

Ecologia da paisagem: conceitos e métodos de pesquisa
Departamento Ecologia
IB-USP



**A importância relativa da
estrutura da paisagem na
riqueza de pequenos
mamíferos em Mata Atlântica**

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Mariana Nagy Baldy dos
Reis
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INTRODUÇÃO



Pequenos mamíferos: tamanho (< 1Kg) e uso de recursos similares (Nowak 1999, Voss e Emmons 1996)

Grupo de mamíferos mais diversificado em florestas neotropicais (209 espécies no Brasil)
(Costa et al. 2005)

**Funções importantes na dinâmica das florestas tropicais (dispersores de sementes e fungos, predadores de sementes e plântulas) –
regeneração das florestas**



(Pizzo et al. 1997, Vieira e Izar 1999, Vieira et al. 2003, Cáceres et al. 2000, Terborgh 1988, Terborgh et al. 2001)



INTRODUÇÃO

Composição, riqueza, abundância e o padrão de distribuição deste grupo ecológico na Mata Atlântica são influenciados pela **qualidade do habitat** (complexidade estrutural) e pela configuração da paisagem (**tamanho, isolamento, efeito de borda** dos fragmentos florestais, e **qualidade da matriz**)

(Pardini 2004, Vieira et al. 2003, Pardini et al. 2005, Umetsu et al 2008, Bueno 2008, Vieira et al. 2009)



Tamanho e Isolamento (Vieira et al. 2009)

Table 2

Fit and selection statistics of models affecting composition of small mammal species in the 23 forest sites studied. Total inertia (proportional to total variation) was 1.366 for all models, constrained inertia is proportional to variation explained by the CCA axes, RSS = residual sum of squares, K = number of parameters in the model, $n = 23$, AICc = Akaike Information Criteria corrected for small ratio sample size/number of parameters, w_i = Akaike weight (probability that the model is the best K-L model among the models in the set).

Model		Constrained inertia	RSS	K	AICc	Δ_i	w_i
1	Fragment size and isolation	0.378	0.988	2	-67.787	0.000	0.425
2	Fragment isolation	0.220	1.146	1	-66.800	0.987	0.260
3	Fragment size	0.202	1.164	1	-66.437	1.350	0.217
4	Property ownership and fragment isolation	0.487	0.879	5	-61.565	6.222	0.019
5	Property ownership	0.342	1.024	4	-61.352	6.435	0.017
6	Property ownership, fragment size and isolation	0.610	0.756	6	-61.305	6.482	0.017
7	Property ownership and fragment size	0.428	0.938	5	-60.070	7.717	0.009
8	Economic activity	0.411	0.955	5	-59.641	8.146	0.007
9	Economic activity and fragment isolation	0.529	0.837	6	-58.951	8.836	0.005
10	Economic activity and fragment size	0.493	0.872	6	-58.008	9.779	0.003
11	Economic activity, fragment size and isolation	0.638	0.728	7	-57.954	9.833	0.003



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Efeito de borda (Pardini 2004)

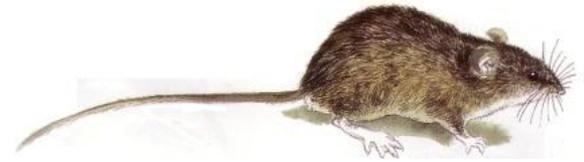


Table 5. Mean and standard deviation of small mammal community variables for interiors of remnants (IL + IS) and for edges of remnants (EL + ES) in Una, South Bahia, Brazil.

Variable	IL + IS, <i>n</i> = 12		EL + ES, <i>n</i> = 12		Significance ^a		
	Mean	Standard deviation	Mean	Standard deviation	C	B	CXB
Community abundance	40.25	13.14	49.42	13.61	0.137	0.69	0.912
Community richness	7.67	1.30	8.92	1.62	0.051	0.559	0.260
<i>O. laticeps</i>	12.17	5.22	9.08	6.01	0.175	0.079	0.805
<i>R. mastacalis</i>	6.42	5.87	10.50	7.99	0.202	0.635	0.982
<i>Oligoryzomys</i> sp.	0.17	0.39	4.50	5.25	0.006**	0.569	0.975
<i>Thaptomys</i> sp.	1.25	2.05	2.92	2.91	0.095	0.201	0.114
<i>M. demerarae</i>	3.58	3.85	3.17	3.51	0.776	0.923	0.904
<i>M. murina</i>	4.17	4.37	7.83	4.80	0.107	0.773	0.607
<i>M. incanus</i>	4.42	3.63	3.08	2.64	0.242	0.159	0.754
<i>M. americana</i>	6.33	3.89	3.92	2.54	0.065	0.039*	0.845
<i>A. cursor</i>	0.00	0.00	2.42	2.75	0.015*		

^aSignificance levels using two-way ANOVA. C, components (interior or edges of remnants); B, blocks (three different blocks of the landscape); CXB, category-by-block interaction effects. For *A. cursor*, a median test was used.

* $P \leq 0.05$.

** $P \leq 0.01$.

Efeito de borda (Pardini 2004)



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Qualidade da matriz e conectividade (Umetsu et al. 2008)

(Umetsu et al. 2008)

Table 2. Results from Poisson regressions of the abundance of small mammal species against habitat quantity (considering or not matrix quality and using as indices of matrix quality both species abundance – A or occurrence – O) within circumferences of 200, 400 and 800 m of radius around the 20 forest remnants in the Ibiúna Plateau, Brazil.

Species	Not considering matrix quality						Type of index	Considering matrix quality						
	scale 200 m		scale 400 m		scale 800 m			scale 200 m		scale 400 m		scale 800 m		
	b (slope)	p	b (slope)	p	b (slope)	p		b (slope)	p	b (slope)	p	b (slope)	p	
<i>E. russatus</i>	0.233	0.044*	0.105	<0.001*	0.036	<0.001*								
<i>D. aurita</i>	-0.117	0.012*	-0.034	0.015*	-0.011	0.025*								
<i>D. sublineatus</i>	0.060	0.313	0.012	0.424	0.007	0.123	A	0.071	0.260	0.015	0.320	0.008	0.120	
							O	0.081	0.217	0.019	0.230	0.008	0.118	
<i>M. incanus</i>	0.035	0.348	0.012	0.185	0.003	0.309	A	0.018	0.331	0.006	0.180	0.002	0.298	
							O	0.049	0.229	0.015	0.141	0.004	0.226	
<i>S. angouya</i>	-0.012	0.882	-0.002	0.942	0.005	0.452	A	0.080	0.514	0.017	0.570	0.012	0.228	
							O	0.040	0.658	0.010	0.690	0.008	0.276	
<i>O. nigripes</i>	-0.050	0.347	-0.015	0.326	-0.003	0.551	A	0.029	0.298	0.003	0.720	0.005	0.085	
							O	1.126	0.555	0.174	0.640	0.007	0.938	
<i>A. montensis</i>	-0.013	0.617	-0.017	0.020*	-0.013	<0.001*	A	0.013	0.062	0.003	0.190	0.001	0.233	
							O	-0.679	0.314	0.062	0.710	0.024	0.615	
<i>M. paraguayanus</i>	0.150	0.377	0.100	0.040*	0.035	0.005*	A	0.294	0.402	0.196	0.047*	0.068	0.005*	
							O	0.140	0.434	0.092	0.060	0.033	0.005*	

*p < 0.05.



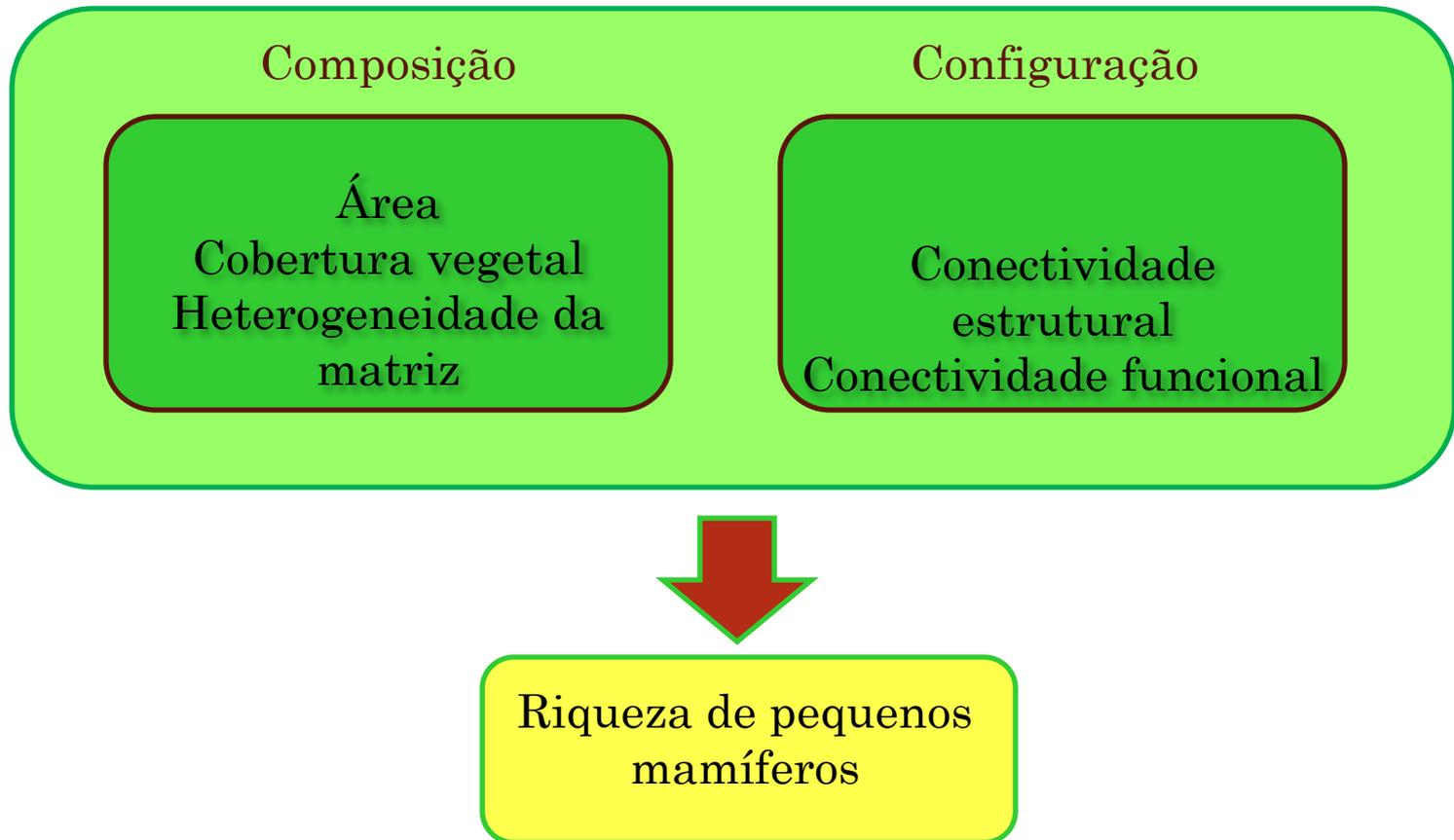
OBJETIVO

Determinar a importância relativa da estrutura da paisagem na riqueza de pequenos mamíferos em Mata Atlântica.

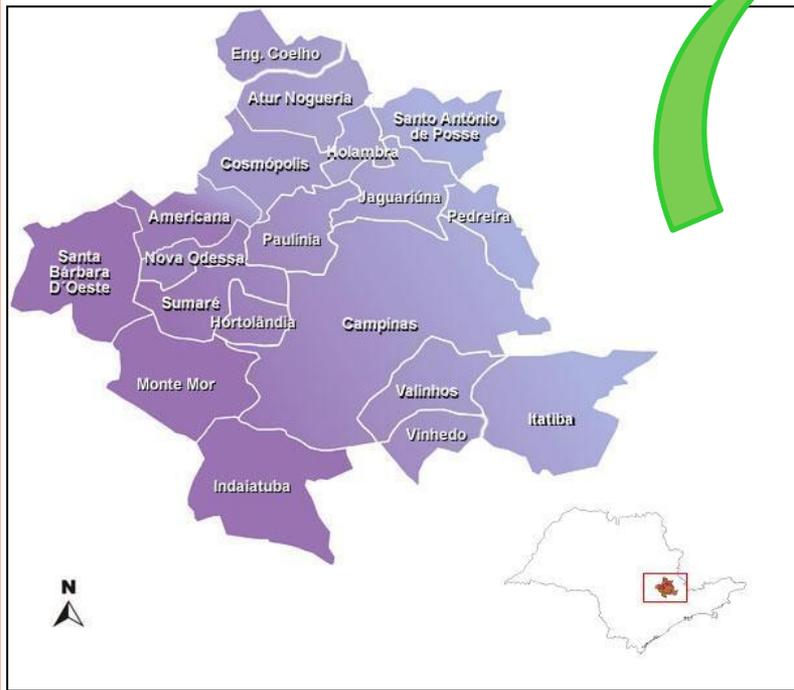


HIPÓTESE

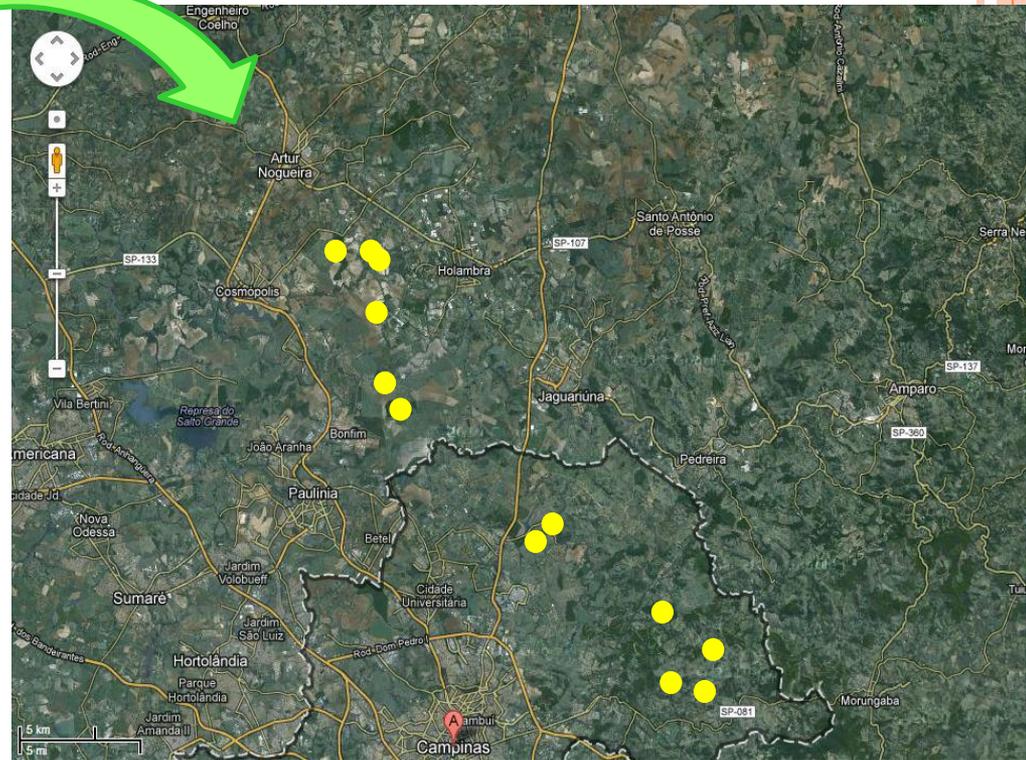
Estrutura da paisagem



ÁREA DE ESTUDO



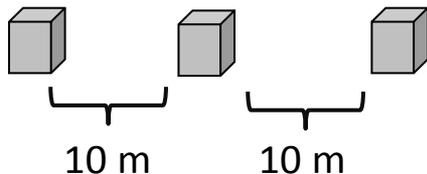
Fonte:
www.iea.sp.gov.br



Fragmentos: 5ha a 230ha

METODOLOGIA

Sherman



40 estações por fragmento
(armadilha de chão e armadilha
de subosque a 1,5m do chão)

Uso de isca (banana, farinha de
milho, pasta de amendoim,
essência de baunilha e óleo de
fígado de bacalhau).



5 dias (Estação chuvosa) + 5
dias (Estação seca) em um ano



Esforço amostral: 640
armadilhas-noite por fragmento
e 7680 armadilhas-noite ao total

ANÁLISE DE DADOS

- ArcGIS 9 (versão 9.3.1)
- Patch analyst for ArcGIS
- Tamanhos dos buffers (200, 400, 800m)
- Proximidade - 200m (Crouzeilles R. & al, 2010)
- Statistica 7.0



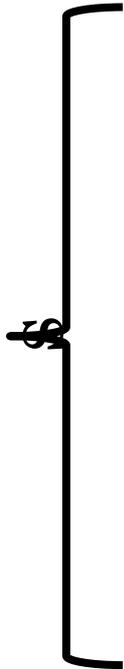
ANÁLISE ESTATÍSTICA

Teste de Autocorrelação



Estrutura da paisagem

Variáveis



Composição

Área

Cobertura vegetal
Heterogeneidade da
matriz

Configuração

Conectividade
estrutural
Conectividade
funcional



Riqueza de pequenos
mamíferos



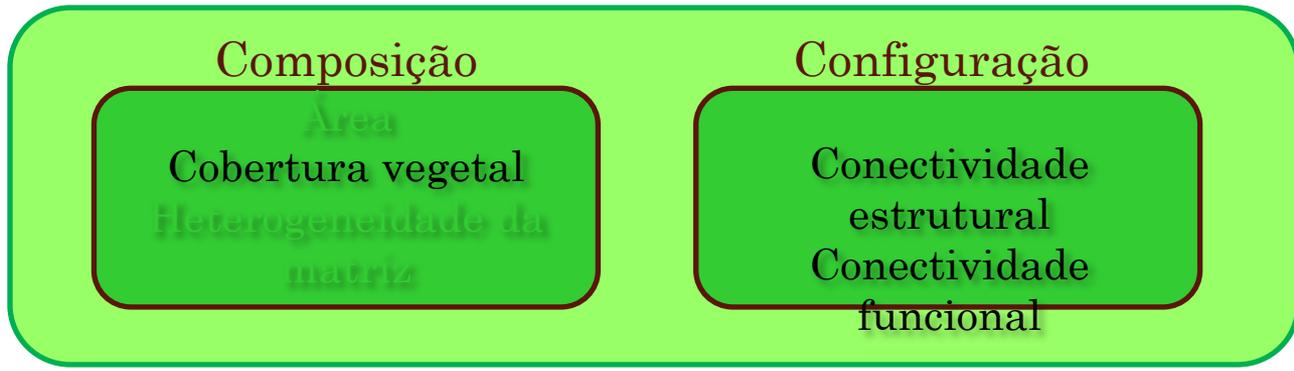
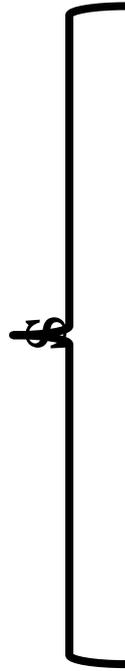


Teste de Autocorrelação



Estrutura da paisagem

Variáveis



Riqueza de pequenos mamíferos

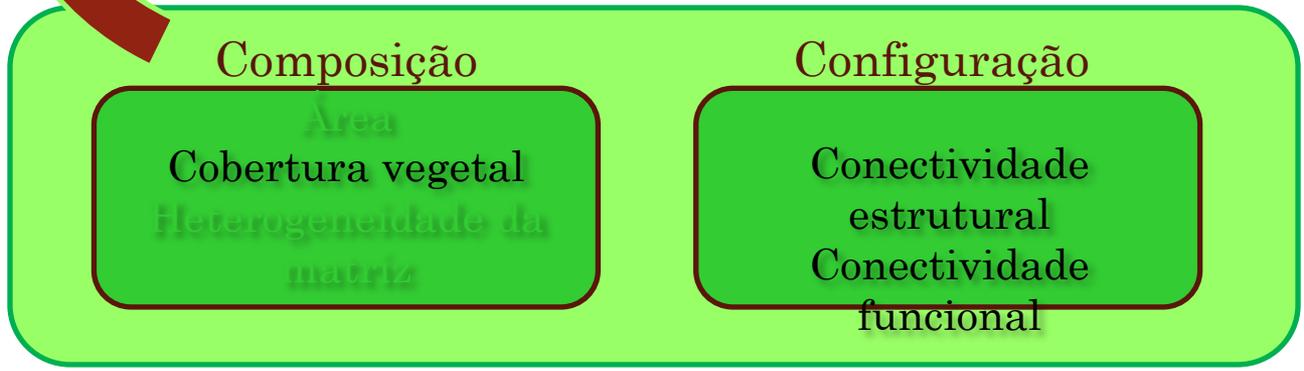
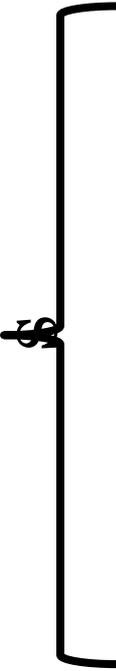




Teste de Correlação Múltipla

Estrutura da paisagem

Variáveis



Riqueza de pequenos mamíferos



Espécies de pequenos mamíferos coletadas



Oligoryzomys nigripes



Necomys lasiurus



Cerradomys subflavus



Didelphis aurita



Rhipidomys itoans



Gracilinanus microtarsus



Akodon montensis

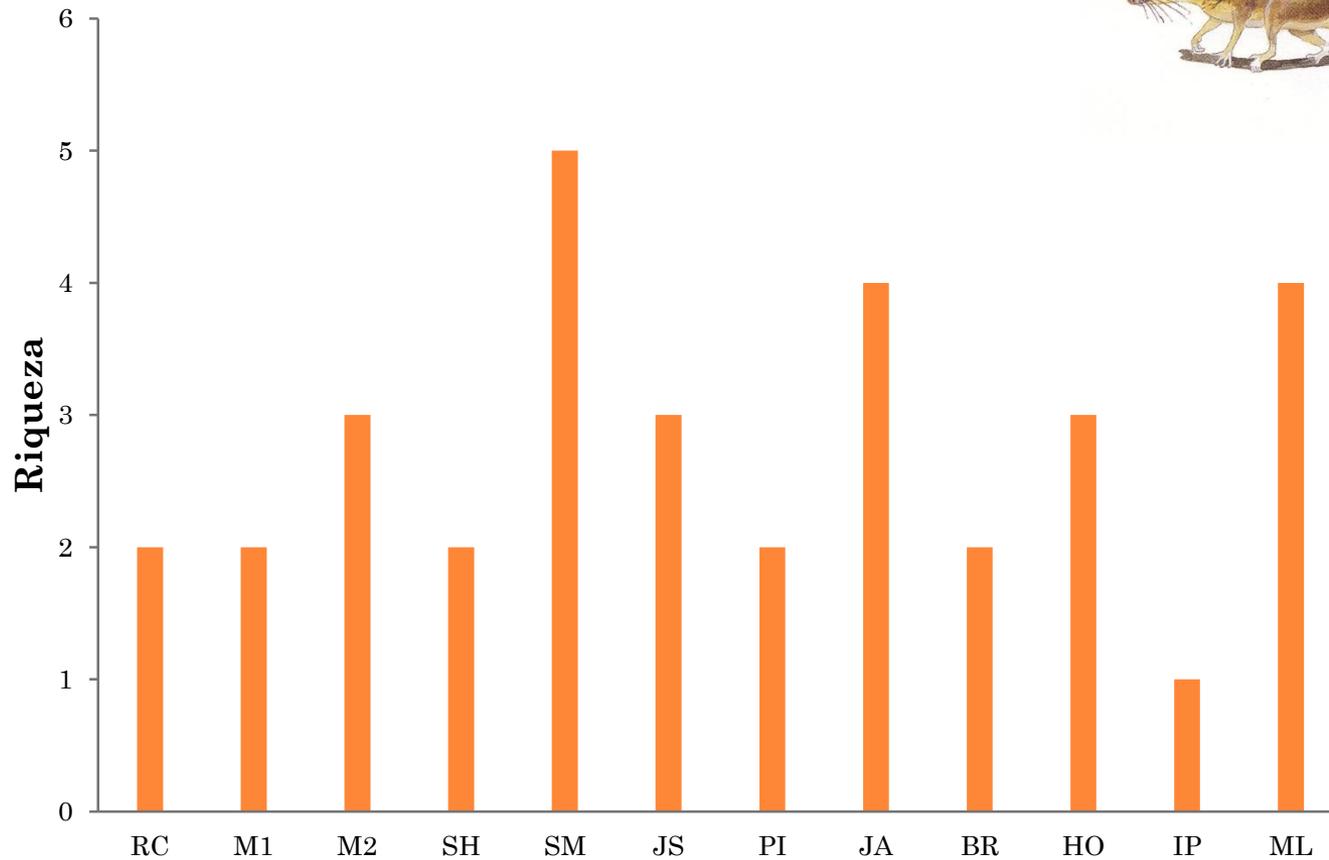


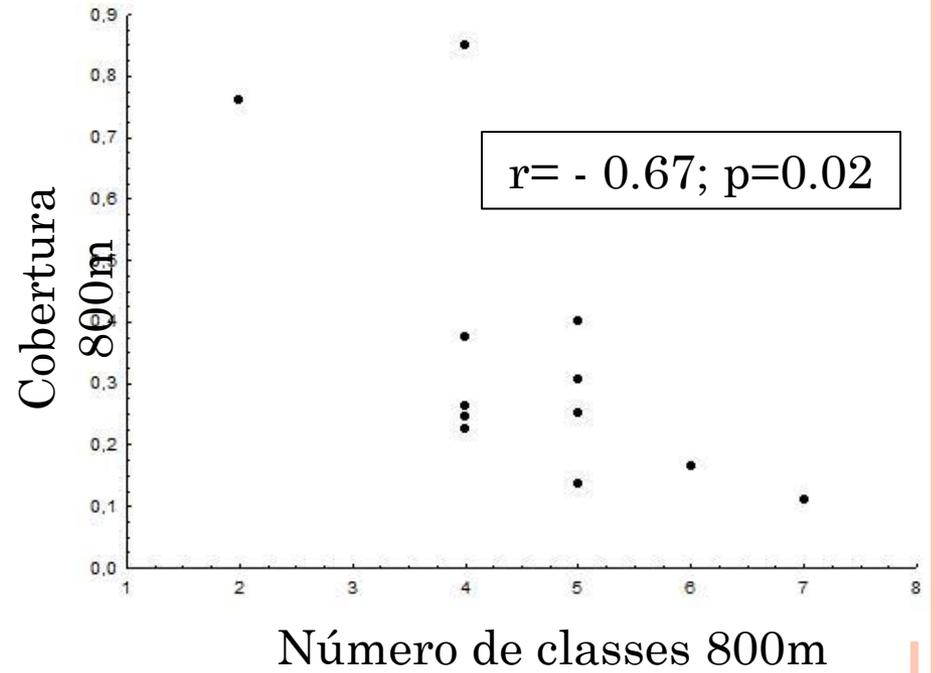
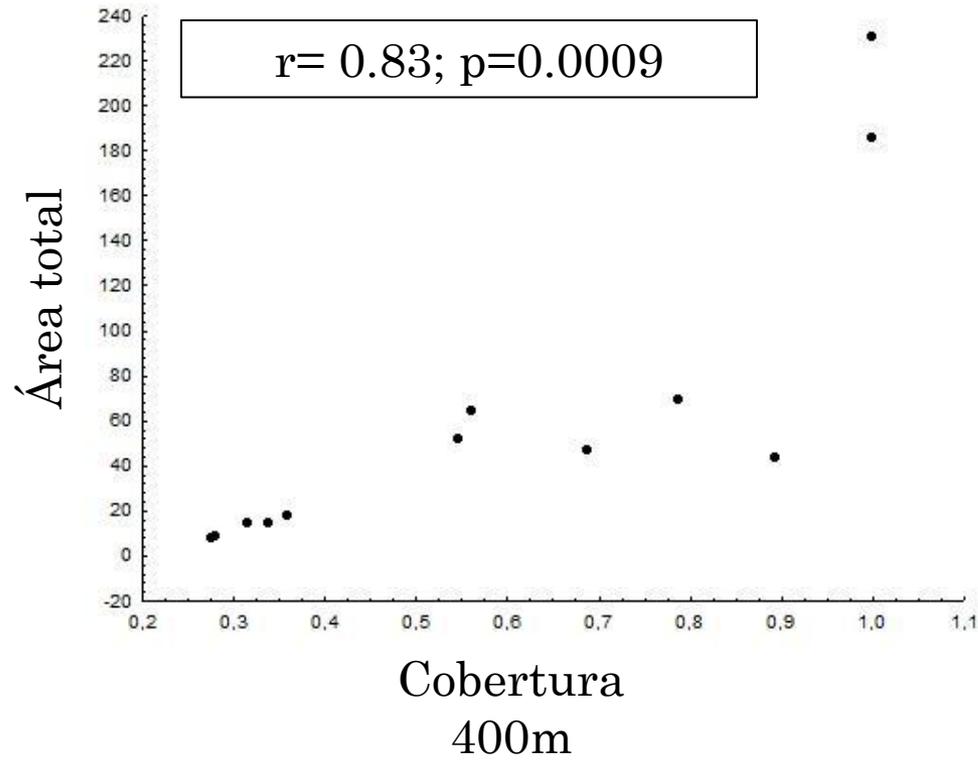
Didelphis albiventris

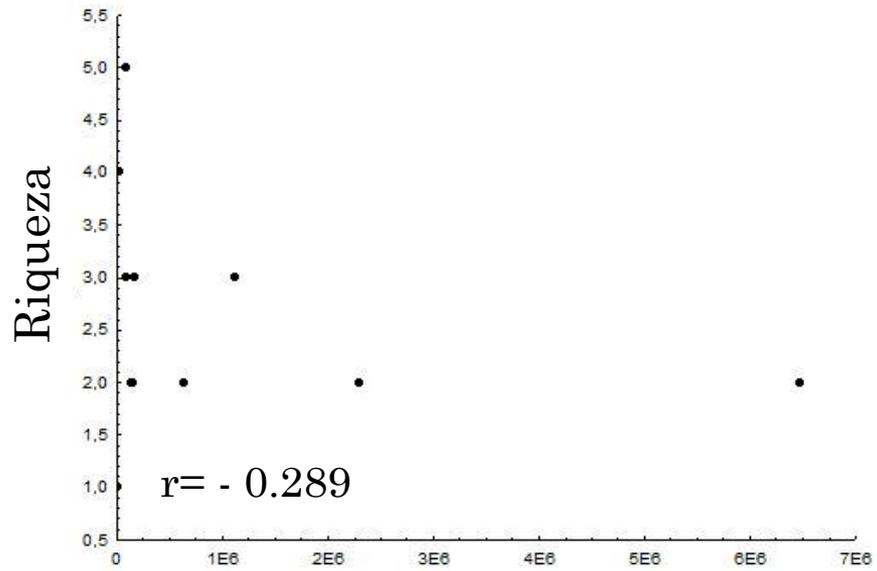


Oecomys sp.

Riqueza nos fragmentos

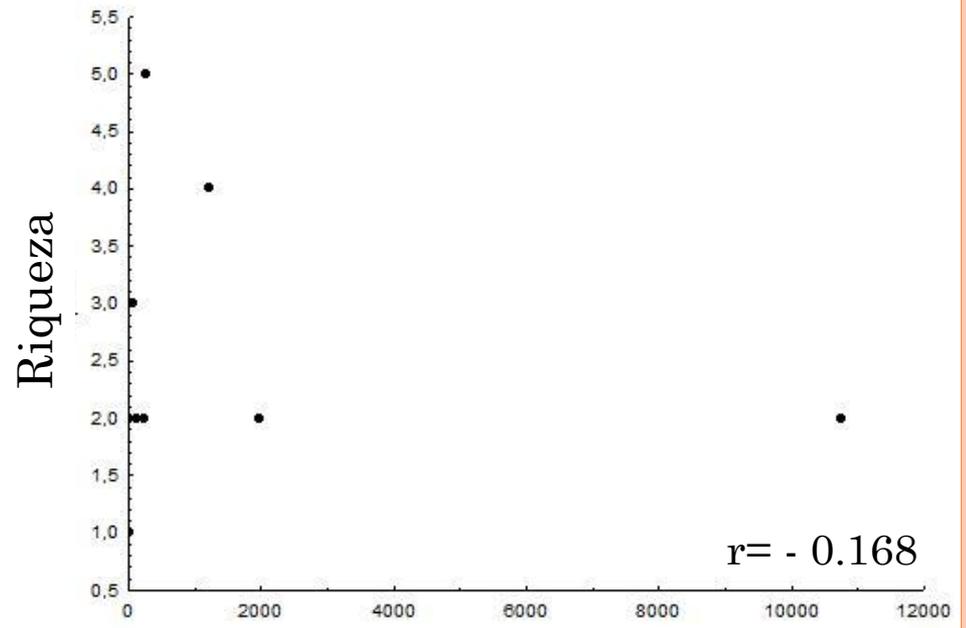




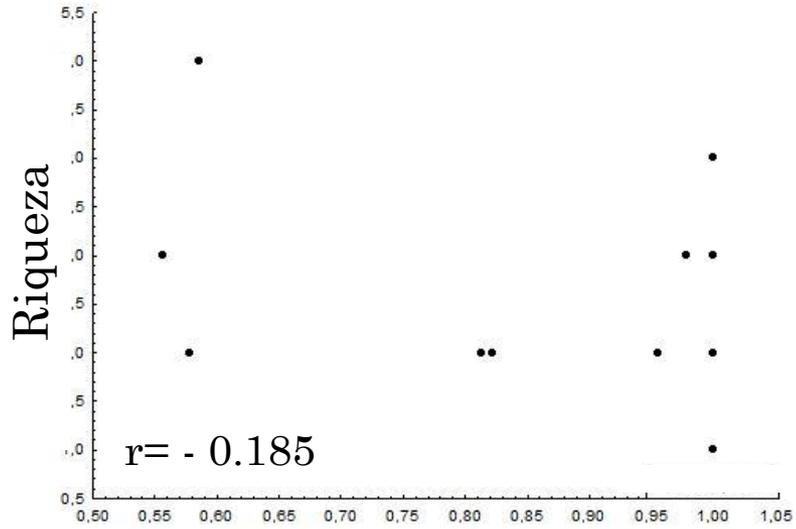


Conectividade
estrutural

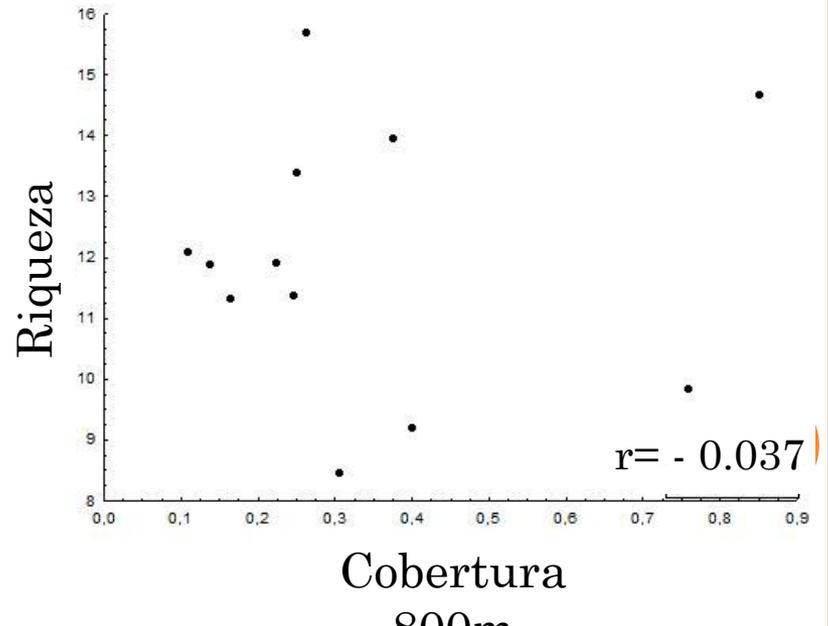
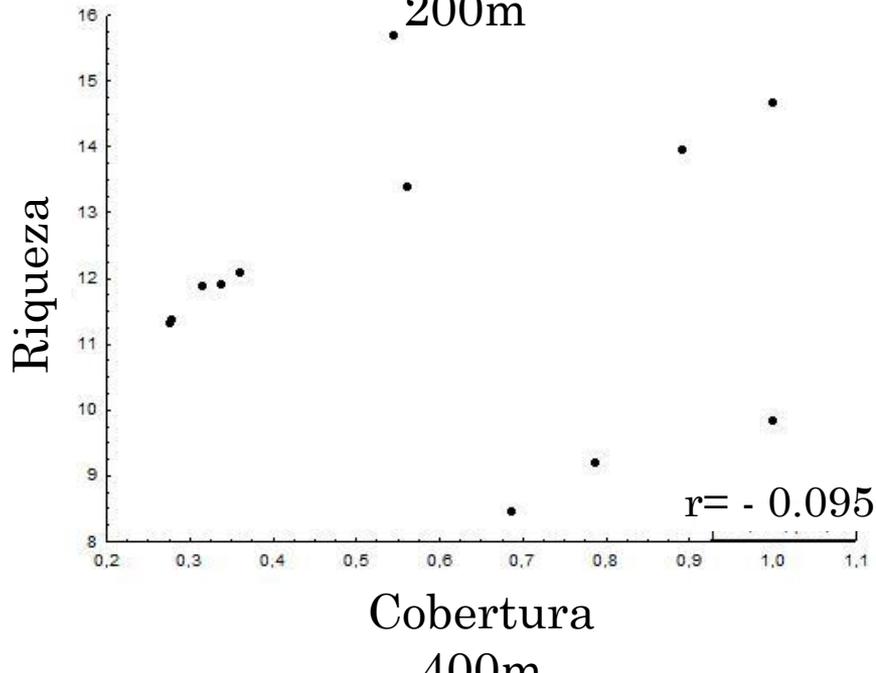
P > 0.05

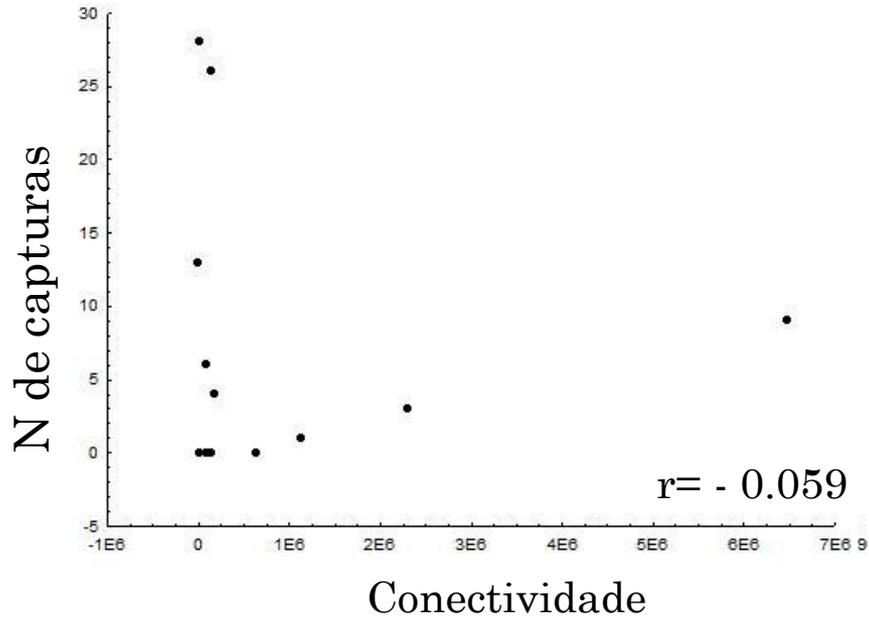
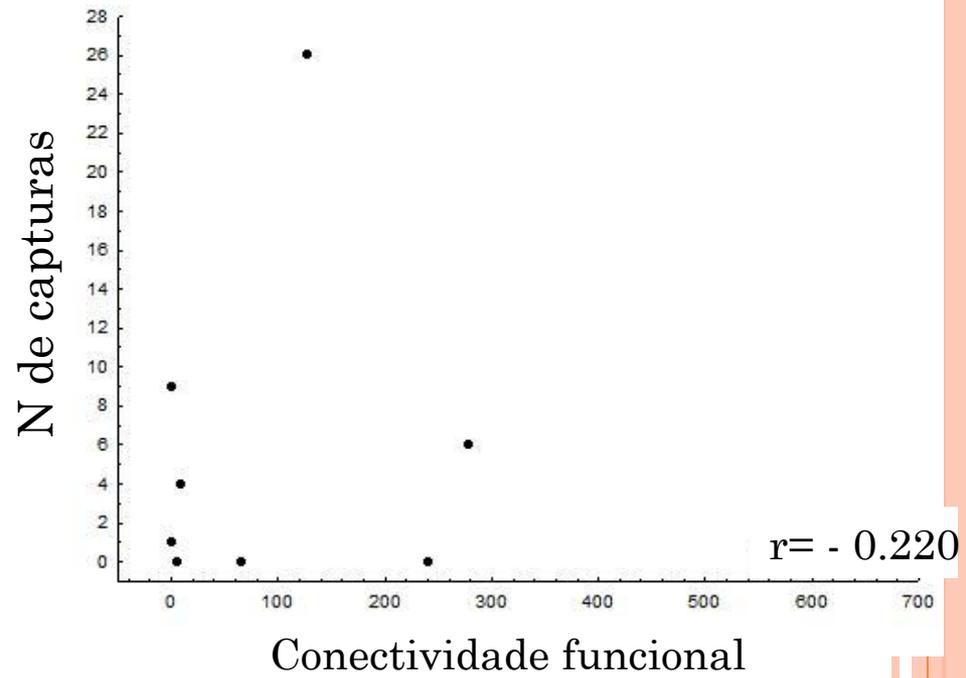
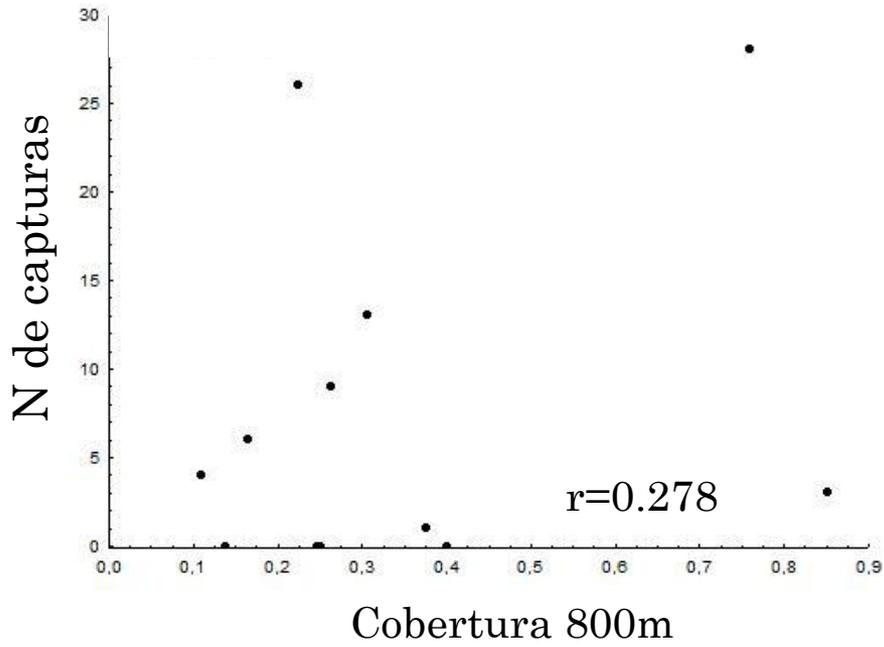


Conectividade funcional



P > 0.05





P > 0.05



Akodon montensis

DISCUSSÃO

Não houve influência da cobertura vegetal e conectividade



Tamanho amostral pequeno

Ausência de réplicas

Abundância

Espécies generalistas

Importância de se testar a auto correlação entre métricas de paisagem



MILTON RIBEIRO
JEAN PAUL METZGER
MONITORES
ELEONORE SETZ
KARINA SAKANE



An aerial photograph of a rural landscape. The scene is dominated by vibrant green fields and a large, dense forest in the center. A winding dirt road or path is visible in the foreground, curving through the fields. The background shows rolling hills and a hazy horizon under a bright sky. The overall atmosphere is peaceful and scenic.

OBRIGADA PELA ATENÇÃO