

Populações e Comunidades Vegetais

Estrutura de Populações

Alexandre Adalardo de Oliveira

Ecologia- IBUSP Agosto 2018

Ecologia Vegetal

Ecologia Vegetal

Módulos

1. Estrutura de Populações
2. Dinâmica de Populações
3. Estrutura de Comunidades
4. Dinâmica de Comunidades

Estrutura Populacional de Plantas

- definições
- população estruturada
- estrutura espacial
 - escala
 - inferência de processos

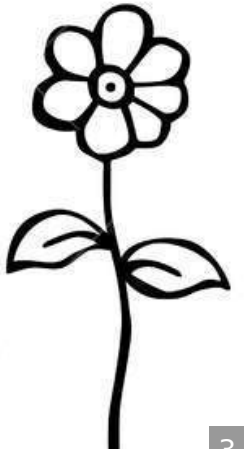
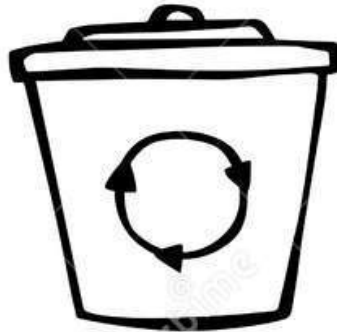
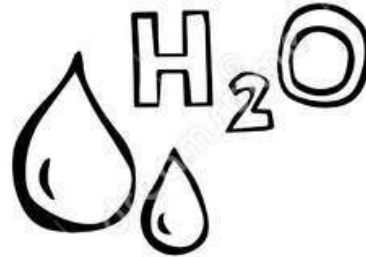
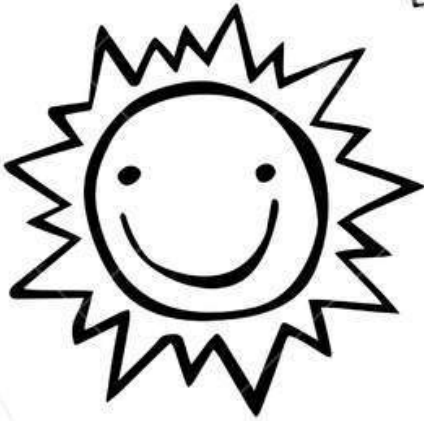
recycle

eco

ECO

ORGANIC

Green



RECYCLE

Definições

- Ecologia Vegetal
 - Distribuição e abundância das plantas
 - Estrutura de População
 - População
 - Estrutura
 - Padrões
 - Relação entre entidades do sistema
 - Variação não aleatória
-
- etária
 - tamanho
 - genética
 - espacial

População Estruturada

- Taxas vitais
 - estádios ontogenéticos
 - idade
 - tamanho

Estrutura Etária

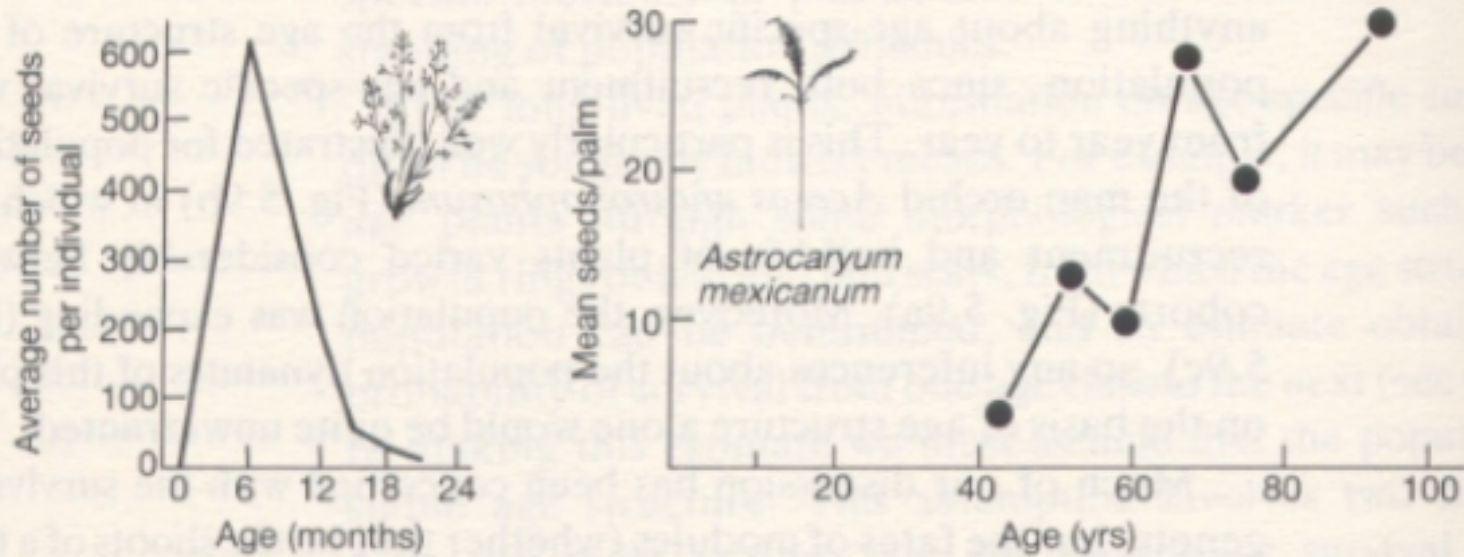
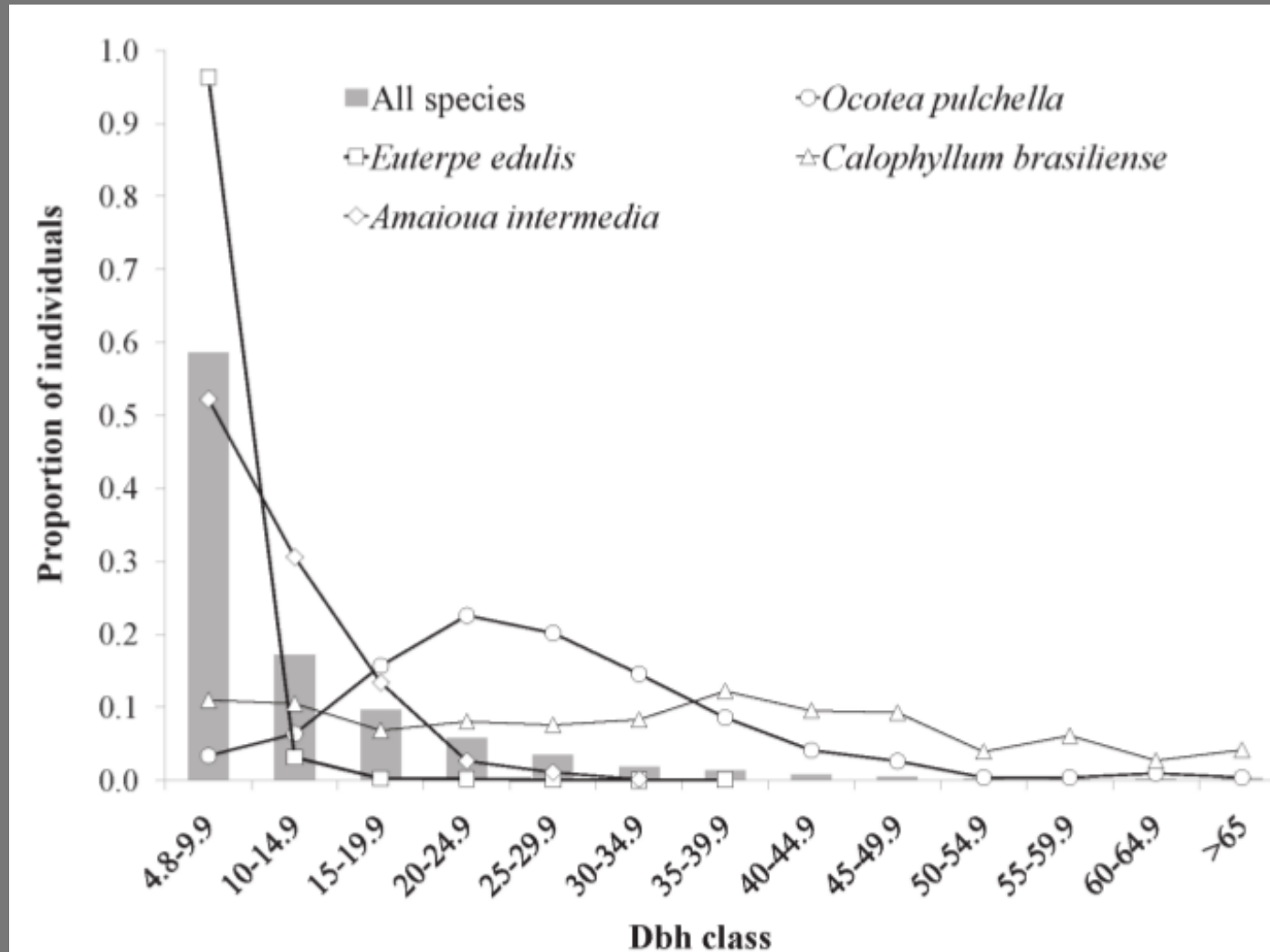


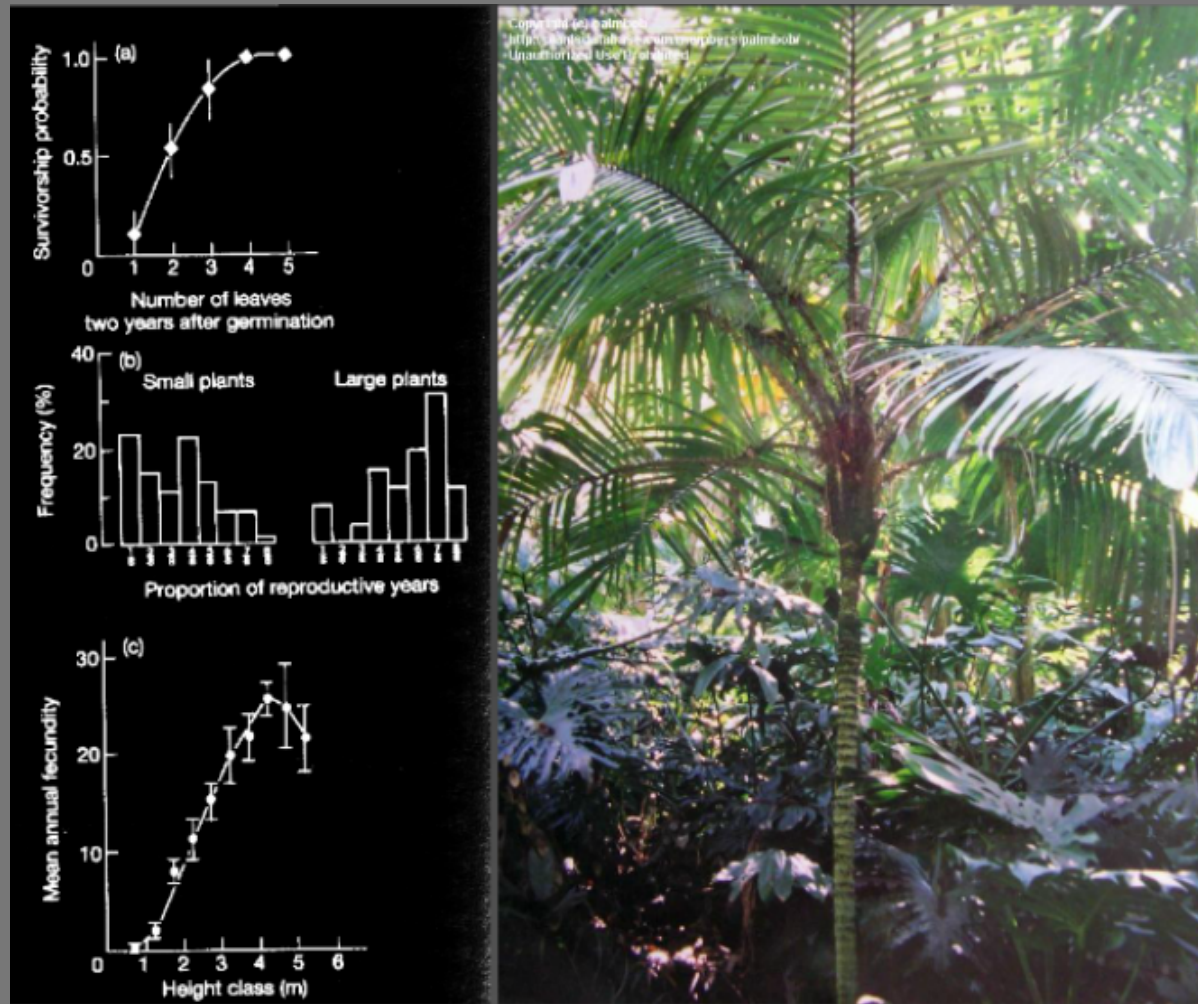
Fig. 5.11. Age-specific fecundity for (a) annual meadow grass, *Poa annua* (from Law, 1975); and (b) the tropical understorey palm, *Astrocaryum mexicanum*. From Sarukhán (1980).

Estrutura de Tamanho



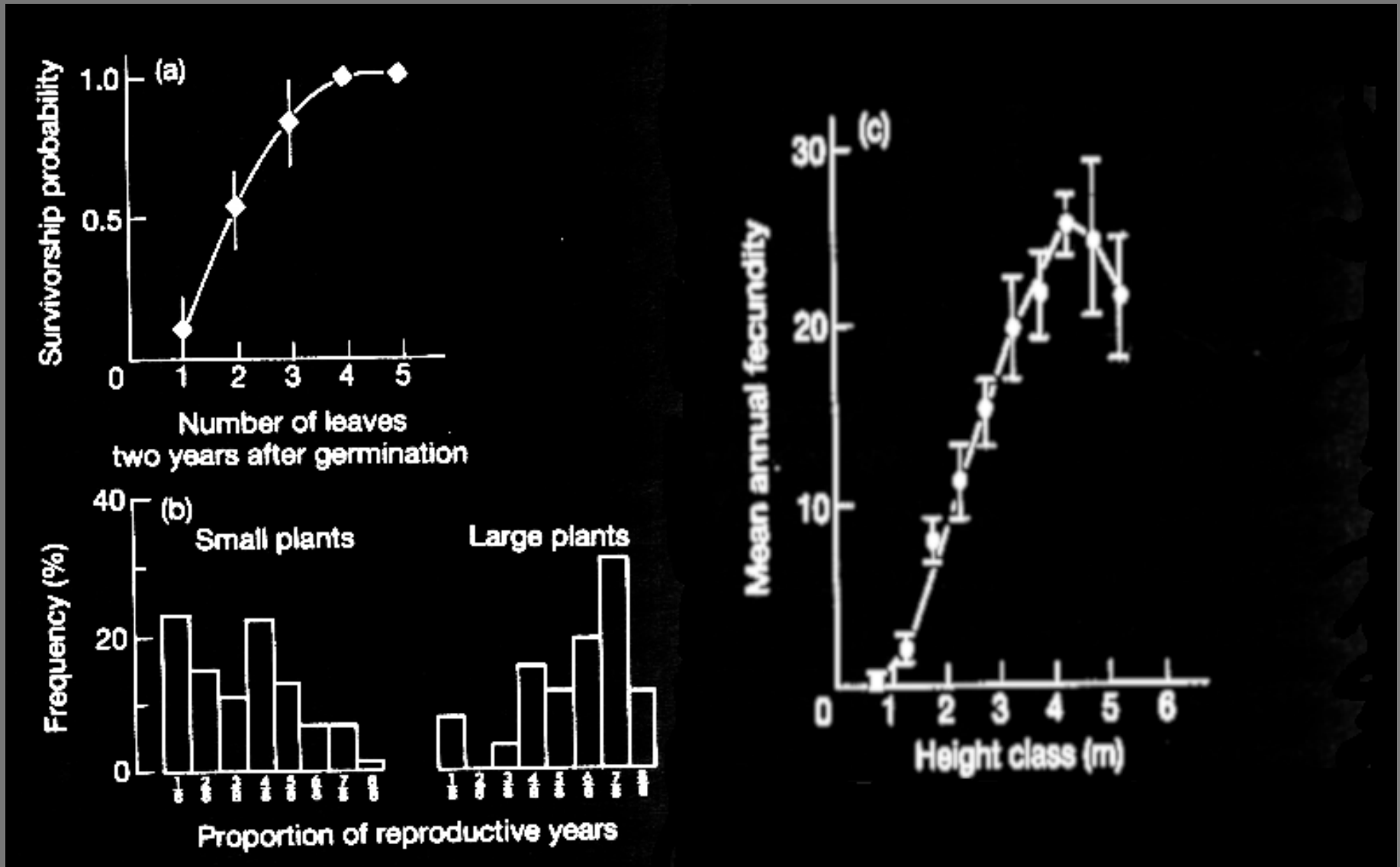
Lima et al. 2012. Structure, diversity, and spatial patterns in a permanent plot of a high Restinga forest in Southeastern Brazil

Estrutura de Tamanho



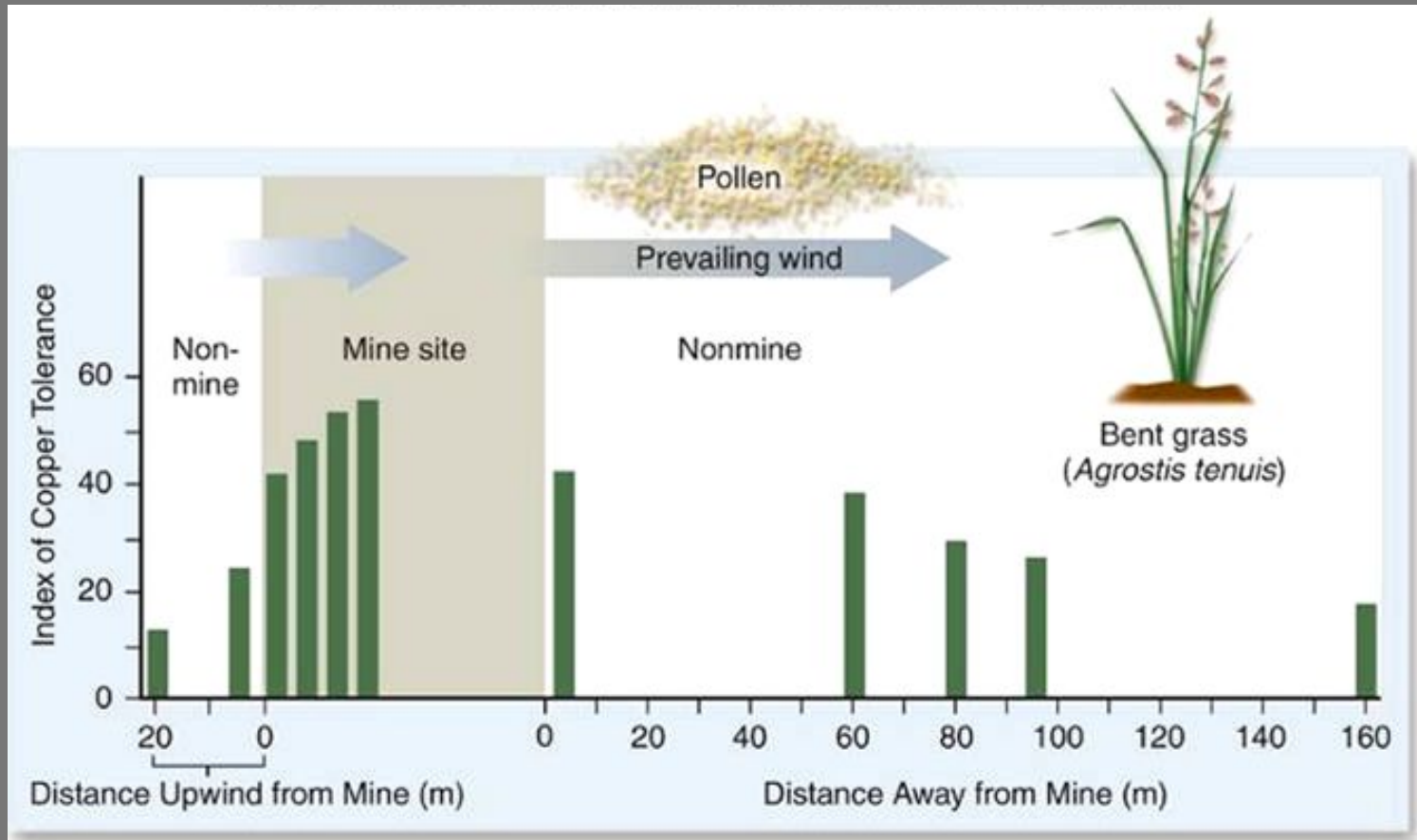
Daniel Piñedo & Miguel Martínez-Ramos. 1970-1980. *Astrocarium mexicanum*

Estrutura de Tamanho



Acompanhamento de coorte

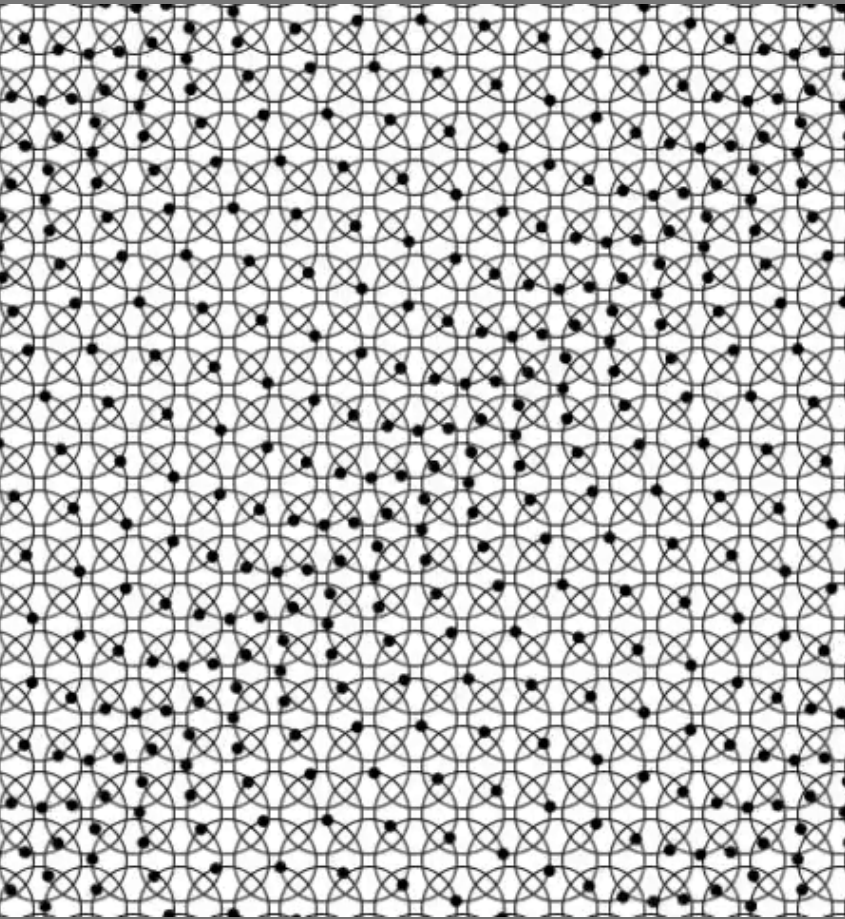
Estrutura Genética: seleção



Bradshaw et al. 1960 – 1970. Tolerância a metal pesado: adaptação local e dispersão.

Estrutura no espaço

Escala de observação



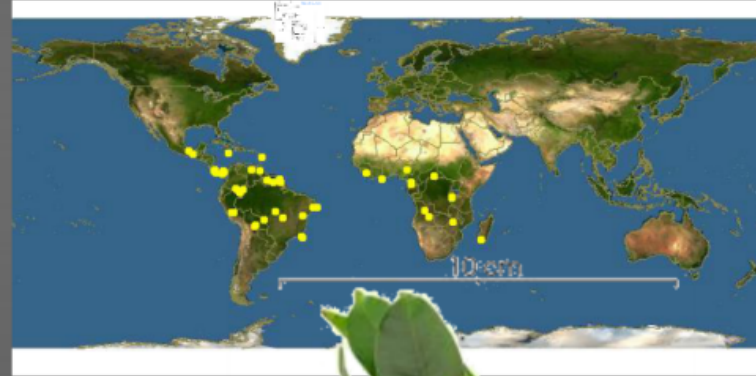
Distribuição

- difere
- proces

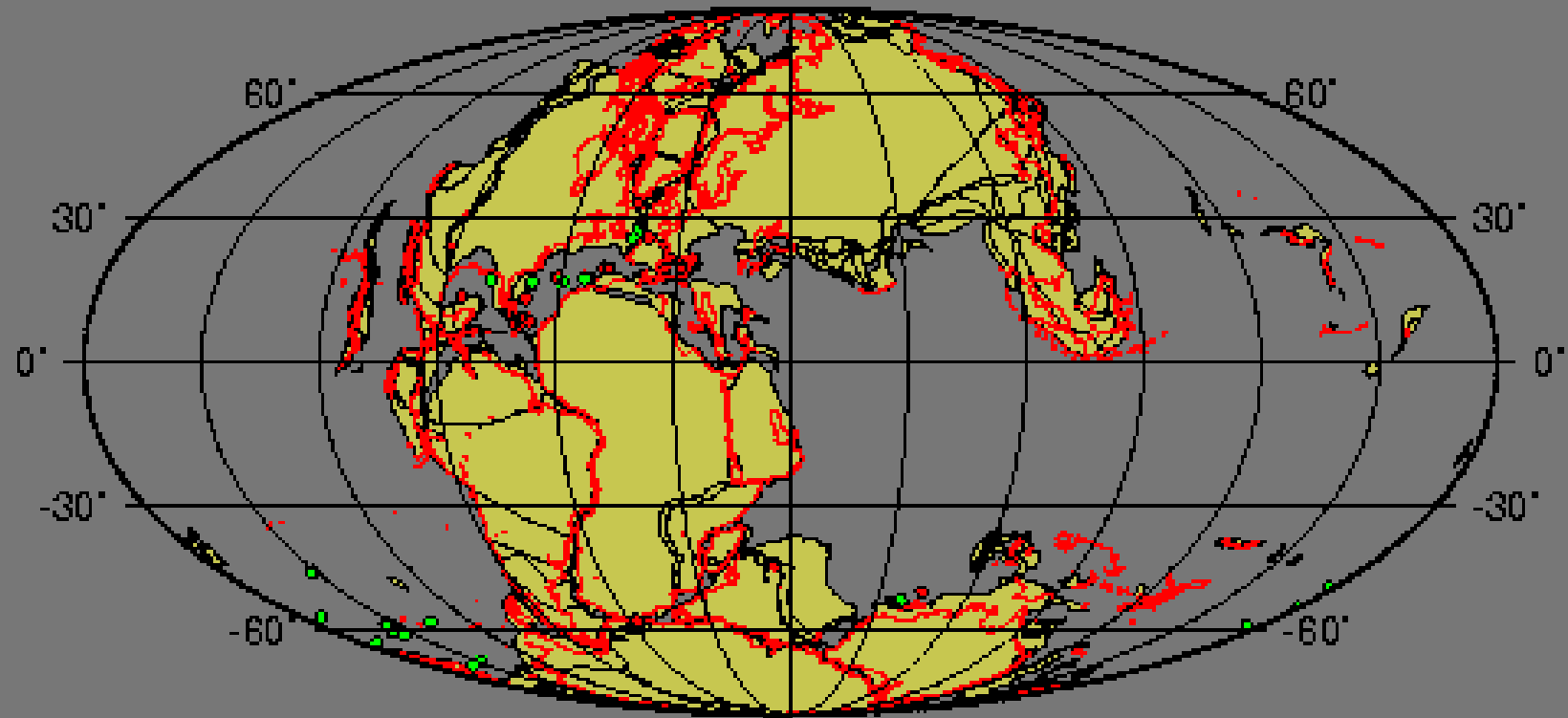
Escala Geográfica



Symphonia globulifera L.



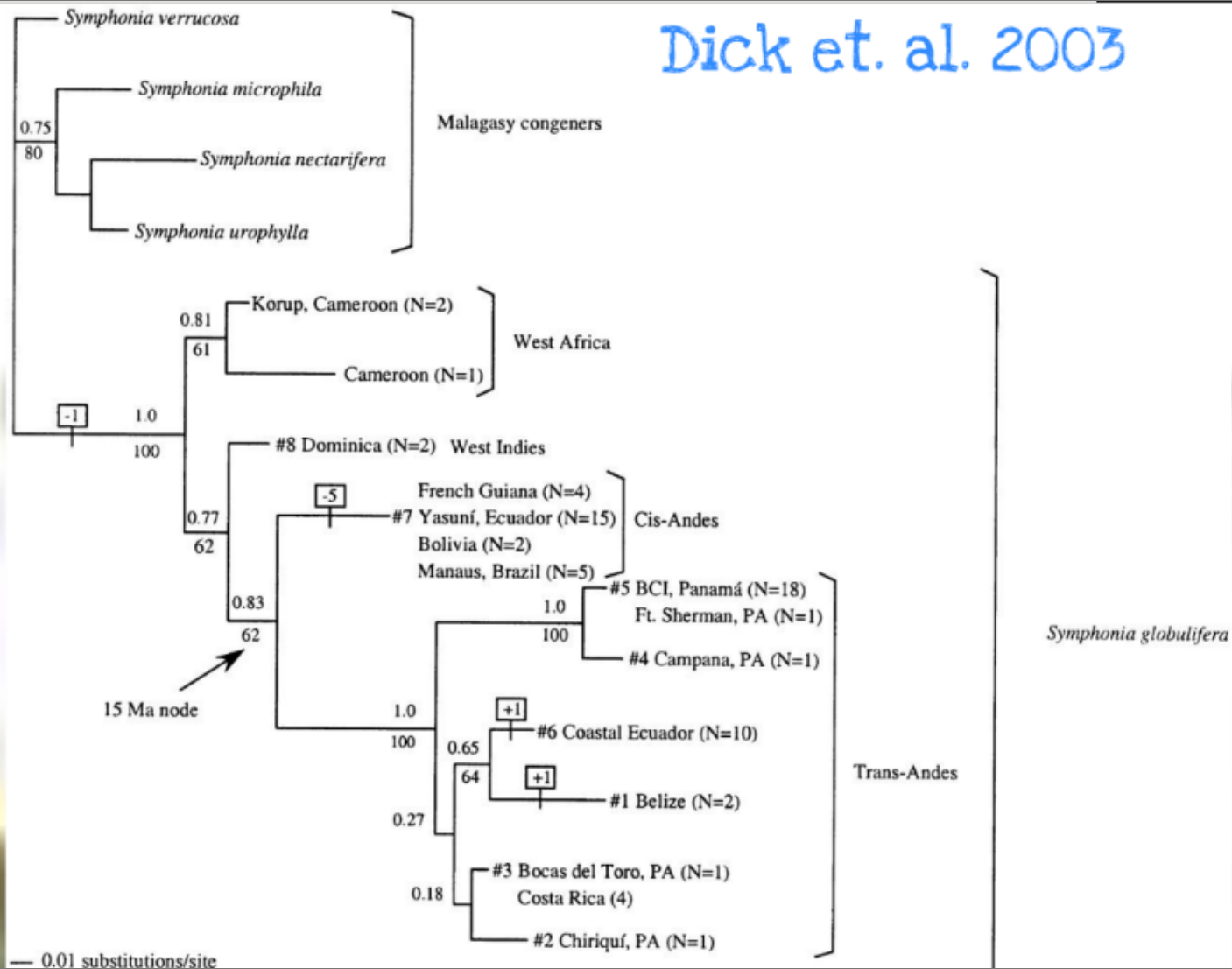
Escala Geográfica



150 My Reconstruction

Escala Geográfica

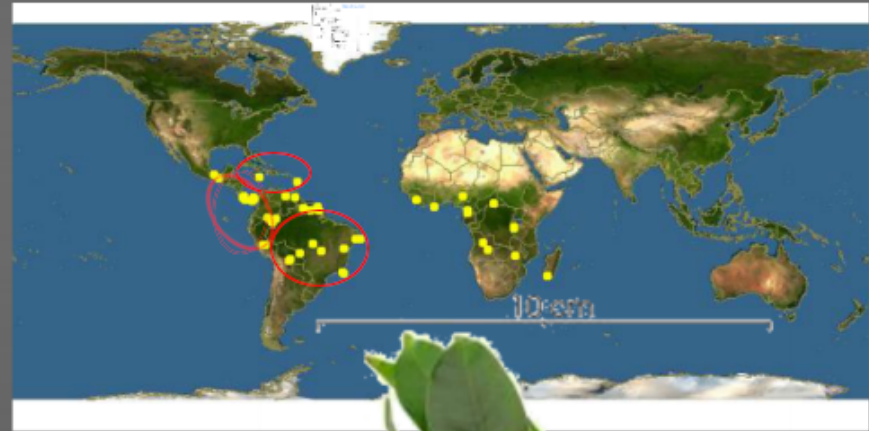
Dick et. al. 2003

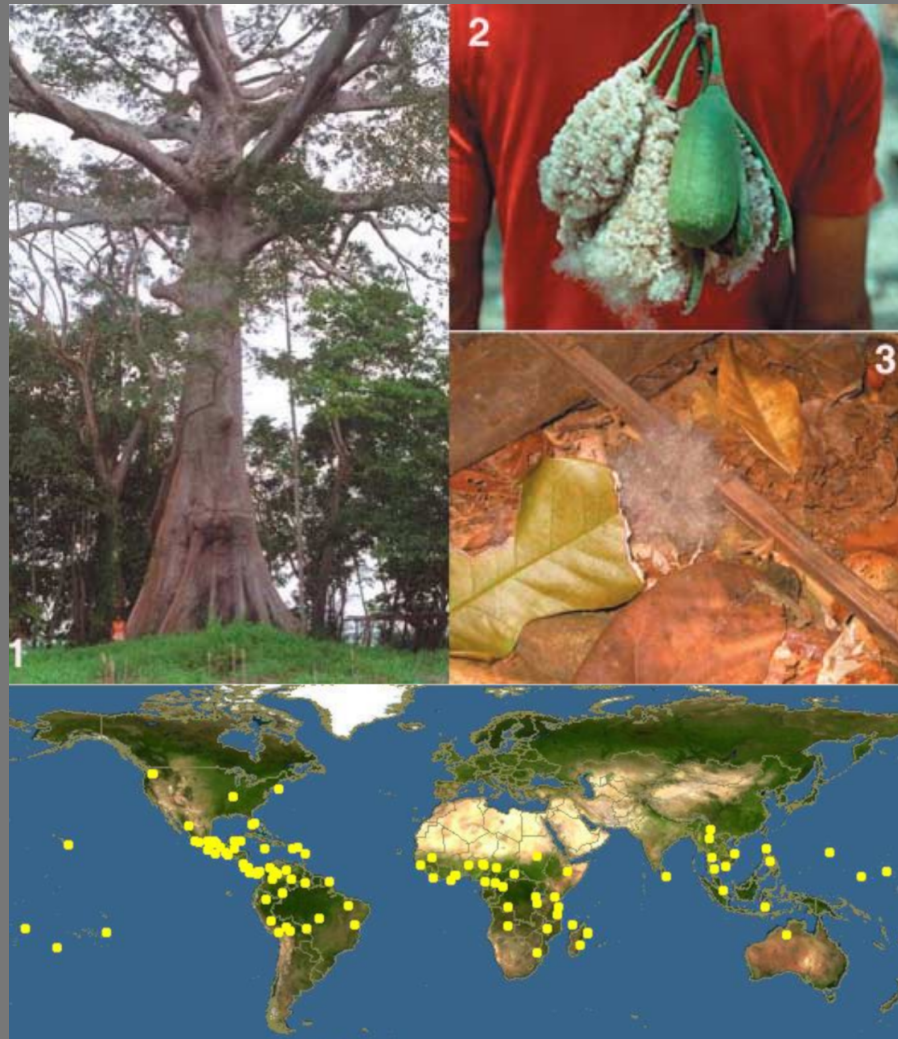


Escala Geográfica



Symphonia globulifera L.

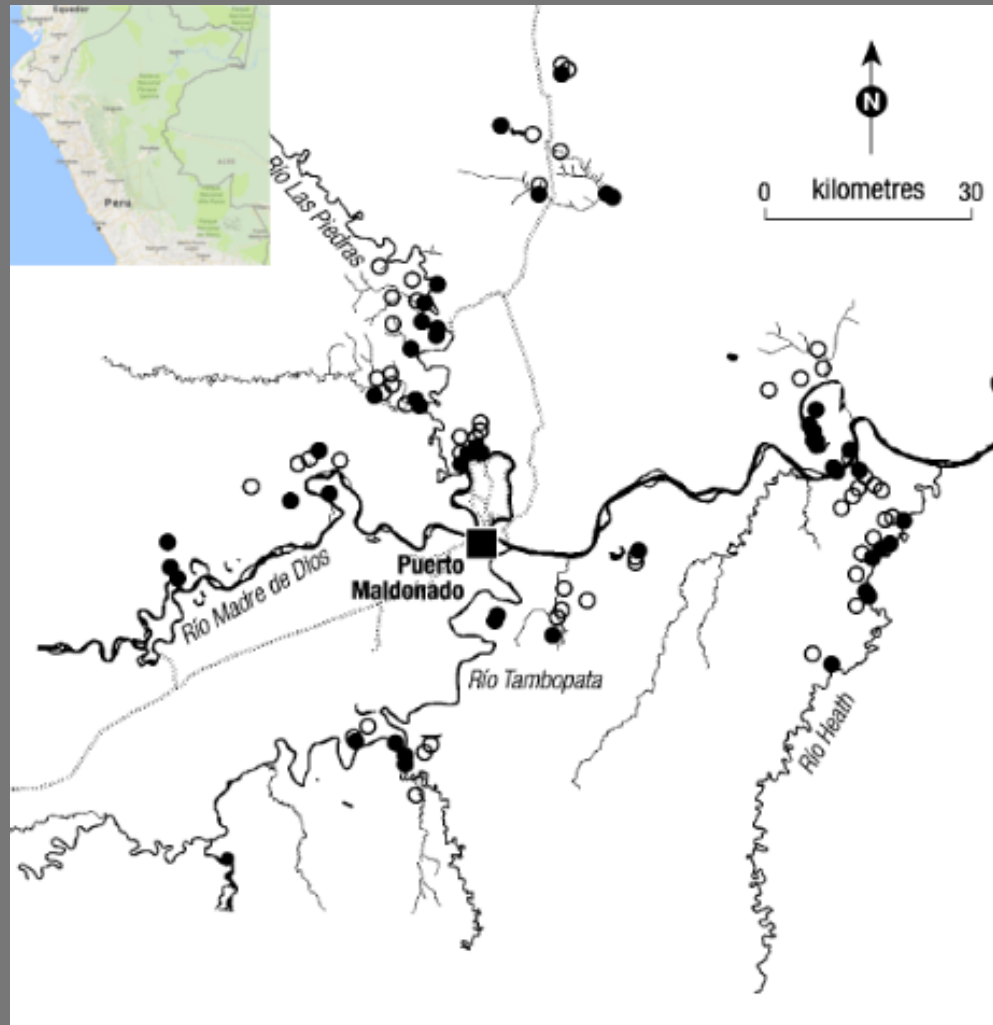




Ceiba pentandra

Dick et al. 2007. *Molecular Ecology*.

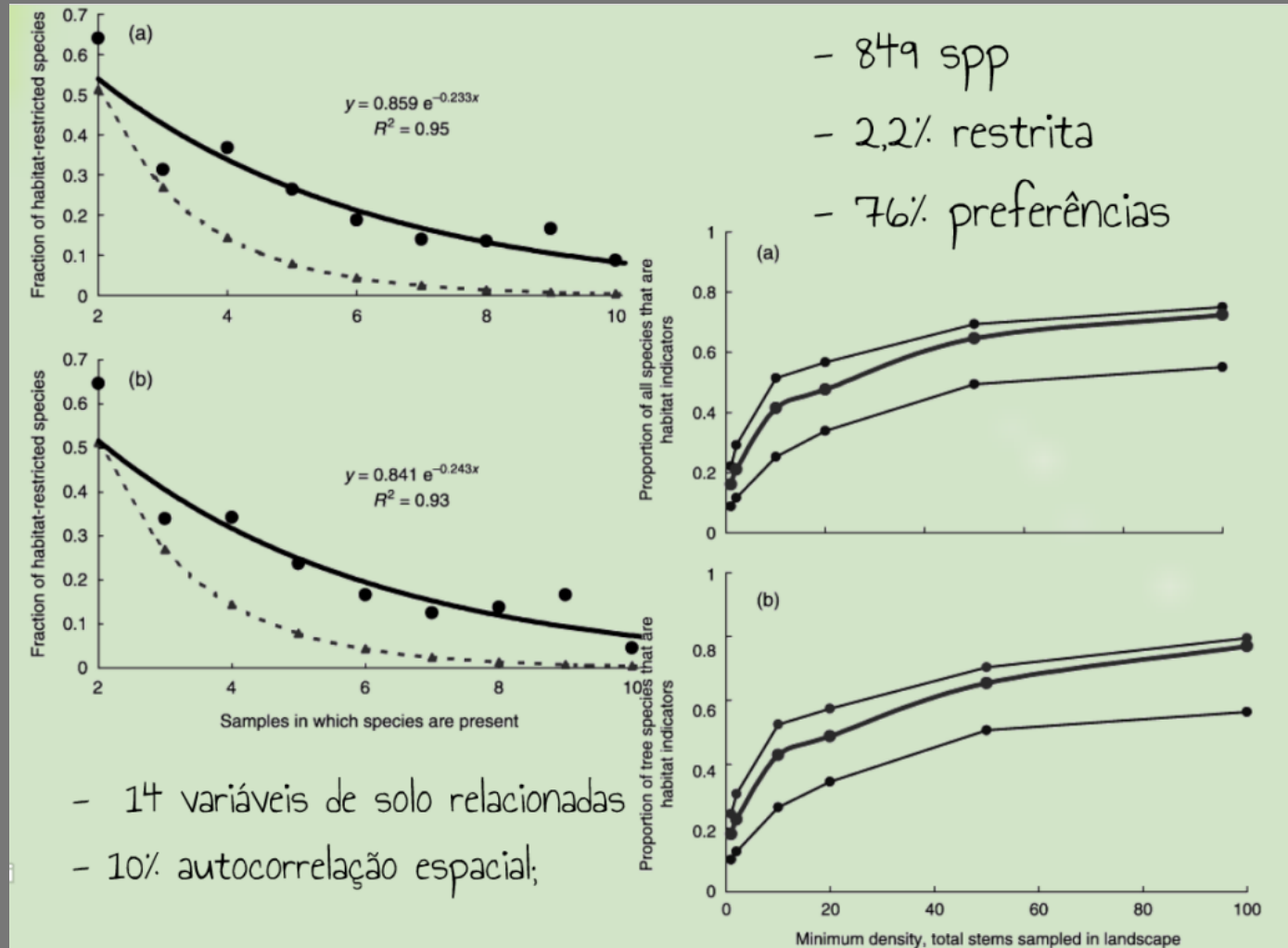
Distribuição Regional



Amazônia Peruana

Phillips et. al. 2003. *Journal of Ecology*.

Escala Regional

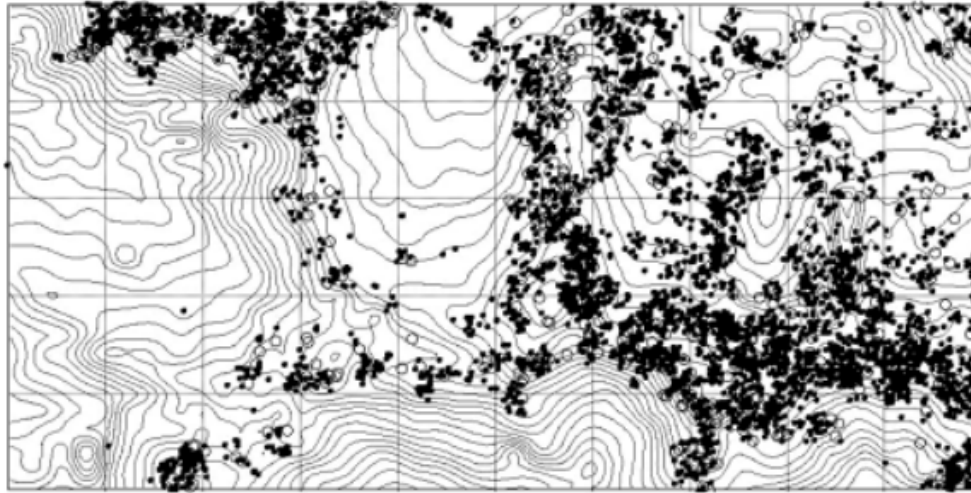


"Habitat Association is important"

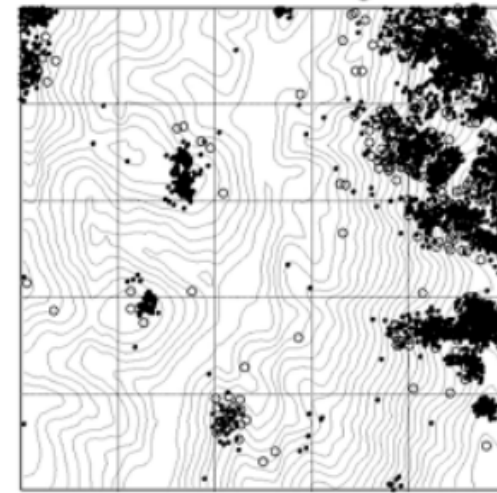
Escala Local

Condit et al. 2000

Vatica micrantha



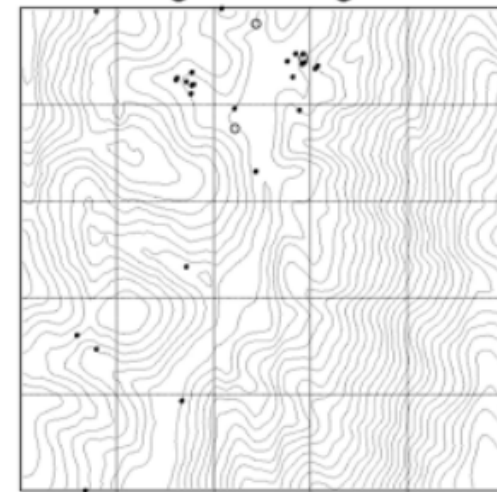
Shorea worthingtonii



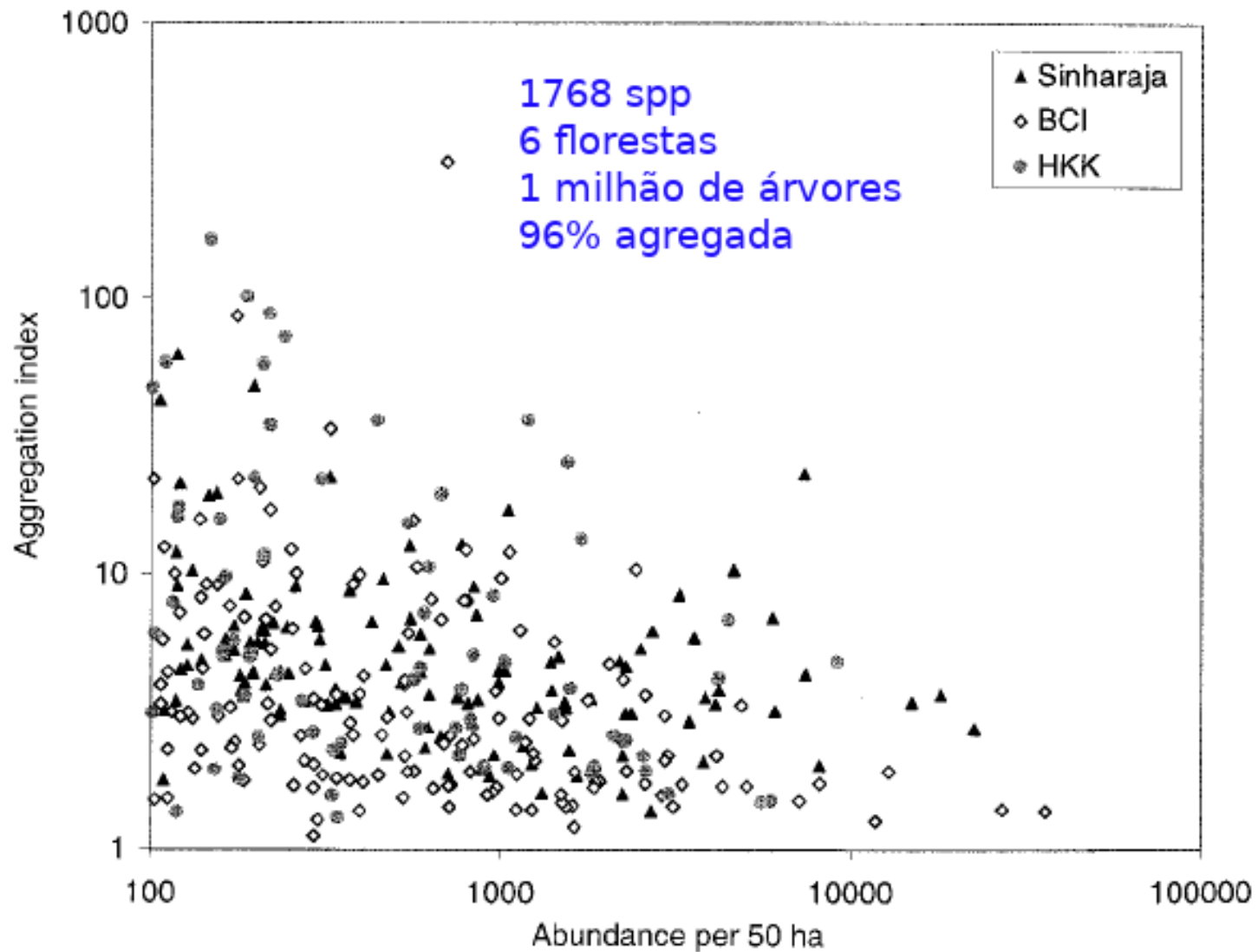
Rinorea sylvatica



Eugenia insignis

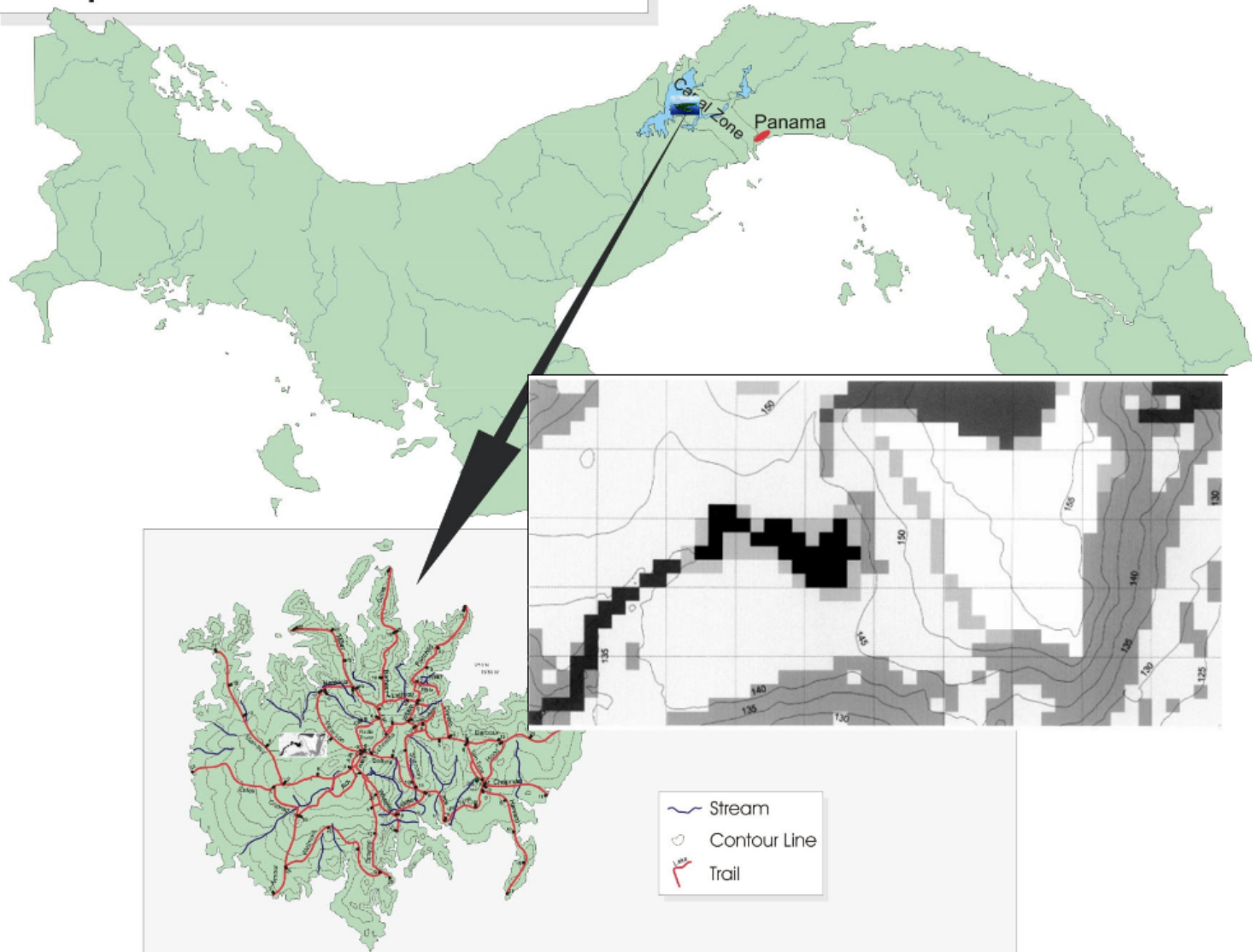


Condit 2000



Distribuição Espacial

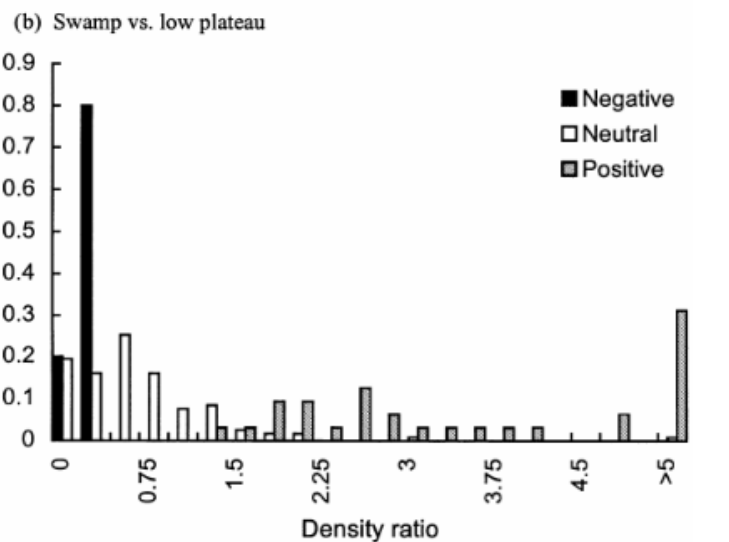
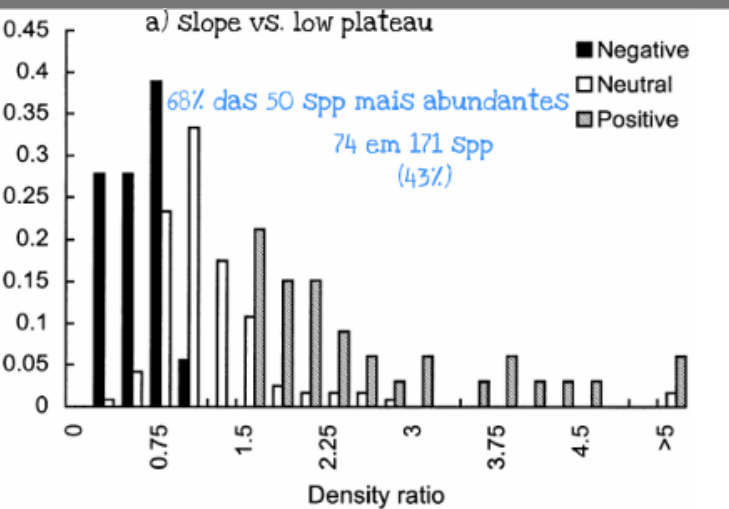
Republic of Panama



Modelo Nulo Torus



Associação de Habitat



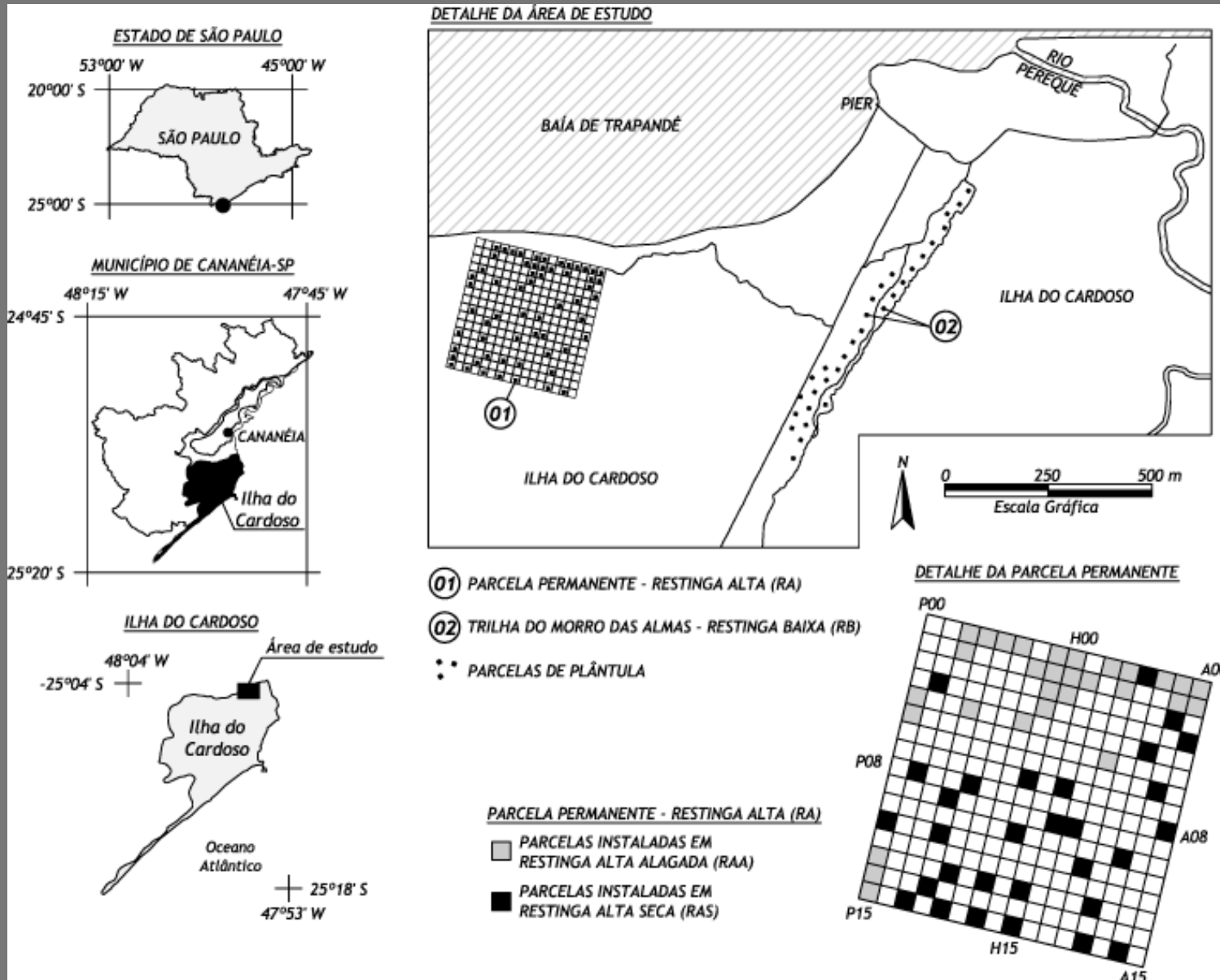
Harms et. al. 2
Barro

Habitat Assoc

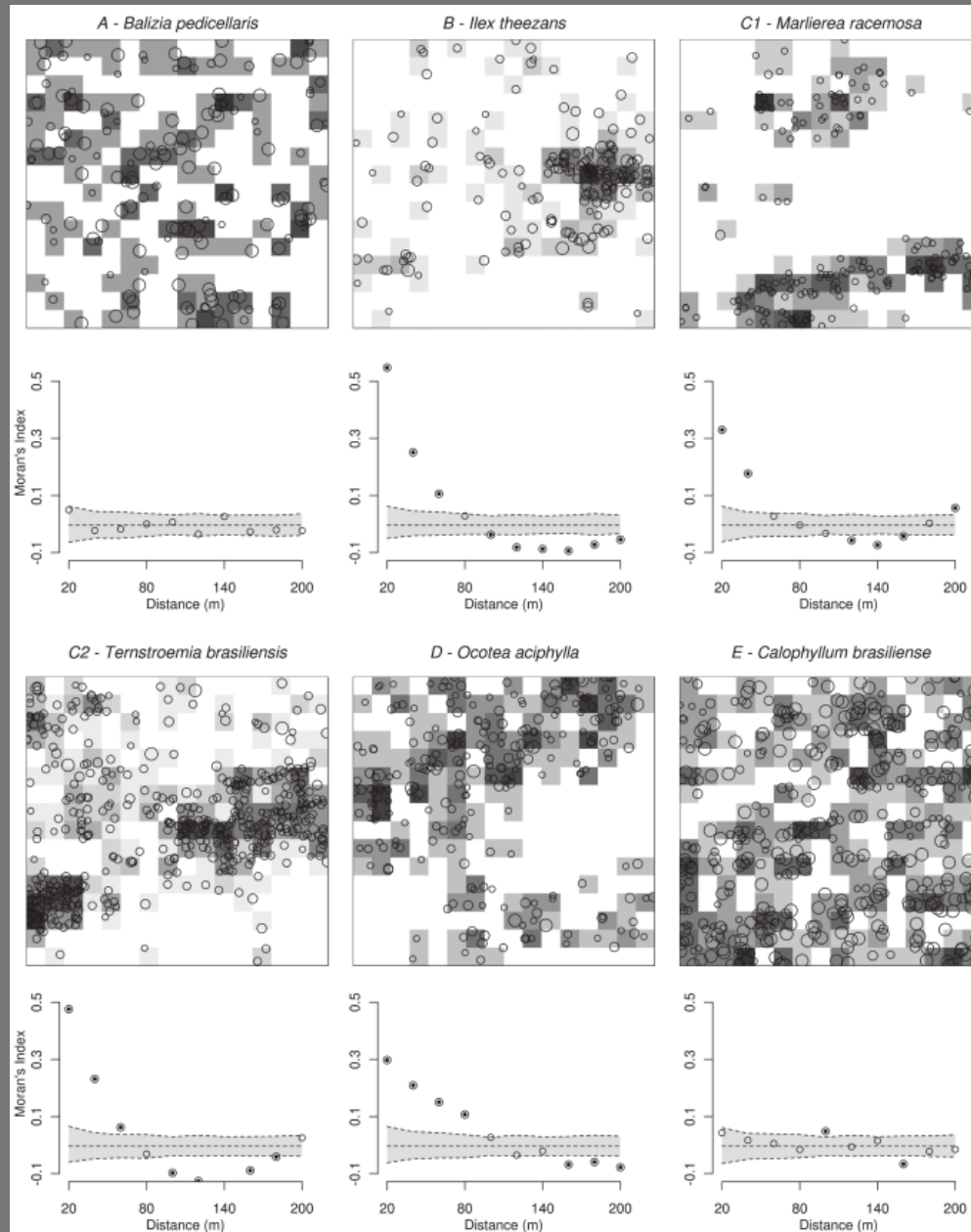
Restinga PEIC



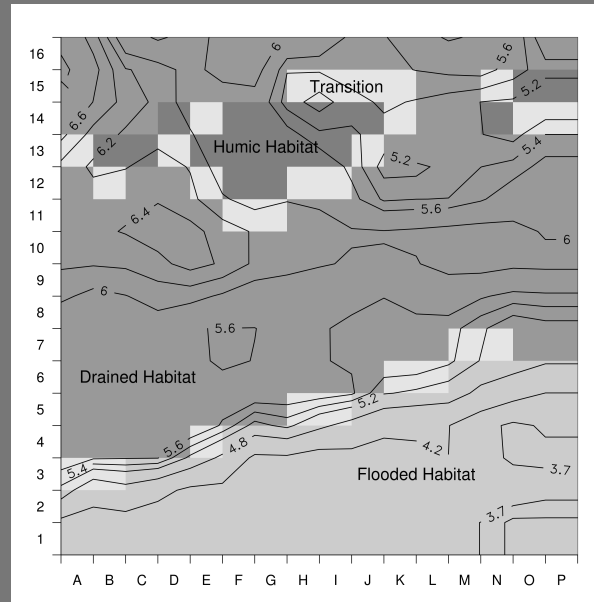
Parcela Permanente PEIC



Padrão Espacial



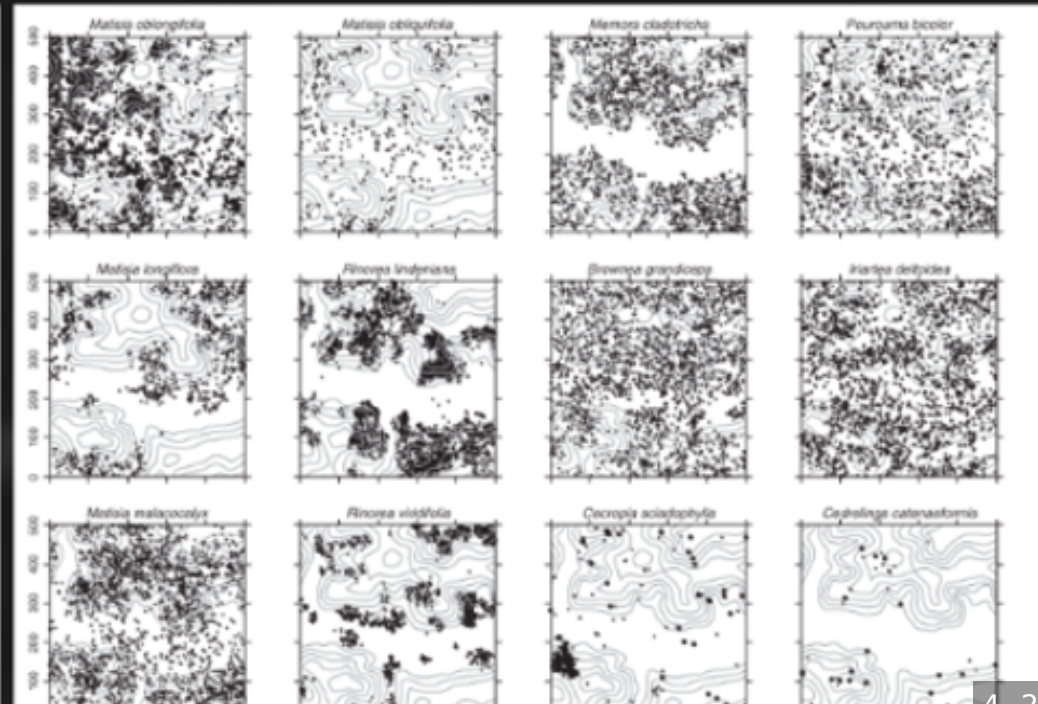
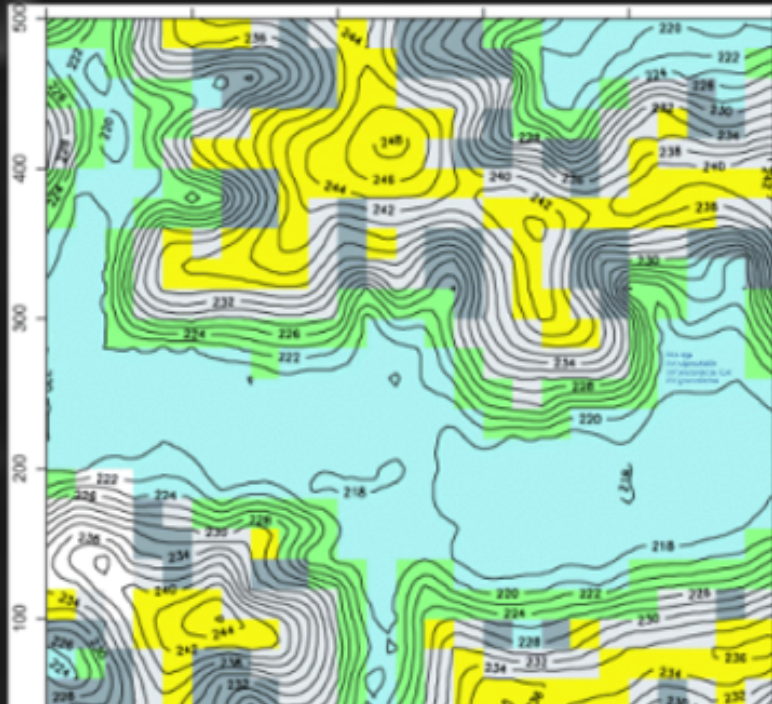
Tipos de Habitats Edáficos



Oliveira et al. 2014. *Journal of Plant Ecology*

- 99 spp > 20 trees
- 52% habitat preference
- Flooded: 19+/14-
- No-Flooded: 10+/20-

- 152353 arv.
- 1104 spp



Yasuni

1104 Spp

25% especialista

50% preferência $>1,5x$

25% generalistas



Valencia et al. 2004. Journal of Ecology

Habitat specialization is important!

Kraft et al., 2008

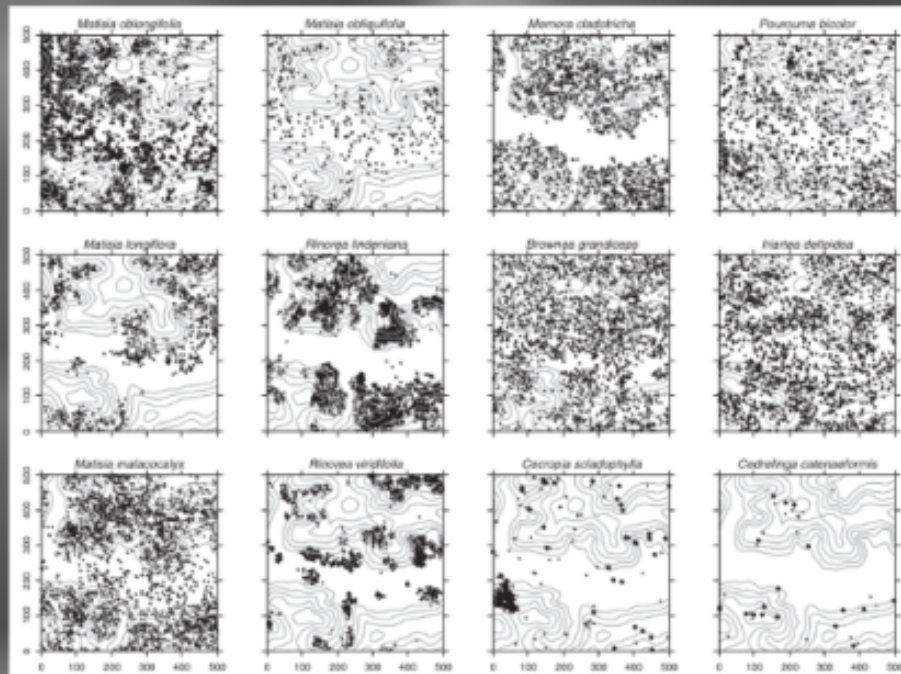
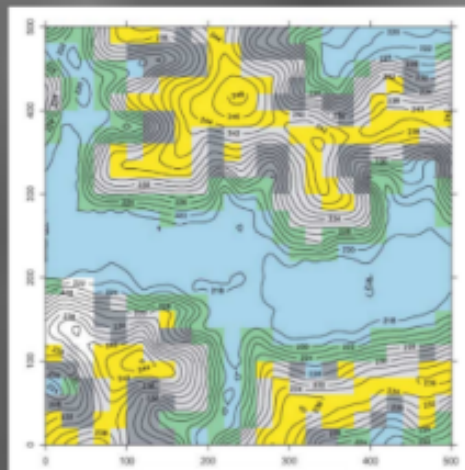
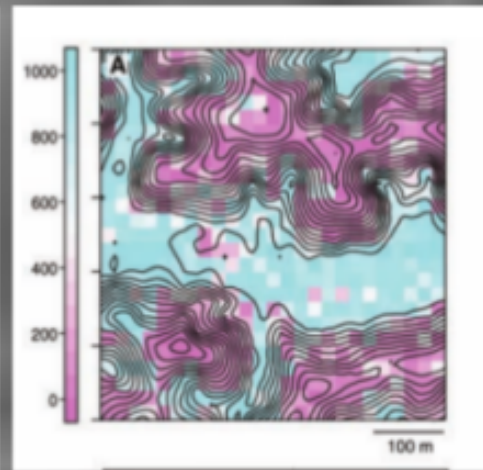


Fig. 4 Species distribution maps overlain on 5-m contours. Points come in three sizes: the largest indicate trees with d.b.h. ≥ 300 mm, medium indicate d.b.h. ≥ 100 and < 300 mm, and the smallest indicate d.b.h. ≥ 10 and < 100 mm.



HABITATS



SLA

Yi-Ching 2011

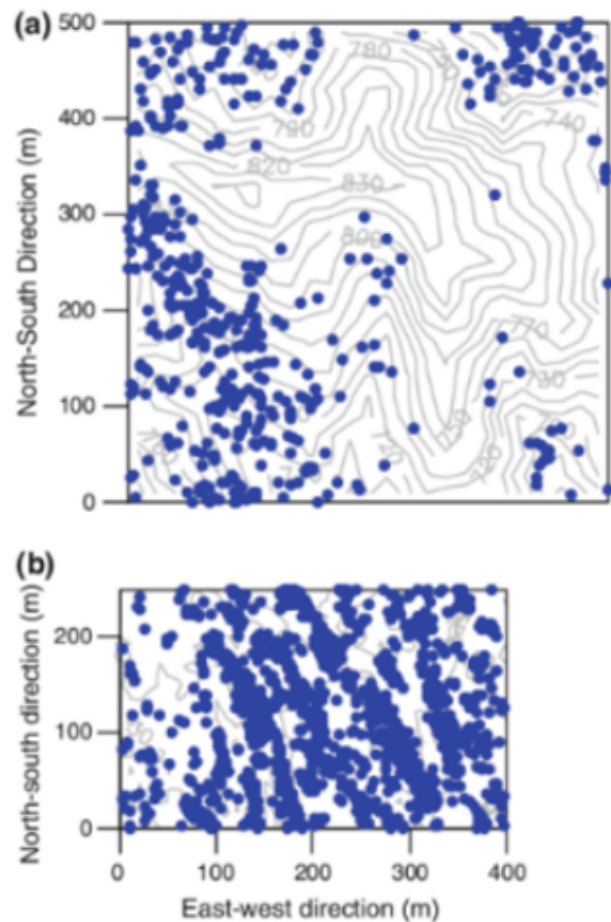
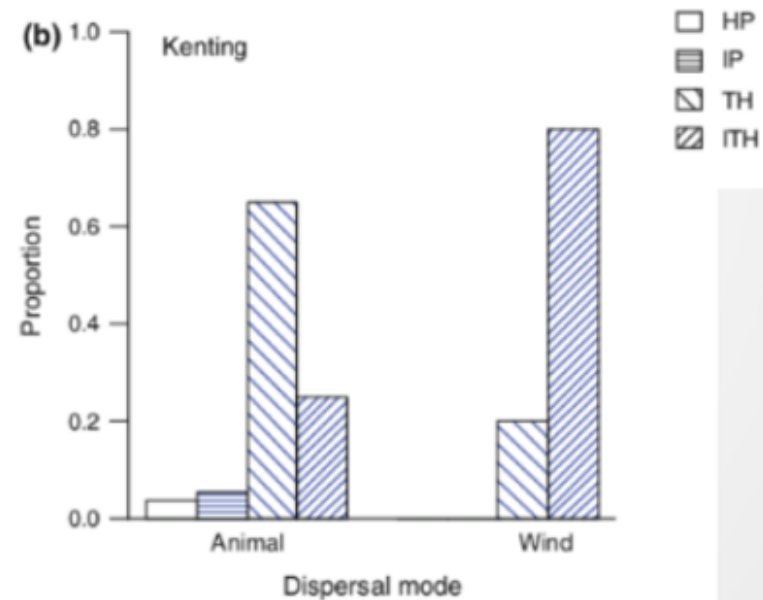


Fig. 2 Stem maps of *Ardisia sieboldii* in the LHC plot (a) and *Aglaia formosana* (b) in the Kenting plot. Each dot represents an individual

Table 1 Proportion of the best models for tree species in the LHC and Kenting plots in Taiwan as judged by the AIC (ESM S1, S2)

Model	LHC	Kenting
Homogeneous Poisson process	3% (3)	4% (2)
Inhomogeneous Poisson process	13% (13)	5% (3)
Homogeneous Thomas process	33% (31)	30% (17)
Inhomogeneous Thomas process	49% (46)	61% (35)

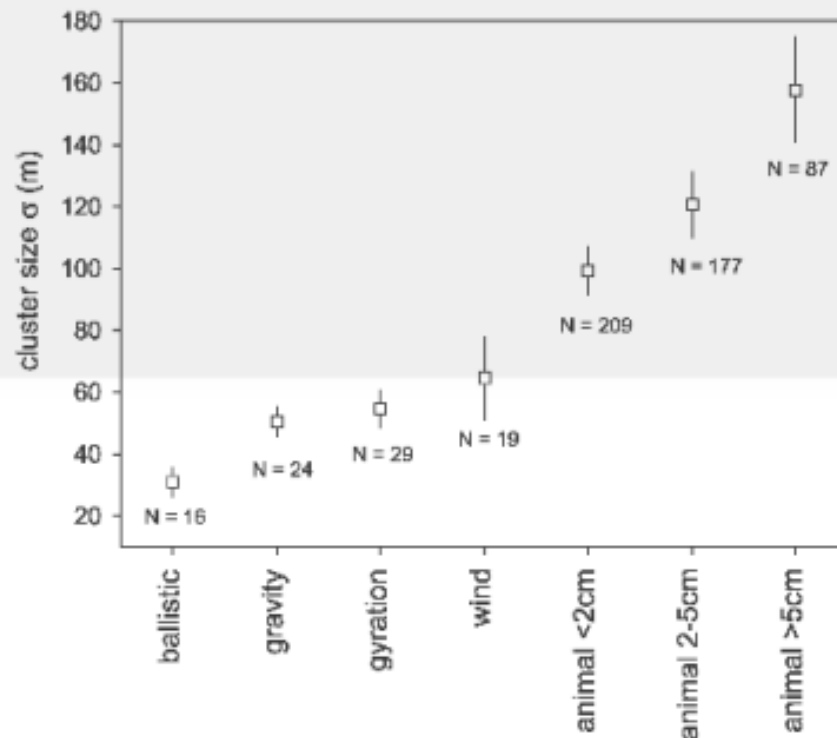


ACCESS



PEER-REVIEWED

ARTICLE

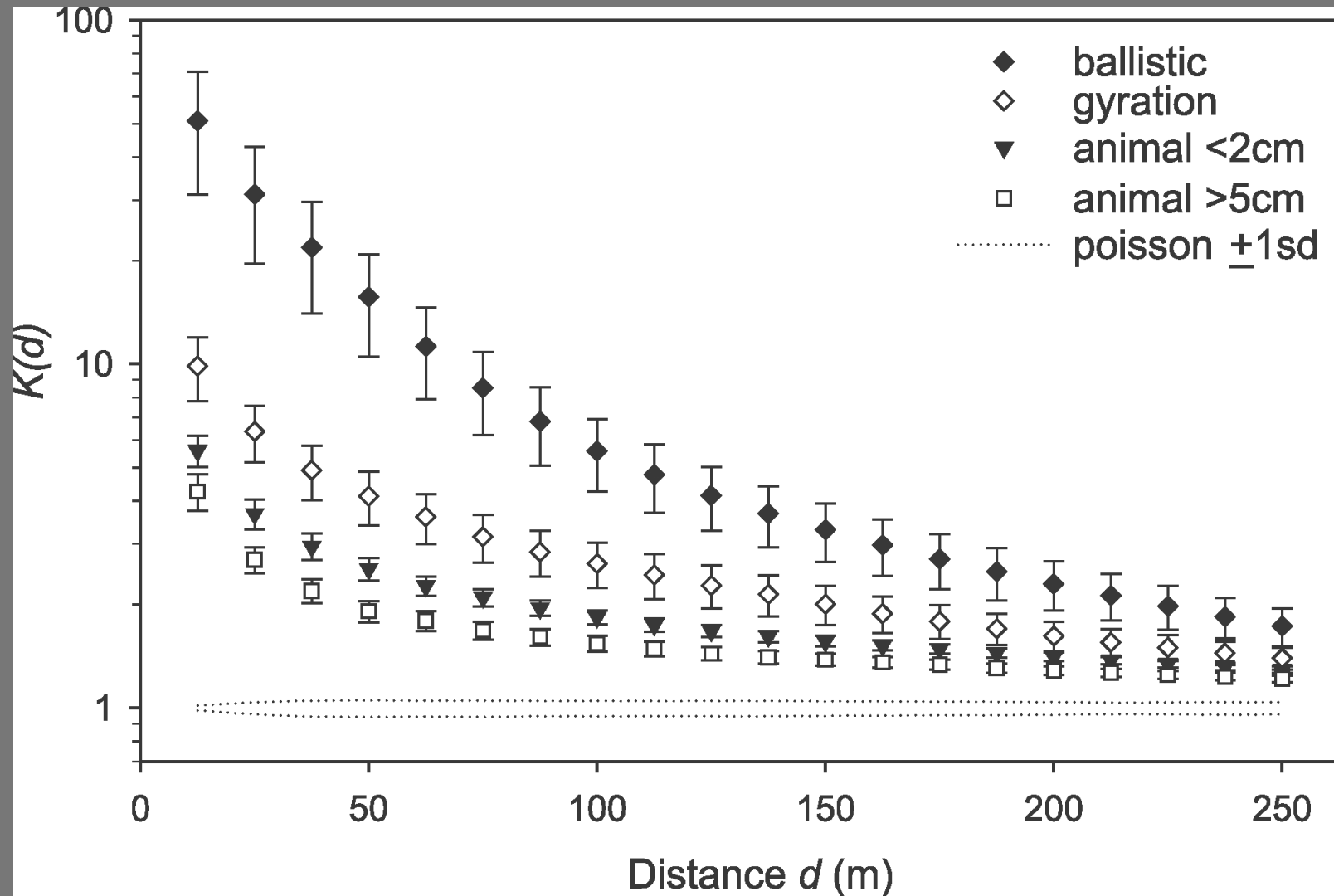


Dispersal and Spatial Pattern in Tropical Trees

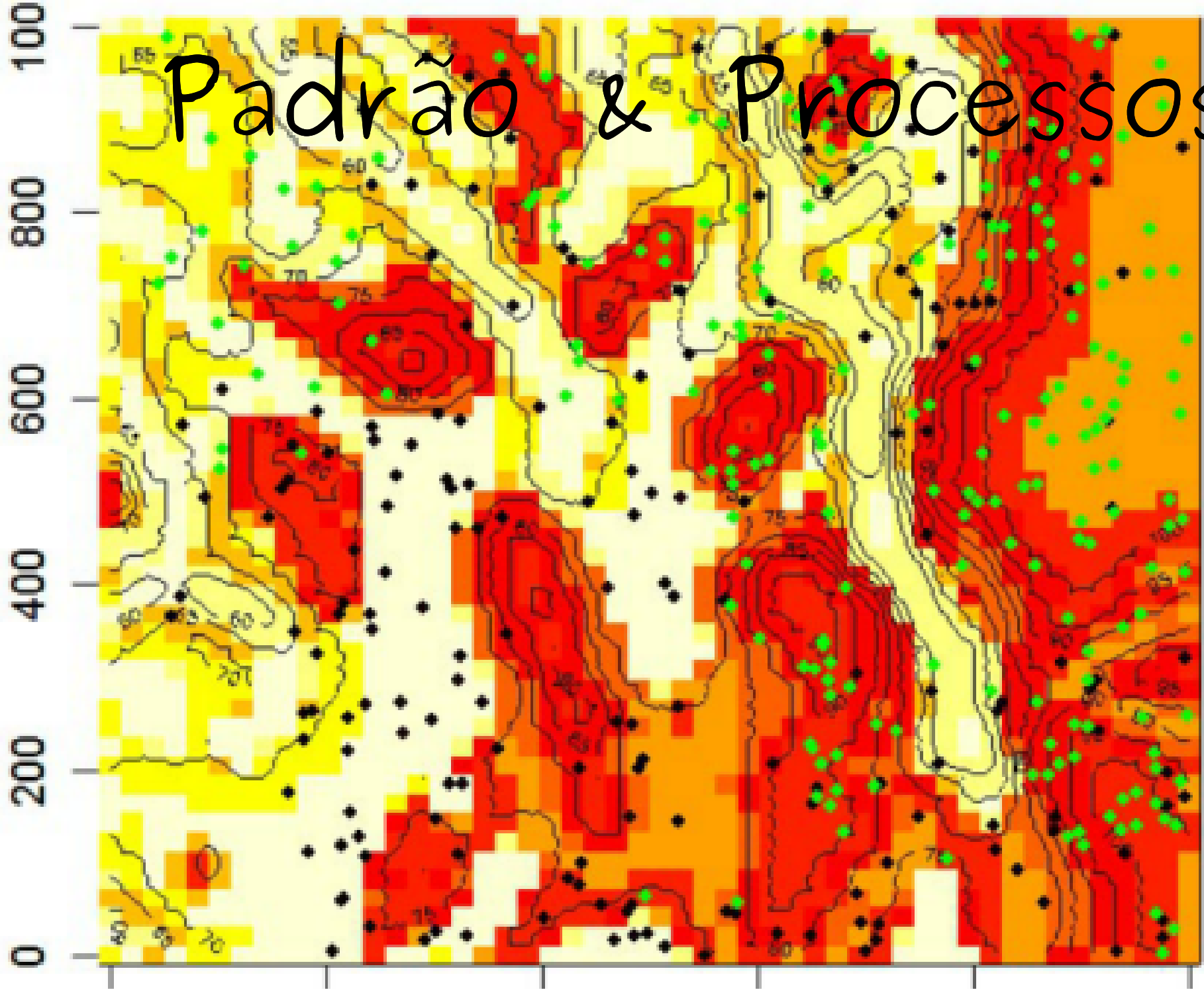
G Seidler, Joshua B Plotkin

50 hectares Malasia
561 spp árvores

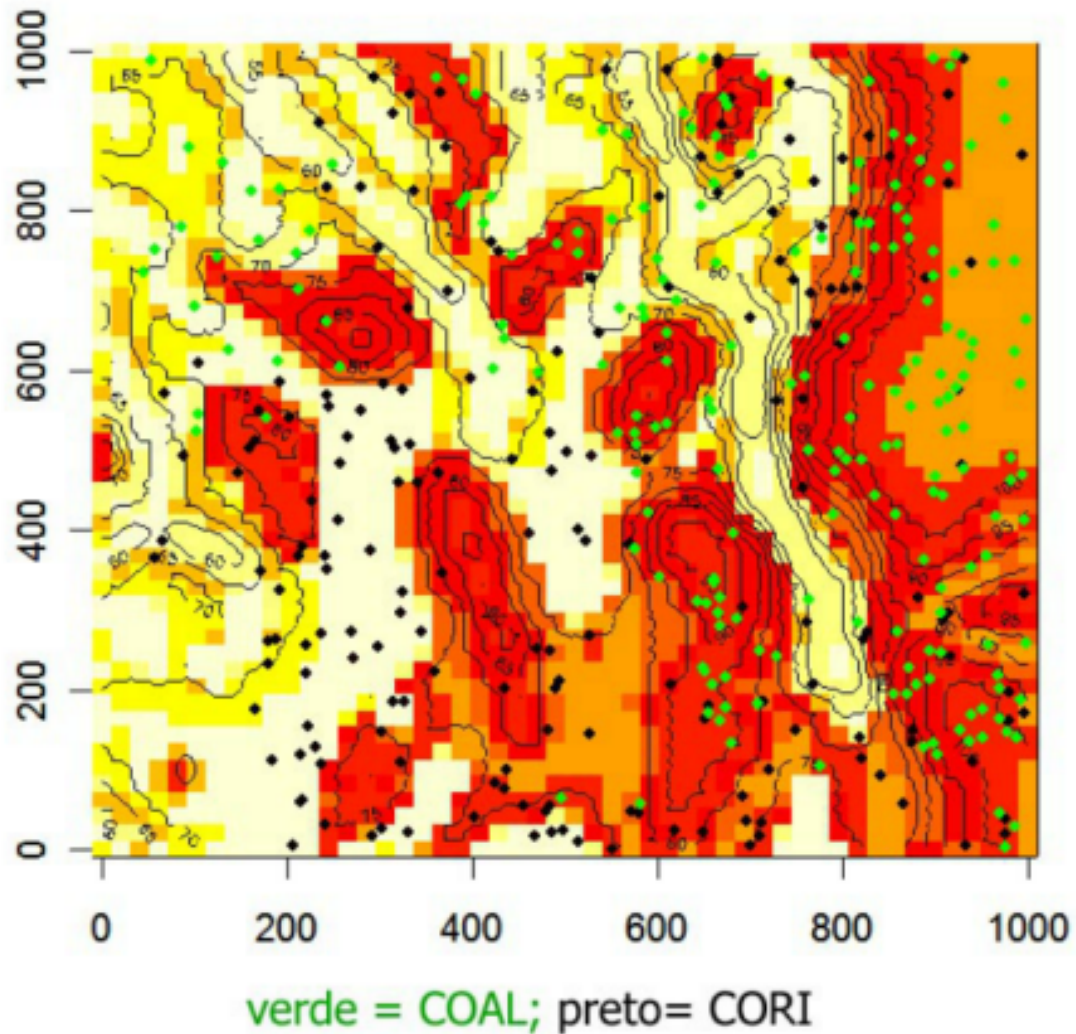
Dispersão



Padrão & Processos



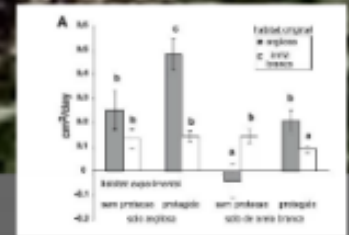
Inferir Processos

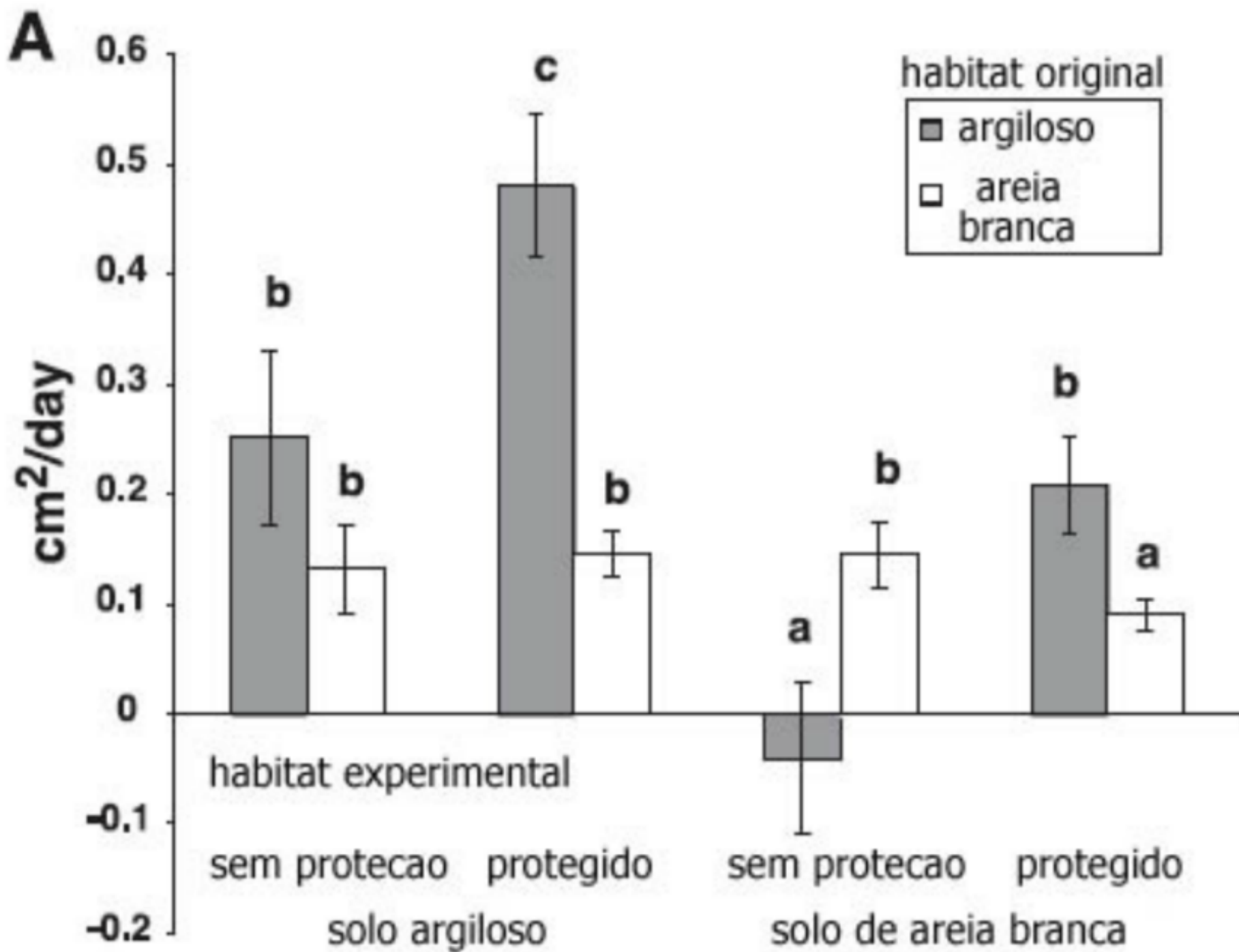


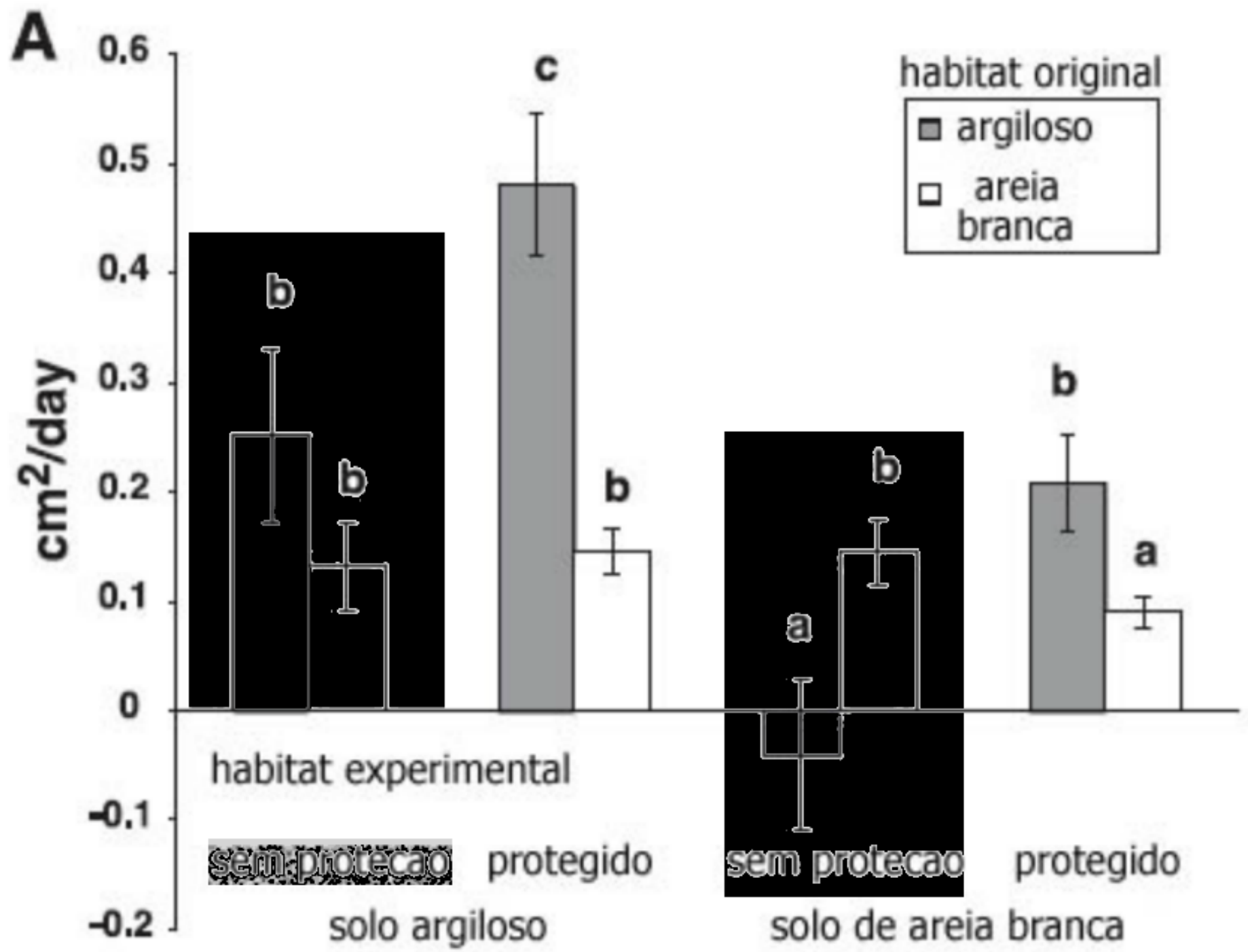
Fine et al., 2004

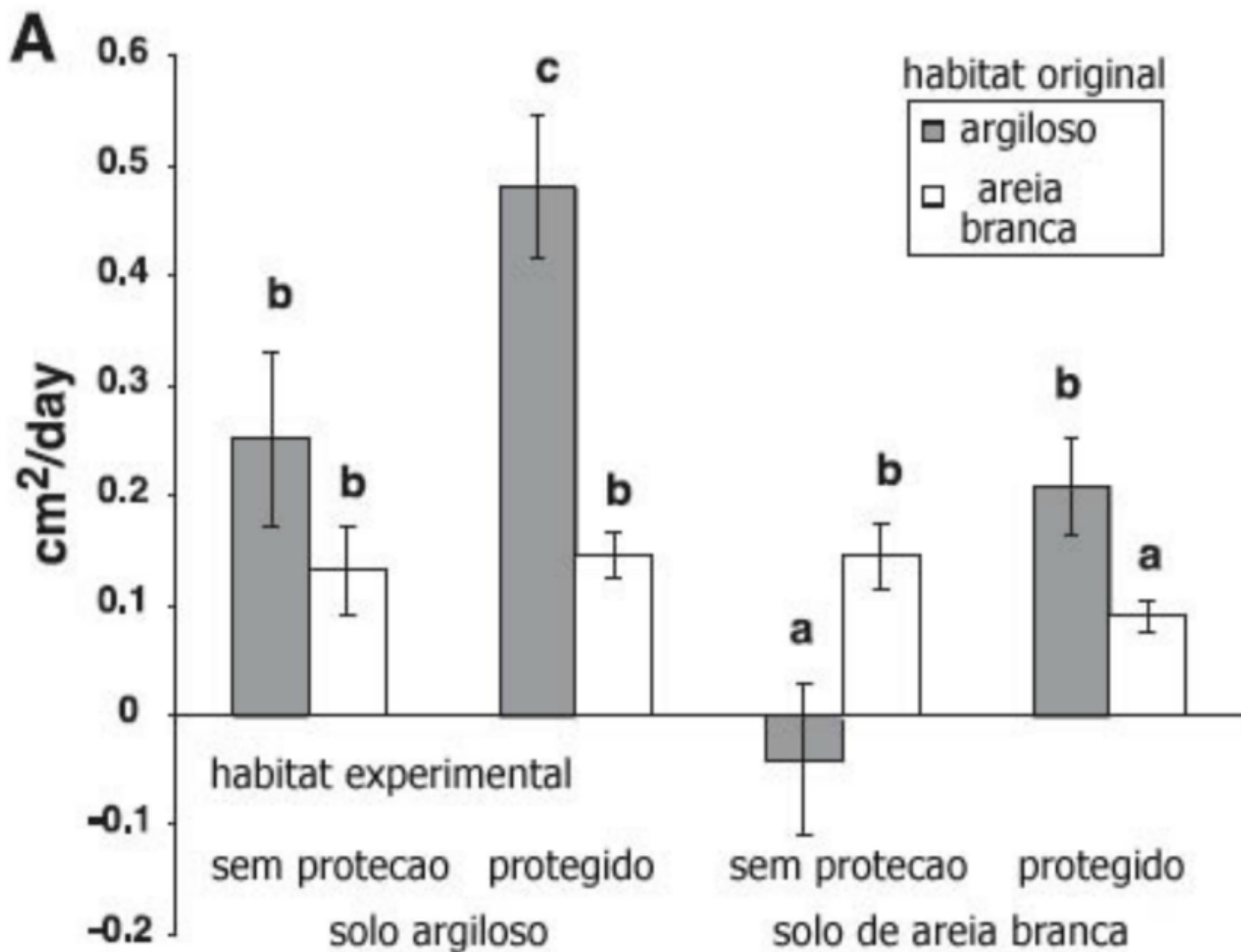


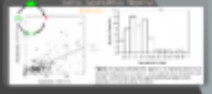
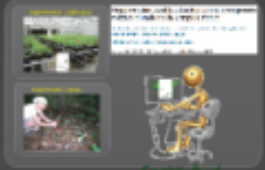
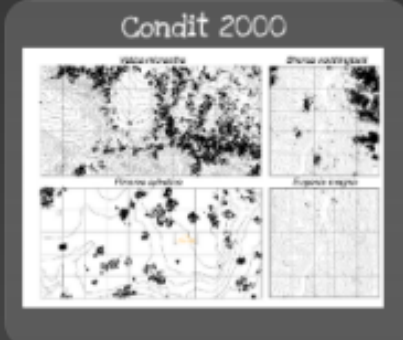
Year	Area (m ²)	Plot ID
1982	100	100-1
1982	100	100-2
1982	100	100-3
1982	100	100-4
1982	100	100-5
1982	100	100-6
1982	100	100-7
1982	100	100-8
1982	100	100-9
1982	100	100-10
1982	100	100-11
1982	100	100-12
1982	100	100-13
1982	100	100-14
1982	100	100-15
1982	100	100-16
1982	100	100-17
1982	100	100-18
1982	100	100-19
1982	100	100-20
1982	100	100-21
1982	100	100-22
1982	100	100-23
1982	100	100-24
1982	100	100-25
1982	100	100-26
1982	100	100-27
1982	100	100-28
1982	100	100-29
1982	100	100-30
1982	100	100-31
1982	100	100-32
1982	100	100-33
1982	100	100-34
1982	100	100-35
1982	100	100-36
1982	100	100-37
1982	100	100-38
1982	100	100-39
1982	100	100-40
1982	100	100-41
1982	100	100-42
1982	100	100-43
1982	100	100-44
1982	100	100-45
1982	100	100-46
1982	100	100-47
1982	100	100-48
1982	100	100-49
1982	100	100-50
1982	100	100-51
1982	100	100-52
1982	100	100-53
1982	100	100-54
1982	100	100-55
1982	100	100-56
1982	100	100-57
1982	100	100-58
1982	100	100-59
1982	100	100-60
1982	100	100-61
1982	100	100-62
1982	100	100-63
1982	100	100-64
1982	100	100-65
1982	100	100-66
1982	100	100-67
1982	100	100-68
1982	100	100-69
1982	100	100-70
1982	100	100-71
1982	100	100-72
1982	100	100-73
1982	100	100-74
1982	100	100-75
1982	100	100-76
1982	100	100-77
1982	100	100-78
1982	100	100-79
1982	100	100-80
1982	100	100-81
1982	100	100-82
1982	100	100-83
1982	100	100-84
1982	100	100-85
1982	100	100-86
1982	100	100-87
1982	100	100-88
1982	100	100-89
1982	100	100-90
1982	100	100-91
1982	100	100-92
1982	100	100-93
1982	100	100-94
1982	100	100-95
1982	100	100-96
1982	100	100-97
1982	100	100-98
1982	100	100-99
1982	100	100-100



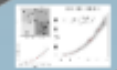
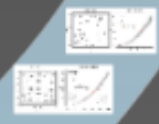
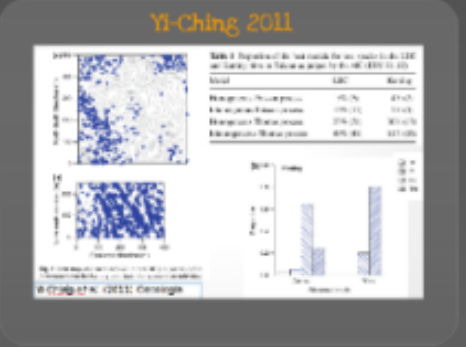
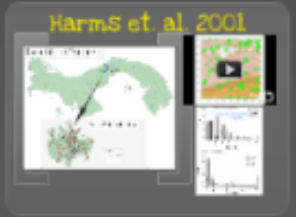








Padrão & Processos



FORTE

experimentos manipulativos

desenhos retritos

observacionais

FRACA

força de
inferência

hipóteses
a priori
a posteriori



Padrão

Escala

Processos

agregado
aleatorio
regular

endêmica
disjunta
ampla/restrita

Local (m)

Regional (km)

Continental

- limitação dispersão
- interações +/-
- especialização habitat
- limitações fisiológicas

- dispersão a longa distância
- barreiras geográficas
- história evolutiva