime), p(NDVI250)	7	818.25	9.2	0.01	1	-399.58
ψ(fire regime), p(NDVI500)	7	821.43	12.37	0	1	-401.17
DIV. FIRE FREQUENCY						
ψ(DIV-FREQ250), p(NDVI50)	5	804.55	0	0.5	0.5	-396.02
ψ(DIV-FREQ500), p(NDVI50)	5	804.58	0.04	0.5	1	-396.04
ψ(DIV-FREQ50), p(NDVI50)	Did not converge					
DIV. FIRE AGE						
ψ(DIV-AGE50), p(NDVI50)	5	801.95	0	0.53	0.53	-394.72
ψ(DIV-AGE500), p(NDVI50)	5	803.45	1.5	0.25	0.78	-395.48
ψ(DIV-AGE250), p(NDVI50)	5	803.72	1.78	0.22	1	-395.61
AREA BURNT <2 YRS						
ψ(BURNED<2Y250), p(NDVI50)	5	802.9	0	0.63	0.63	-395.2
ψ(BURNED<2Y500), p(NDVI50)	5	803.99	1.09	0.37	1	-395.75
ψ(BURNED<2Y50), p(NDVI50)	Did not converge					
AREA NOT BURNT >10 YRS						
ψ(UNBURNED>10Y250), p(NDVI50)	5	802.69	0	0.36	0.36	-395.09
ψ(UNBURNED>10Y500), p(NDVI50)	5	802.87	0.18	0.33	0.7	-395.18
ψ(UNBURNED>10Y50), p(NDVI50)	5	803.05	0.37	0.3	1	-395.28
<i>Mazama</i> sp.						
NDVI						
ψ(fire regime), p(NDVI50)	7	214.81	0	0.96	0.96	-97.86
ψ(fire regime), p(NDVI250)	7	221.64	6.84	0.03	0.99	-101.28
ψ(fire regime), p(NDVI500)	7	224.41	9.6	0.01	1	-102.66

DIV. FIRE FREQUENCY						
$\psi(\text{DIV-FREQ500}), p(\text{NDVI50})$	5	804.55	0	0.5	0.5	-396.02
$\psi(\text{DIV-FREQ50}), p(\text{NDVI50})$	5	804.58	0.04	0.5	1	-396.04
$\psi(\text{DIV-FREQ250}), p(\text{NDVI50})$	Did not converge					
DIV. FIRE AGE						
$\psi(\text{DIV-AGE250}), p(\text{NDVI50})$	4	208.23	0	0.46	0.46	-99.32
$\psi(\text{DIV-AGE500}), p(\text{NDVI50})$	4	209.26	1.03	0.27	0.73	-99.83
$\psi(\text{DIV-AGE50}), p(\text{NDVI50})$	4	209.29	1.06	0.27	1	-99.85
AREA BURNT <2 YRS						
$\psi(\text{BURNED}<2\text{Y250}), p(\text{NDVI50})$	4	208.85	0	0.35	0.35	-99.62
$\psi(\text{BURNED}<2\text{Y500}), p(\text{NDVI50})$	4	208.88	0.03	0.35	0.7	-99.64
$\psi(\text{BURNED}<2\text{Y50}), p(\text{NDVI50})$	4	209.2	0.36	0.3	1	-99.8
AREA NOT BURNT >10 YRS						
$\psi(\text{UNBURNED}>10\text{Y250}), p(\text{NDVI50})$	4	207.03	0	0.39	0.39	-98.72
$\psi(\text{UNBURNED}>10\text{Y500}), p(\text{NDVI50})$	4	207.4	0.37	0.33	0.72	-98.9
$\psi(\text{UNBURNED}>10\text{Y50}), p(\text{NDVI50})$	4	207.74	0.71	0.28	1	-99.07
<i>C. brachyurus</i>						
NDVI						
$\psi(\text{fire regime}), p(\text{NDVI250})$	7	430.9	0	0.53	0.53	-205.9
$\psi(\text{fire regime}), p(\text{NDVI500})$	7	432.5	1.61	0.24	0.77	-206.71
$\psi(\text{fire regime}), p(\text{NDVI50})$	7	432.54	1.64	0.23	1	-206.72
DIV. FIRE FREQUENCY						
$\psi(\text{DIV-FREQ50}), p(\text{NDVI250})$	4	430.79	0	0.53	0.53	-210.6
$\psi(\text{DIV-FREQ250}), p(\text{NDVI250})$	4	432.37	1.58	0.24	0.77	-211.38
$\psi(\text{DIV-FREQ500}), p(\text{NDVI250})$	4	432.45	1.65	0.23	1	-211.42
DIV. FIRE AGE						
$\psi(\text{DIV-AGE500}), p(\text{NDVI250})$	4	428	0	0.69	0.69	-209.2
$\psi(\text{DIV-AGE250}), p(\text{NDVI250})$	4	430.18	2.18	0.23	0.93	-210.29
$\psi(\text{DIV-AGE50}), p(\text{NDVI250})$	4	432.48	4.48	0.07	1	-211.44
AREA BURNT <2 YRS						
$\psi(\text{BURNED}<2\text{Y250}), p(\text{NDVI250})$	4	427.21	0	0.62	0.62	-208.81
$\psi(\text{BURNED}<2\text{Y500}), p(\text{NDVI250})$	4	428.72	1.51	0.29	0.91	-209.56
$\psi(\text{BURNED}<2\text{Y50}), p(\text{NDVI250})$	4	430.96	3.74	0.09	1	-210.68
AREA NOT BURNT >10 YRS						
$\psi(\text{UNBURNED}>10\text{Y500}), p(\text{NDVI250})$	4	432.36	0	0.35	0.35	-211.38
$\psi(\text{UNBURNED}>10\text{Y50}), p(\text{NDVI250})$	4	432.49	0.13	0.33	0.68	-211.45
$\psi(\text{UNBURNED}>10\text{Y250}), p(\text{NDVI250})$	4	432.52	0.17	0.32	1	-211.46
<i>T. terrestris</i>						
NDVI						
$\psi(\text{fire regime}), p(\text{NDVI500})$	7	231.12	0	0.74	0.74	-106.02
$\psi(\text{fire regime}), p(\text{NDVI250})$	7	234.37	3.25	0.15	0.89	-107.64
$\psi(\text{fire regime}), p(\text{NDVI50})$	7	234.95	3.83	0.11	1	-107.93
DIV. FIRE FREQUENCY						
$\psi(\text{DIV-FREQ250}), p(\text{NDVI500})$	4	222.77	0	0.82	0.82	-106.59
$\psi(\text{DIV-FREQ500}), p(\text{NDVI500})$	4	226.13	3.36	0.15	0.97	-108.26
$\psi(\text{DIV-FREQ50}), p(\text{NDVI500})$	4	229.27	6.5	0.03	1	-109.84

DIV. FIRE AGE						
$\psi(\text{DIV-AGE250}), p(\text{NDVI500})$	4	231.51	0	0.35	0.35	-110.95
$\psi(\text{DIV-AGE50}), p(\text{NDVI500})$	4	231.64	0.13	0.33	0.68	-111.02
$\psi(\text{DIV-AGE500}), p(\text{NDVI500})$	4	231.7	0.19	0.32	1	-111.05
AREA BURNT <2 YRS						
$\psi(\text{BURNED}<2\text{Y250}), p(\text{NDVI500})$	4	231.29	0	0.37	0.37	-110.84
$\psi(\text{BURNED}<2\text{Y50}), p(\text{NDVI500})$	4	231.61	0.32	0.32	0.69	-111.01
$\psi(\text{BURNED}<2\text{Y500}), p(\text{NDVI500})$	4	231.61	0.32	0.31	1	-111.01
AREA NOT BURNT >10 YRS						
$\psi(\text{UNBURNED}>10\text{Y500}), p(\text{NDVI500})$	4	230.9	0	0.39	0.39	-110.65
$\psi(\text{UNBURNED}>10\text{Y250}), p(\text{NDVI500})$	4	231.18	0.28	0.34	0.74	-110.79
$\psi(\text{UNBURNED}>10\text{Y50}), p(\text{NDVI500})$	4	231.71	0.81	0.26	1	-111.05

Table S2. Results for the spatial autocorrelation test using Moran's Index (I). Iobs and Iexp represent observed and expected Moran's Index, respectively. If p-value is > 0.05, the null hypothesis of no correlation between sampling units is accepted.

Species	Iobs	Iexp	Standard deviation	p-value
<i>O. bezoarticus</i>	0.02	-0.03	0.05	0.23
<i>Mazama</i> sp.	-0.06	-0.03	0.04	0.59
<i>C. brachyurus</i>	-0.08	-0.03	0.05	0.29
<i>T. terrestris</i>	0.04	-0.03	0.05	0.1

Table S3. Number of records (detections), number of sampling sites with detections, naïve occupancy, estimated detection probability (p), estimated occupancy probability (ψ), and relative abundance of large sized mammals of a Neotropical savanna. Detection and occupancy probability and standard deviation estimated by model averaging of models with $\Delta AICc < 4$.

Species	Detections	Sites with detection	Naïve occupancy	Detection probability (p) \pm SD	Occupancy probability (ψ) \pm SD
<i>O. bezoarticus</i>	123	25	0.83	0.09 \pm 0.04	0.90 \pm 0.06
<i>C. brachyurus</i>	52	16	0.53	0.05 \pm 0.01	0.60 \pm 0.20
<i>Mazama</i> sp	29	7	0.24	0.04 \pm 0.06	0.38 \pm 0.10
<i>T. terrestris</i>	23	11	0.37	0.03 \pm 0.02	0.53 \pm 0.34

Table S4. Model selection used to evaluate the effect of NDVI, season (wet or dry), and method (photo or video) on medium and large-sized mammals detection (p) in Cerrado. K represents the number of parameters in the model, AICcWt and Cum.Wt indicate the relative weight of the model and the accumulated weight, respectively, and -2LL is the log-likelihood. Occupancy (Ψ) was fitted using the fire regime variables (div-freq + div-age + burned<2 + unburned>10).

	K	AICc	Δ AICc	AICcWt	Cum.Wt	-2LL
<i>O.bezoarticus</i>						
ψ (fire regime), p(NDVI)	7	809.05	0	0.63	0.63	-394.98
ψ (fire regime), p(NDVI + season)	8	810.97	1.91	0.24	0.87	-394.05
ψ (fire regime), p(NDVI + method)	8	812.75	3.69	0.1	0.97	-394.94
ψ (fire regime), p(NDVI + season + method)	9	814.96	5.91	0.03	1	-393.98
ψ (fire regime), p(.)	6	826.79	17.73	0	1	-405.57
ψ (fire regime), p(season)	7	828.3	19.24	0	1	-404.6
ψ (fire regime), p(method)	7	830.2	21.14	0	1	-405.55
ψ (fire regime), p(season + method)	8	831.97	22.92	0	1	-404.56
<i>Mazama sp.</i>						
ψ (fire regime), p(NDVI)	7	214.81	0	0.56	0.56	-97.86
ψ (fire regime), p(NDVI + method)	8	216.46	1.66	0.24	0.8	-96.8
ψ (fire regime), p(NDVI + season)	8	217.9	3.09	0.12	0.92	-97.52
ψ (fire regime), p(NDVI + season + method)	9	220	5.19	0.04	0.96	-96.5
ψ (fire regime), p(.)	6	221.43	6.62	0.02	0.98	-102.89
ψ (fire regime), p(season)	7	222.89	8.08	0.01	0.99	-101.9
ψ (fire regime), p(method)	7	224.08	9.27	0.01	1	-102.49
ψ (fire regime), p(season + method)	8	225.91	11.1	0	1	-101.52
<i>C. brachyurus</i>						
ψ (fire regime), p(.)	6	430.13	0	0.39	0.39	-207.24
ψ (fire regime), p(NDVI)	7	430.9	0.77	0.26	0.65	-205.9
ψ (fire regime), p(method)	7	432.85	2.72	0.1	0.75	-206.88
ψ (fire regime), p(season)	7	432.87	2.74	0.1	0.85	-206.89
ψ (fire regime), p(NDVI + season + method)	8	433.79	3.66	0.06	0.91	-205.47
ψ (fire regime), p(NDVI + season)	8	434.06	3.94	0.05	0.96	-205.6
ψ (fire regime), p(season + method)	8	435.72	5.59	0.02	0.99	-206.43
ψ (fire regime), p(NDVI + method)	9	437.16	7.03	0.01	1	-205.08
<i>T.terrestris</i>						
ψ (fire regime), p(NDVI)	7	231.12	0	0.44	0.44	-106.02
ψ (fire regime), p(.)	6	232.15	1.03	0.27	0.71	-108.25
ψ (fire regime), p(NDVI + season)	8	234.39	3.27	0.09	0.8	-105.77
ψ (fire regime), p(NDVI + season + method)	8	234.88	3.75	0.07	0.86	-106.01
ψ (fire regime), p(season)	7	234.91	3.79	0.07	0.93	-107.91
ψ (fire regime), p(method)	7	235.58	4.45	0.05	0.98	-108.24
ψ (fire regime), p(NDVI + method)	9	238.53	7.41	0.01	0.99	-105.77
ψ (fire regime), p(season + method)	8	238.68	7.55	0.01	1	-107.91