

# **EFEITO DO DISTÚRBIO NAS ESTRATÉGIAS DE VIDA**

**DINÂMICAS ECOLÓGICAS E EVOLUTIVAS**

**Luísa Novara Monclar Gonçalves**

**ORIENTADOR: Prof. Dr. Alexandre Adalardo de Oliveira**

**COORIENTADOR: Prof. Dr. Paulo Inácio Prado**



dinâmica  
evolutiva

dinâmica  
ecológica

dinâmica  
evolutiva

mudanças na frequência  
de um atributo na  
**população**

a partir de alterações na  
**frequência relativa  
dos alelos**

dinâmica  
ecológica

dinâmica  
evolutiva

mudanças na frequência  
de um atributo na  
**população**

a partir de alterações na  
**frequência relativa  
dos alelos**

dinâmica  
ecológica

mudanças na frequência  
de um atributo na  
**comunidade**

a partir de alterações na  
**frequência relativa  
das espécies**

## dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

## dinâmica ecológica

## dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

## dinâmica ecológica

- seleção
- deriva ecológica
- migração
- especiação

## dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

## dinâmica ecológica

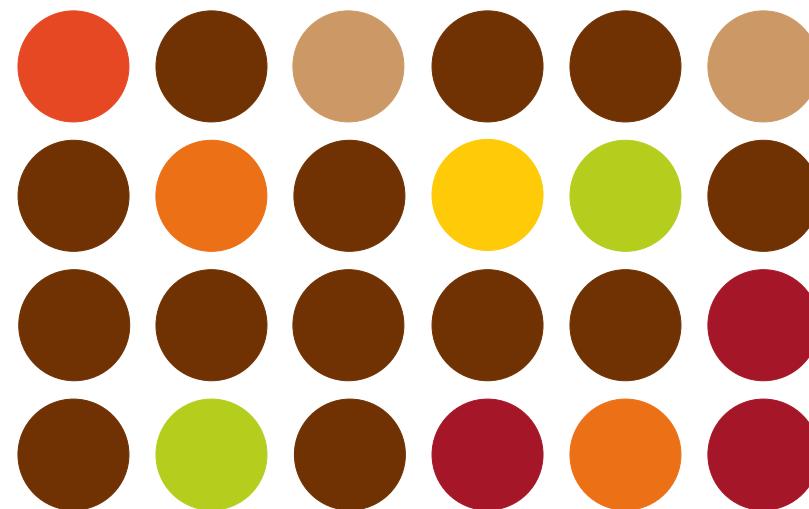
- filtragem ecológica
- deriva ecológica
- migração
- especiação

# dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

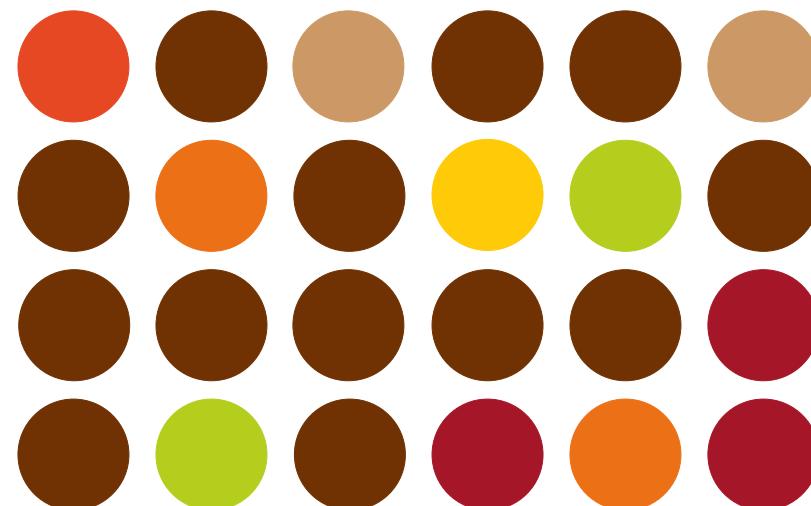
# dinâmica evolutiva

- seleção
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- fluxo gênico
- mutação



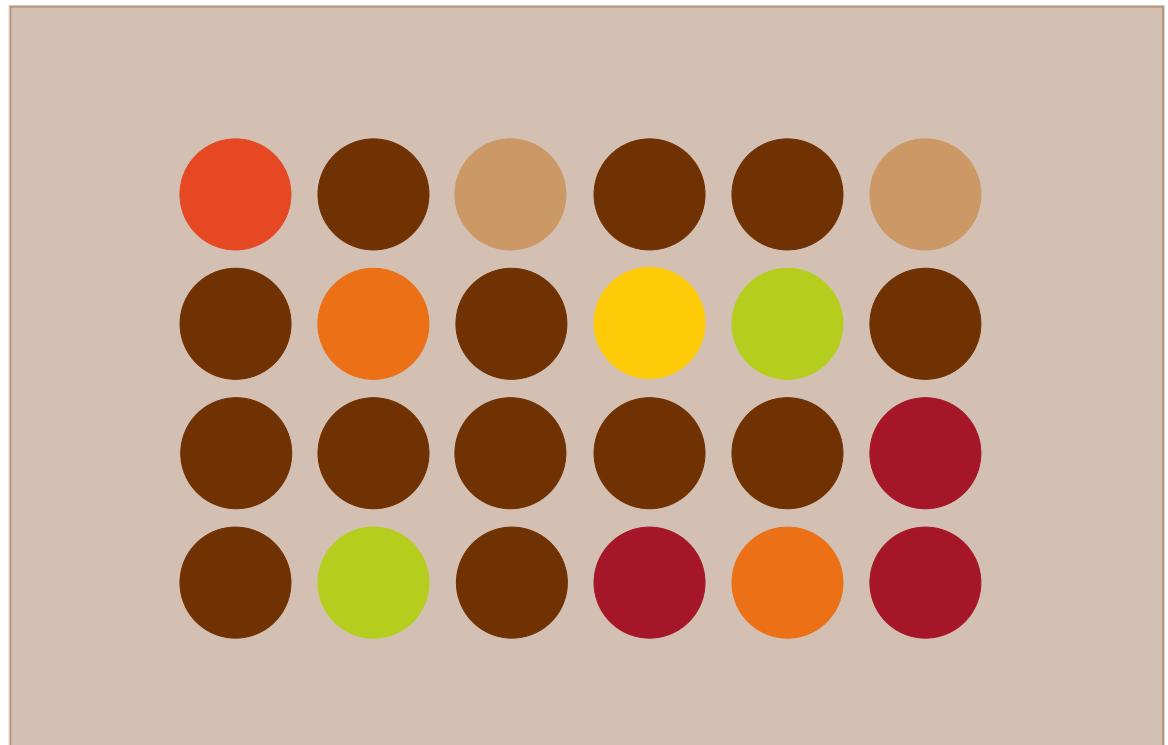
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- **seleção**
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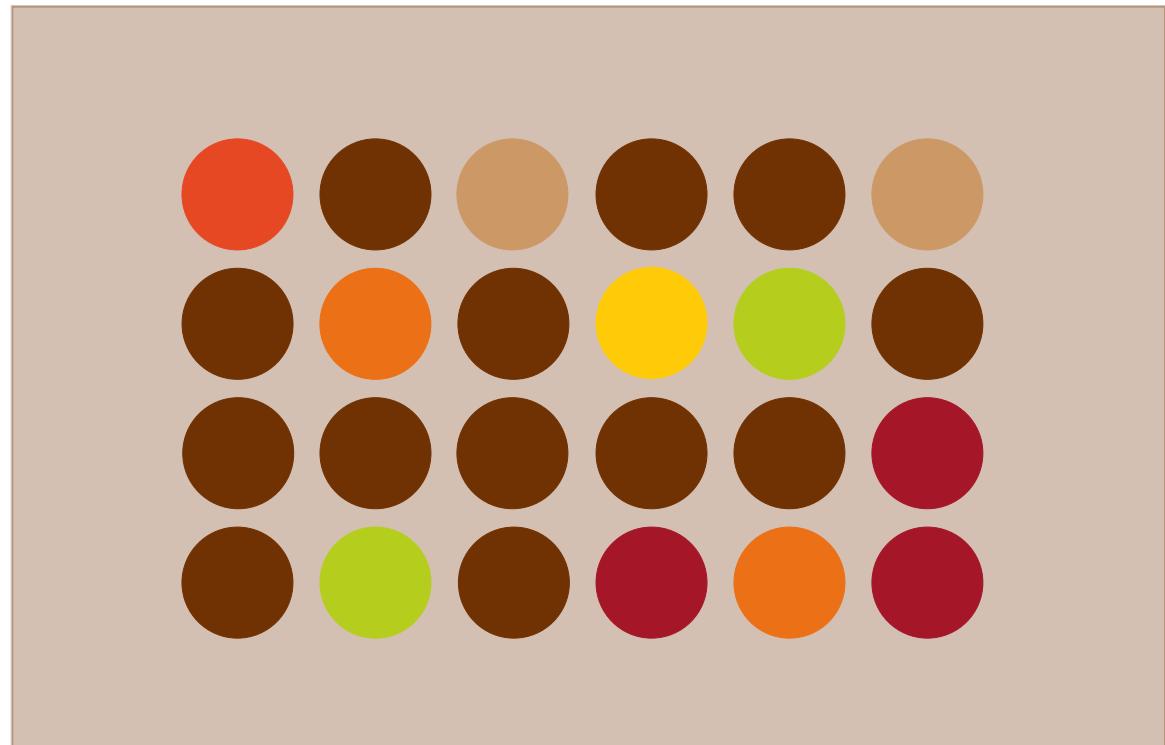
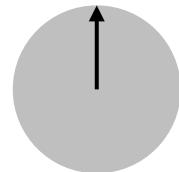
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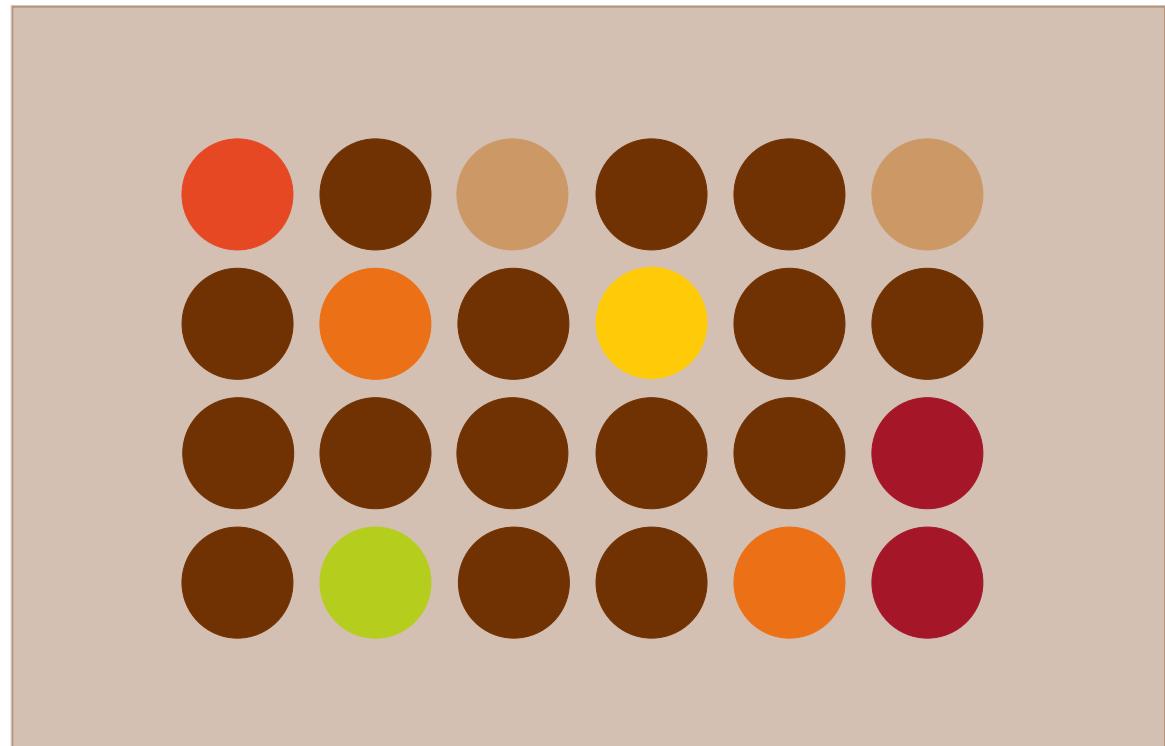
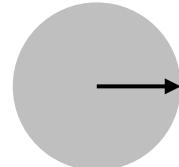
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- mutação



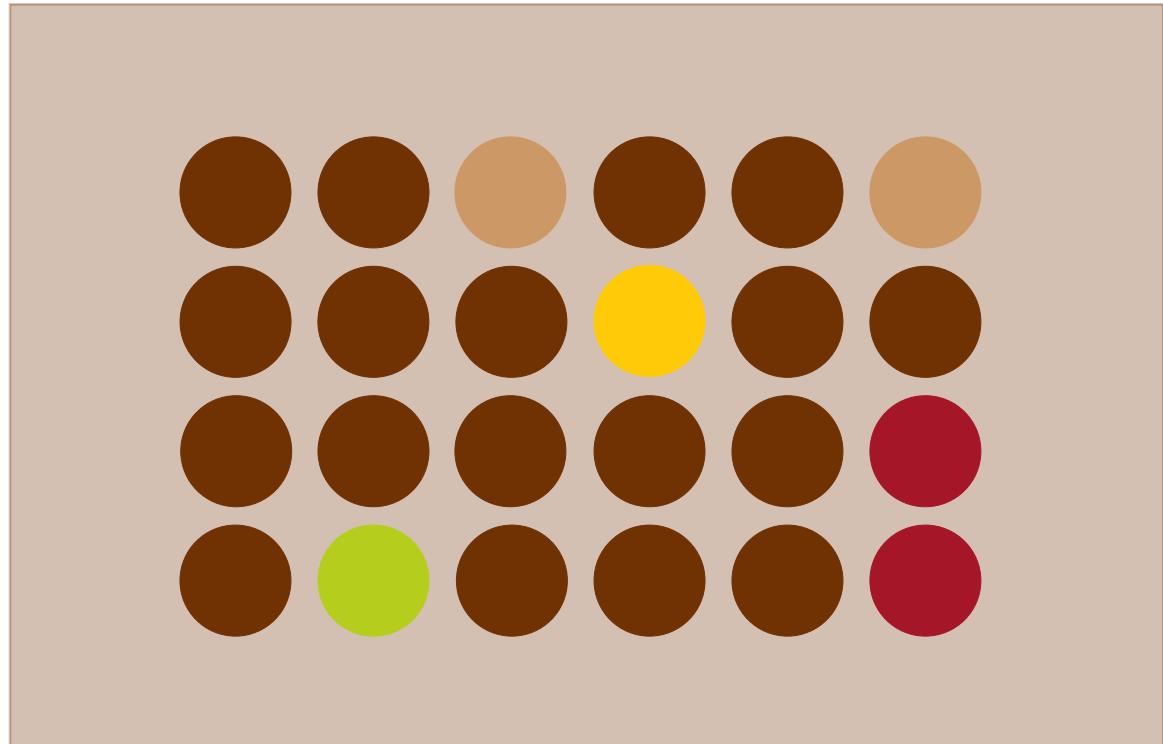
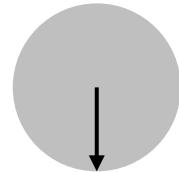
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- mutação



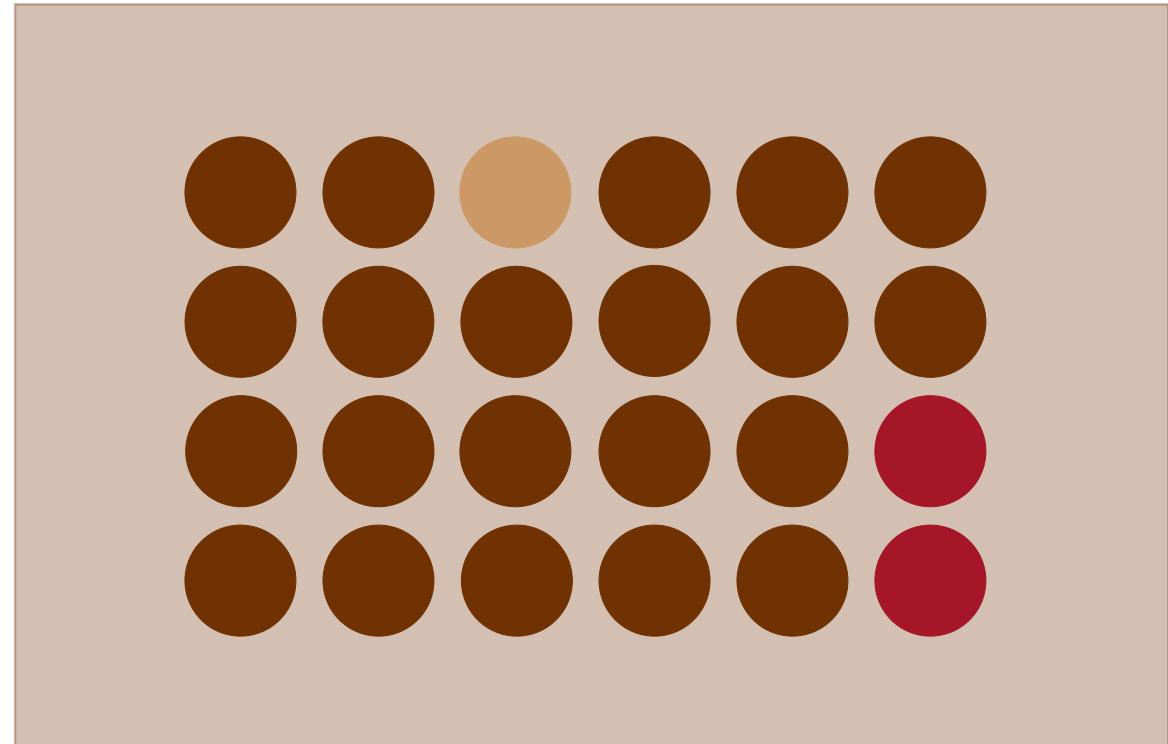
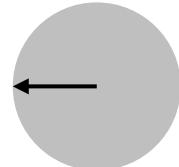
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- fluxo gênico
- mutação



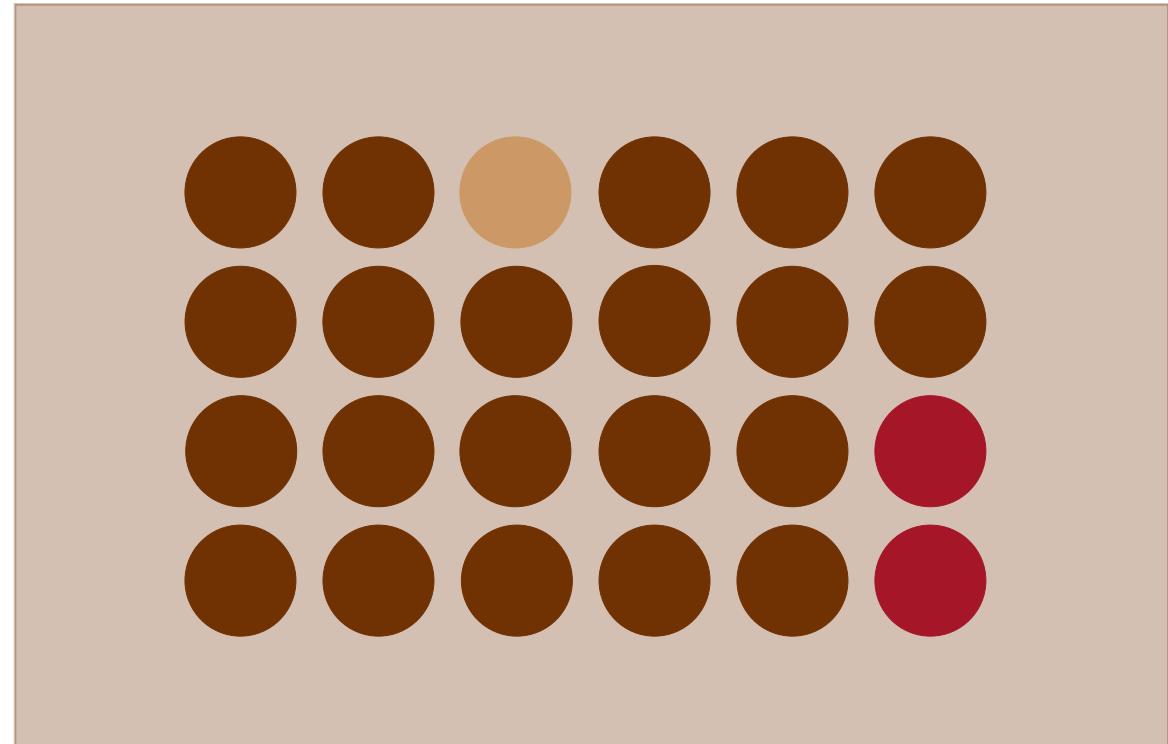
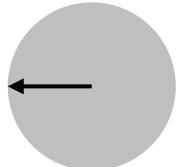
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- mutação



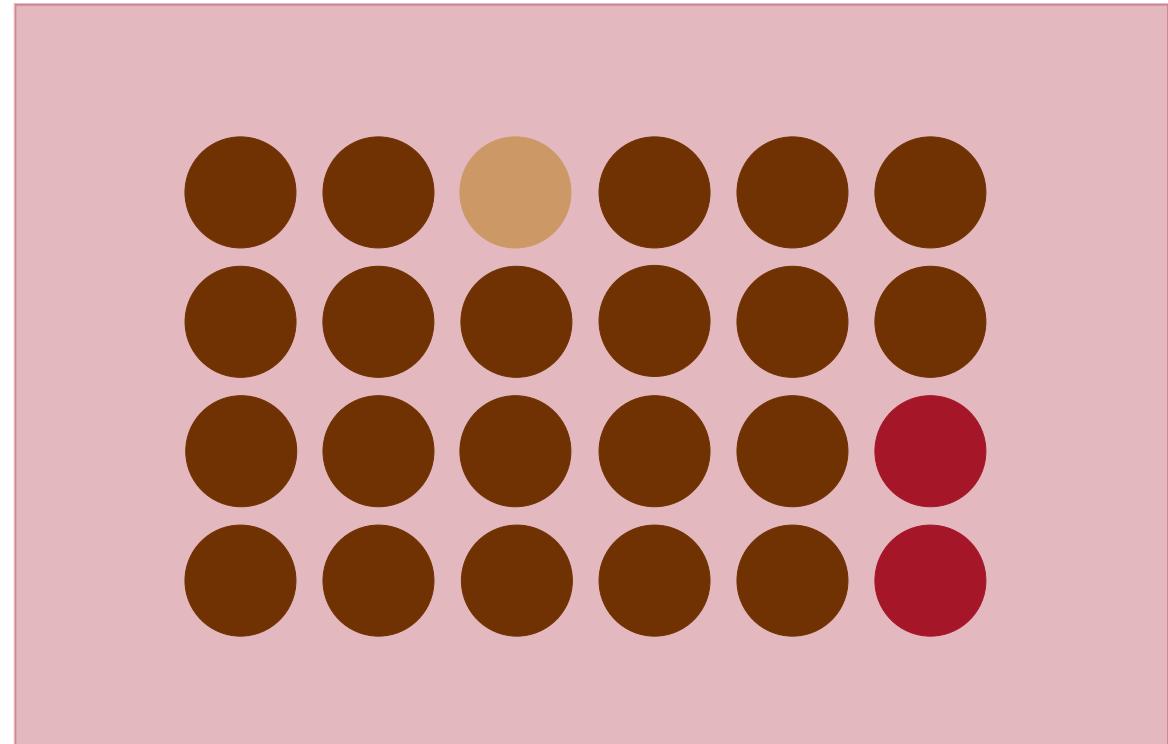
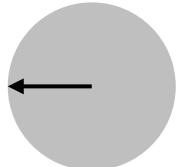
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- seleção
- **deriva genética**
- fluxo gênico
- mutação



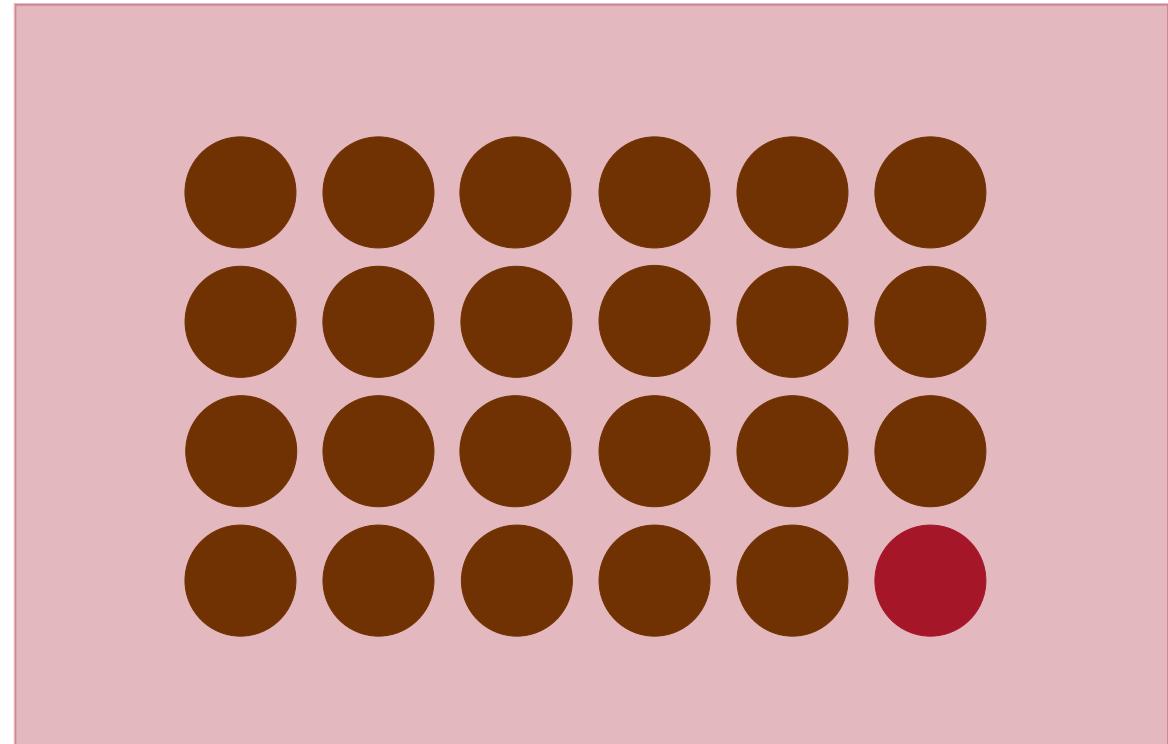
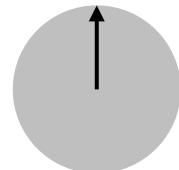
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- **deriva genética**
- fluxo gênico
- mutação



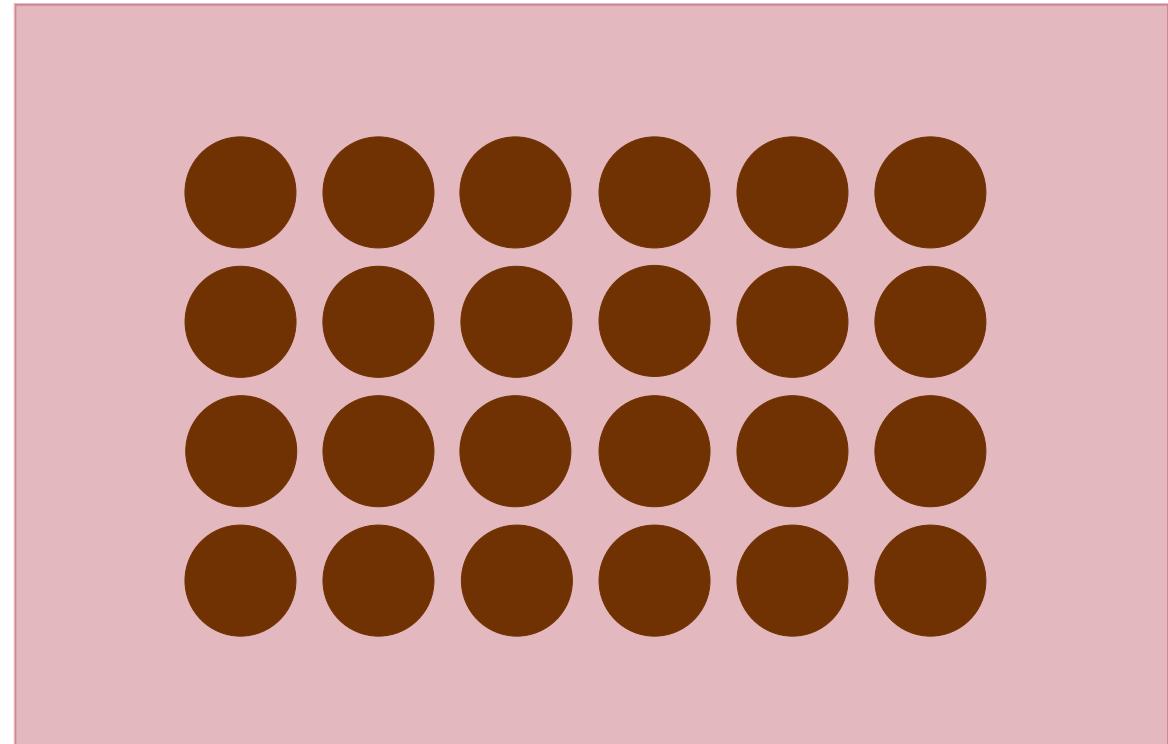
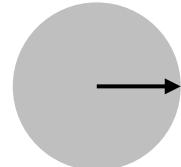
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- **deriva genética**
- fluxo gênico
- mutação



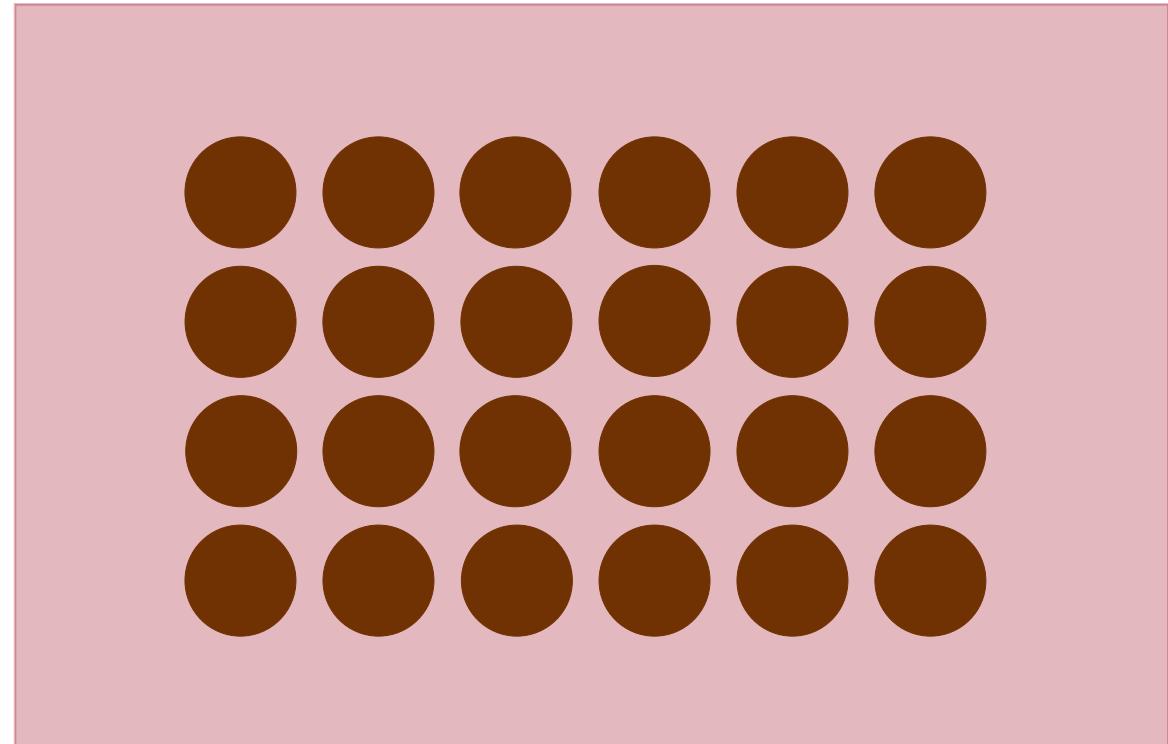
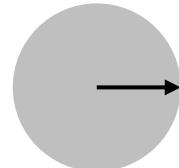
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- **deriva genética**
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- mutação



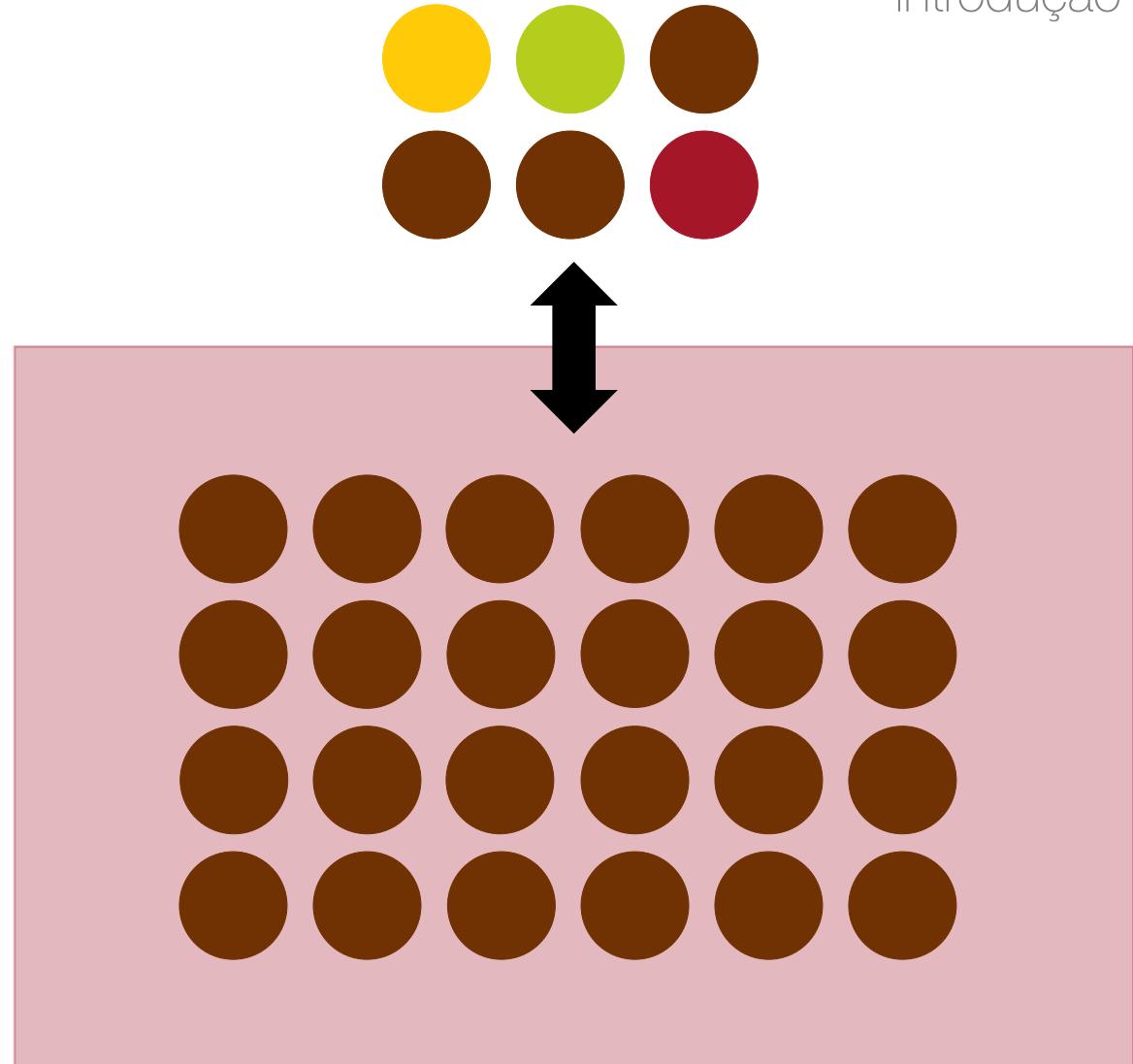
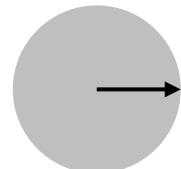
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- **fluxo gênico**
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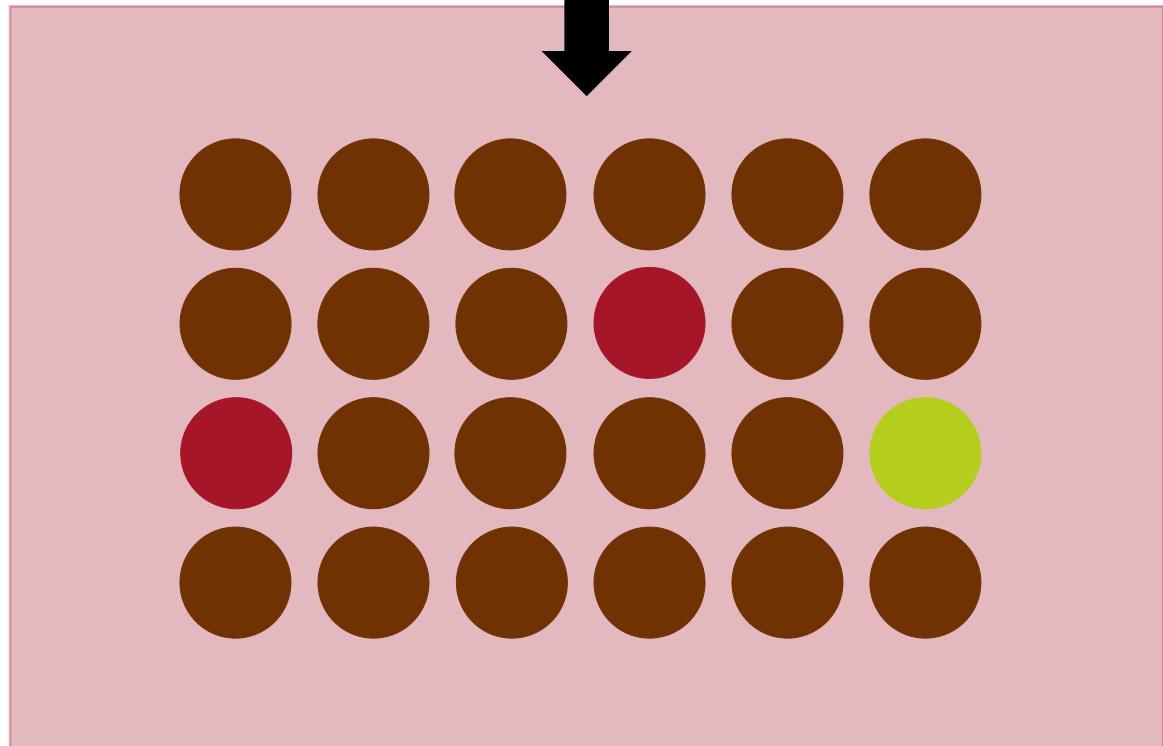
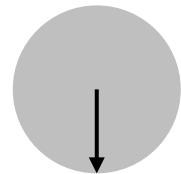
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- seleção
- deriva genética
- **fluxo gênico**
- mutação



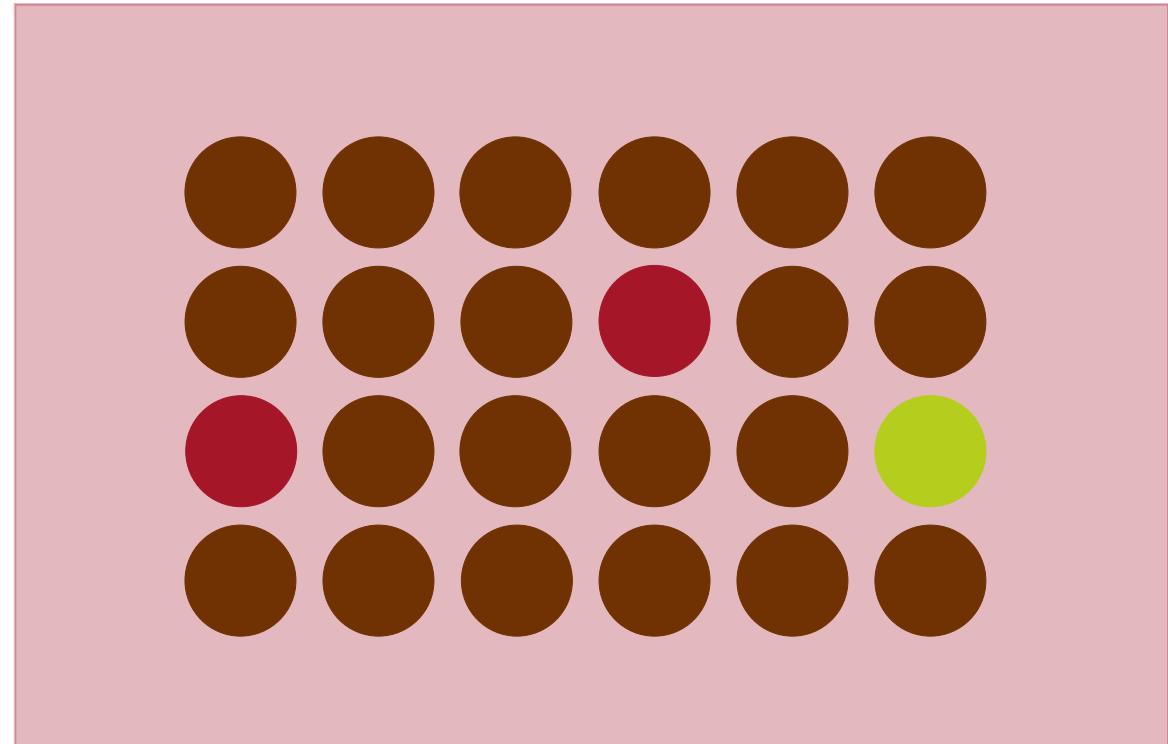
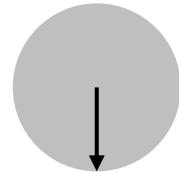
# dinâmica evolutiva

- seleção
- deriva genética
- **fluxo gênico**
- mutação



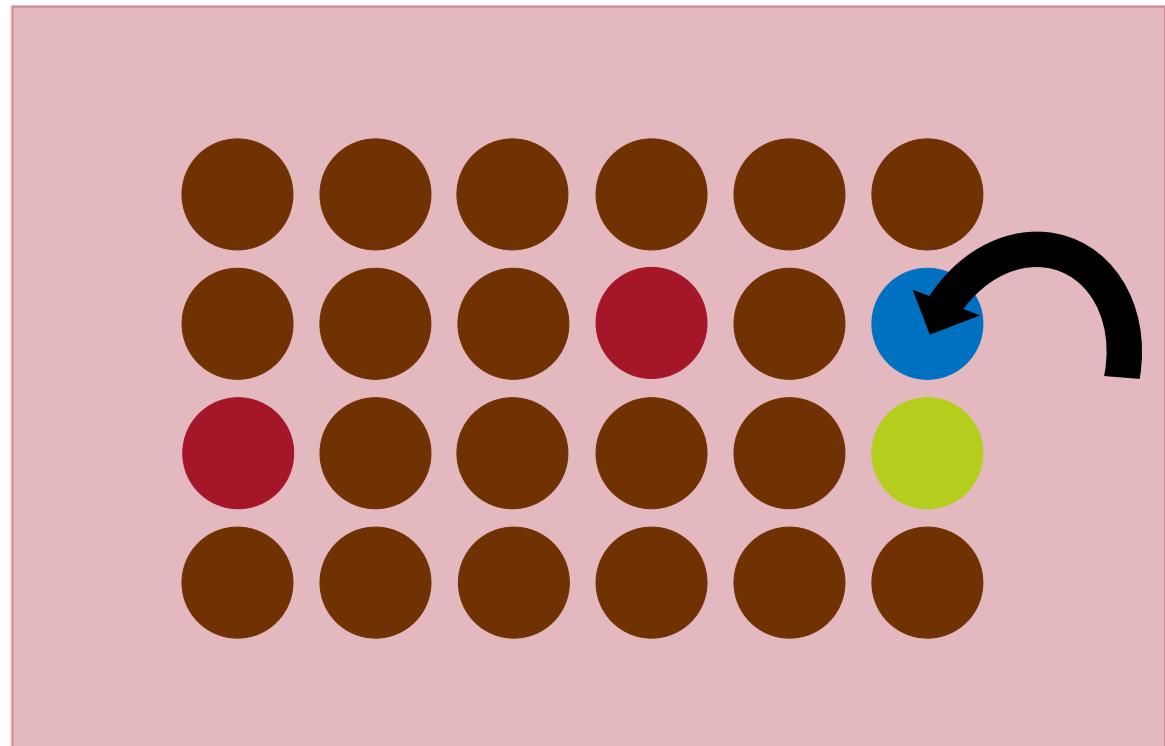
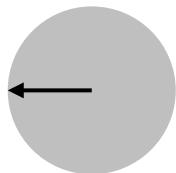
# dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- **mutação**



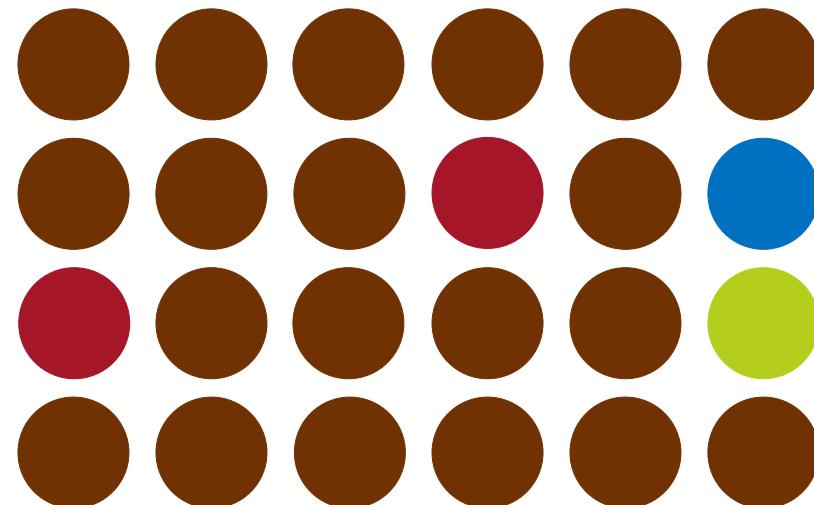
# dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- **mutação**



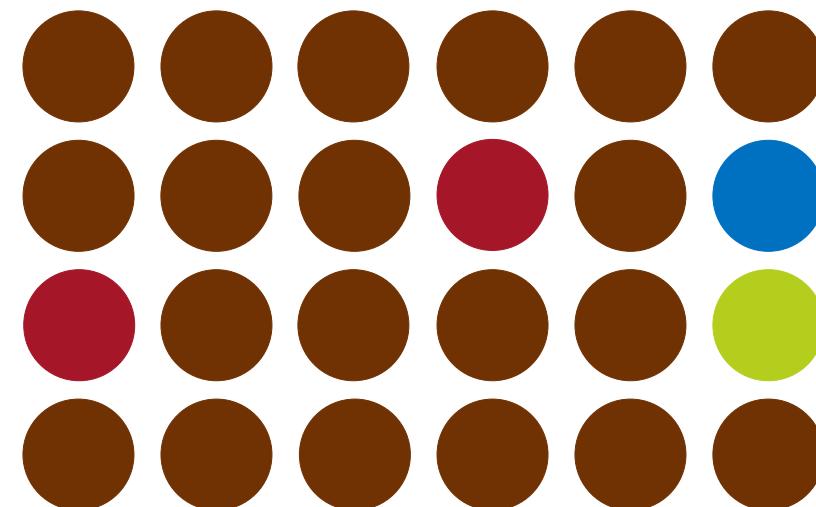
# dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação



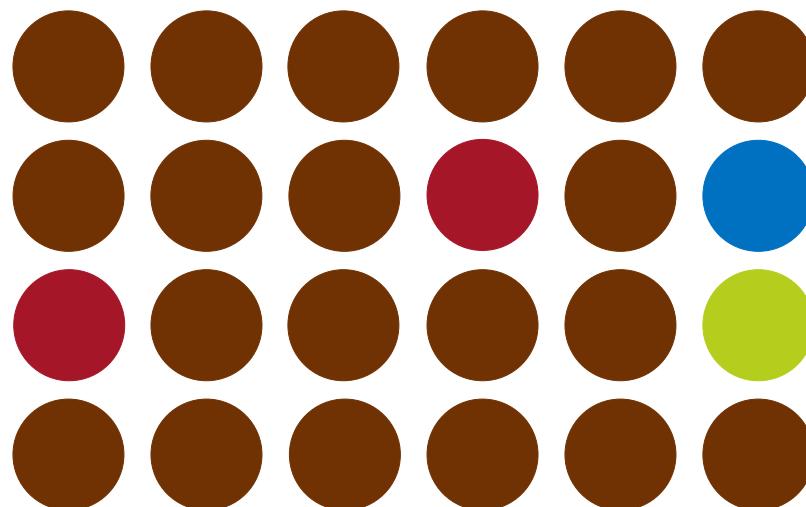
# dinâmica evolutiva

- seleção
  - deriva genética
  - fluxo gênico
  - mutação
- } diversidade



# dinâmica evolutiva

- seleção
  - deriva genética
  - fluxo gênico
  - mutação
- } diversidade
- ↑ diversidade

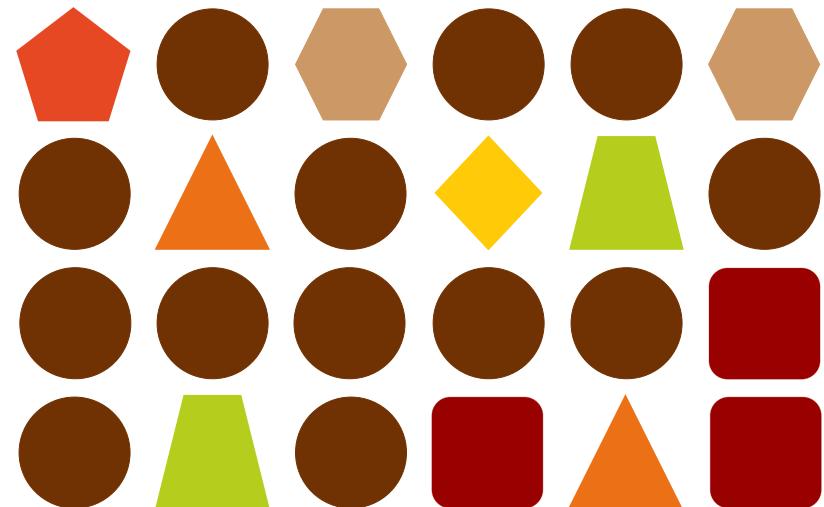




## dinâmica ecológica

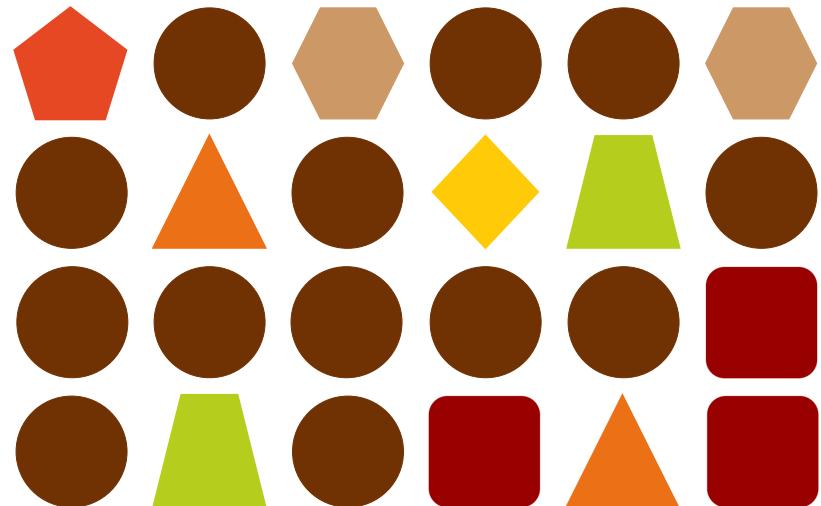
- filtragem ecológica
- deriva ecológica
- migração
- especiação

## dinâmica ecológica



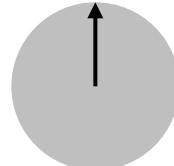
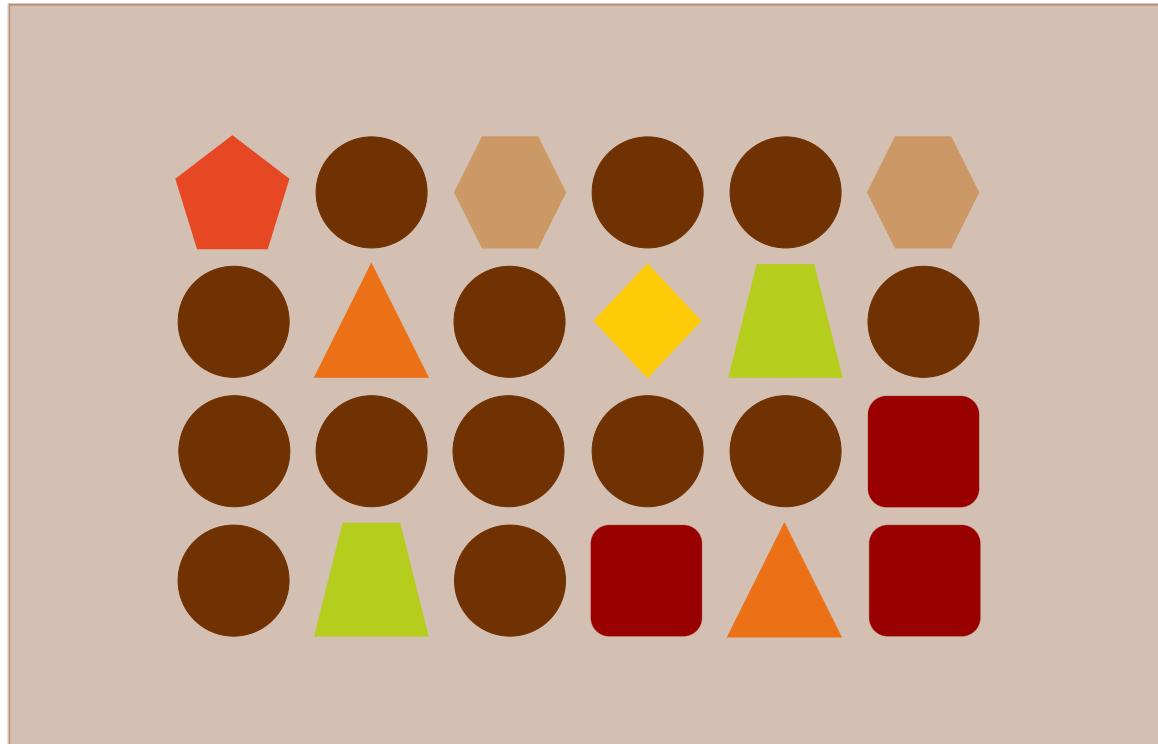
- filtragem ecológica
- deriva ecológica
- migração
- especiação

## dinâmica ecológica



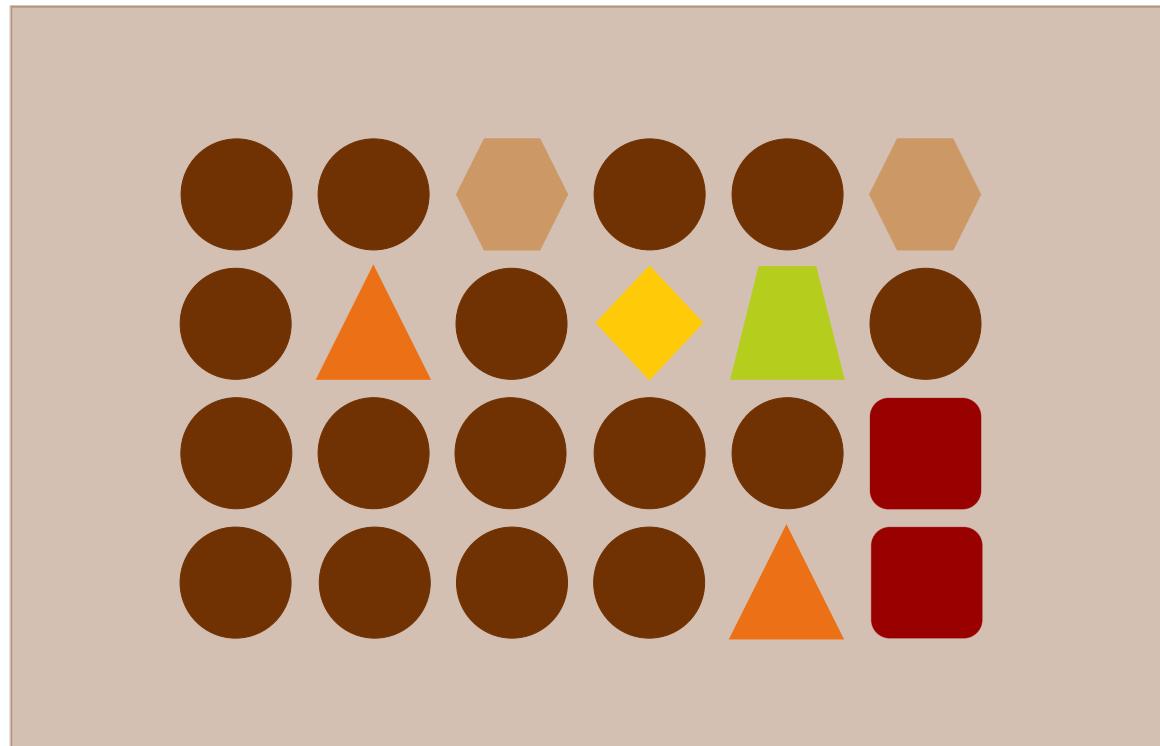
- **filtragem ecológica**
- deriva ecológica
- migração
- especiação

## dinâmica ecológica



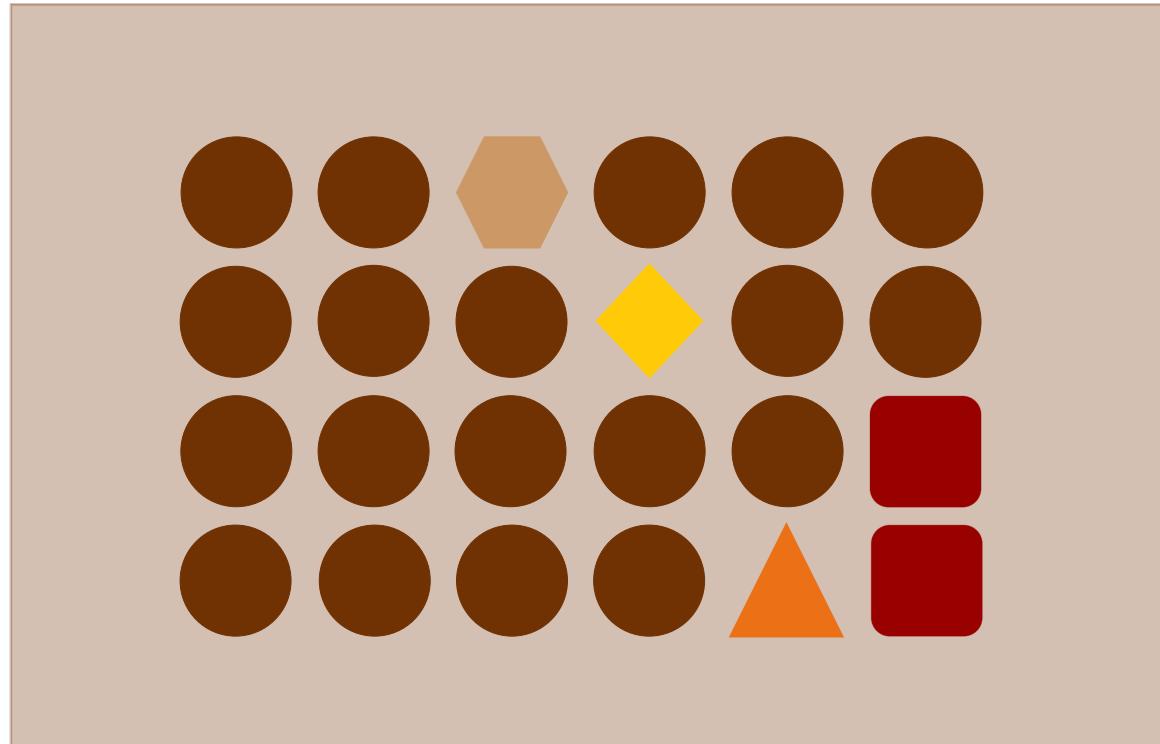
- **filtragem ecológica**
  - deriva ecológica
  - migração
  - especiação

## dinâmica ecológica

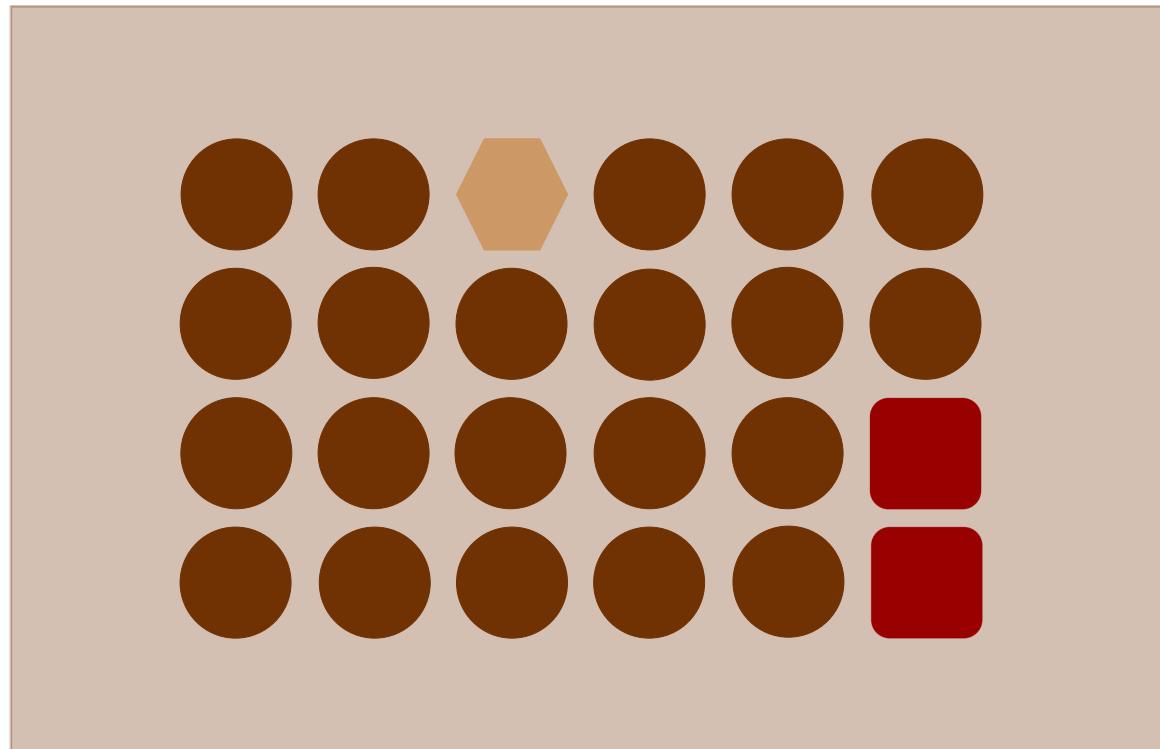


- **filtragem ecológica**
  - deriva ecológica
  - migração
  - especiação

## dinâmica ecológica

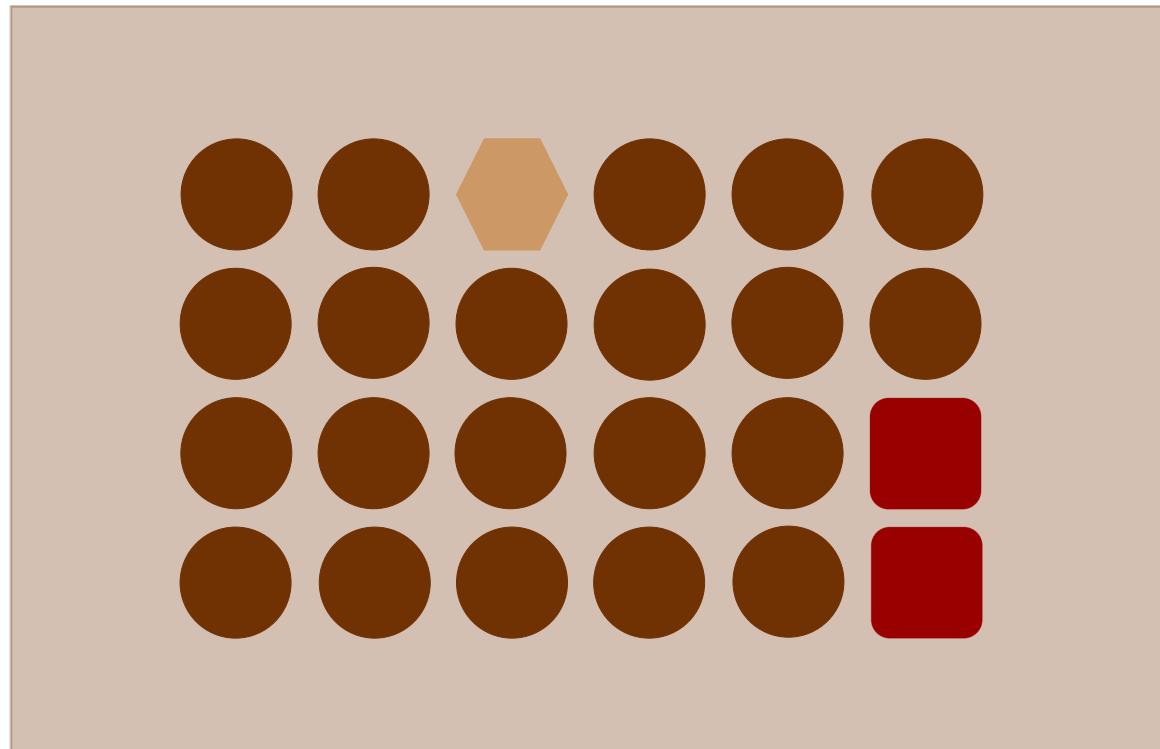


- **filtragem ecológica**
  - deriva ecológica
  - migração
  - especiação



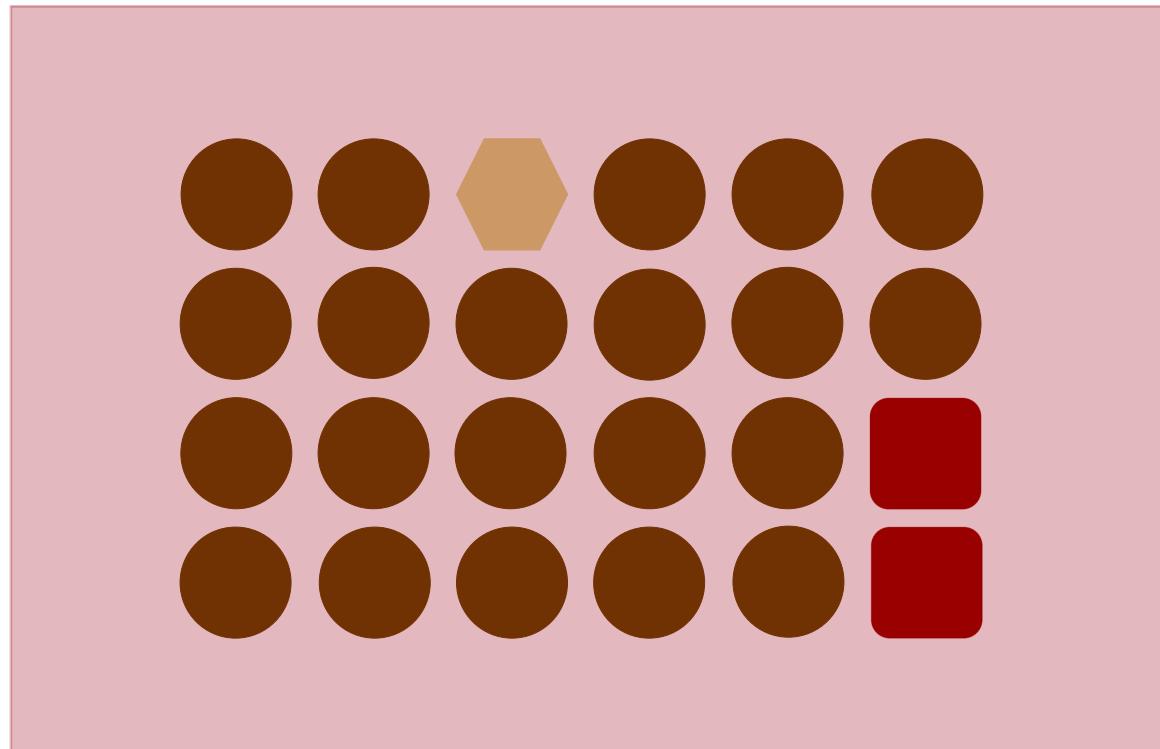
## dinâmica ecológica

- **filtragem ecológica**
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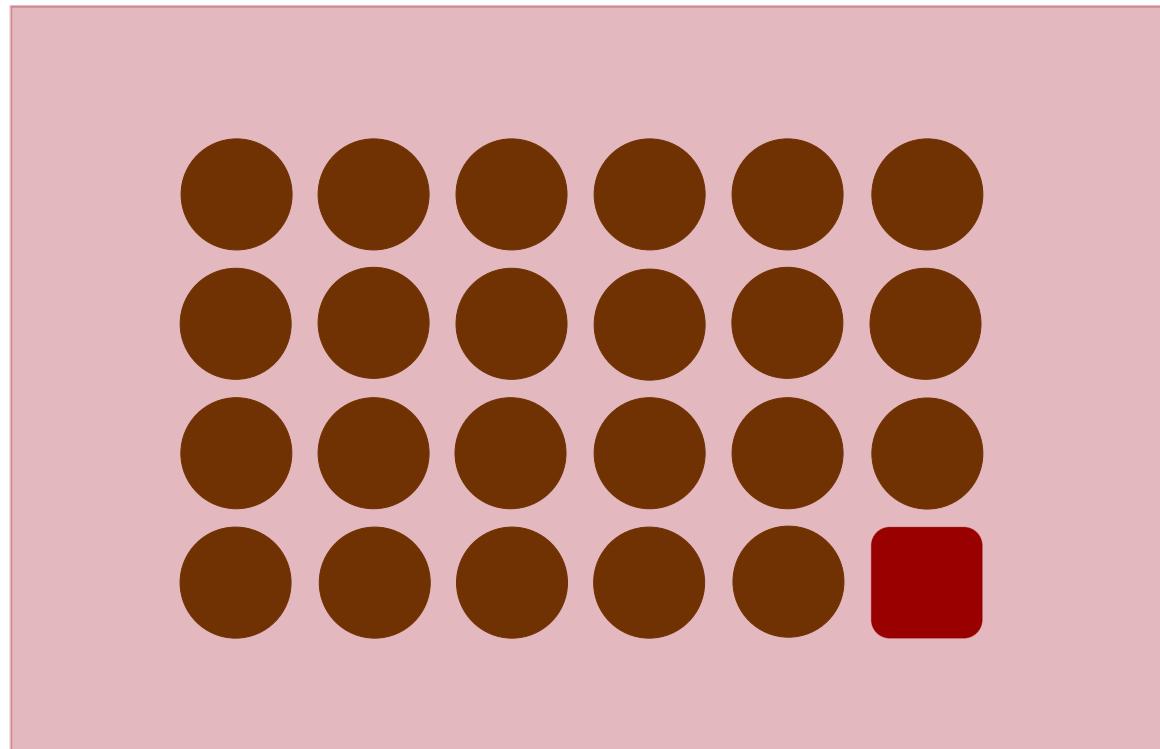
## dinâmica ecológica

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- especiação



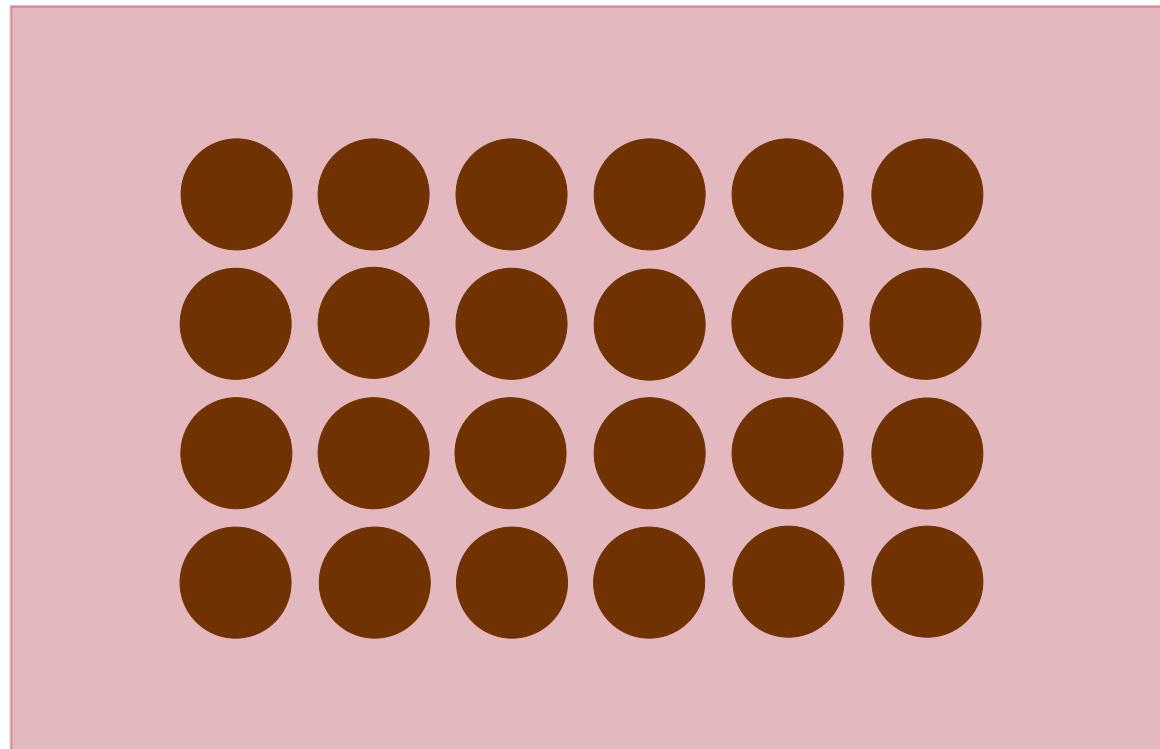
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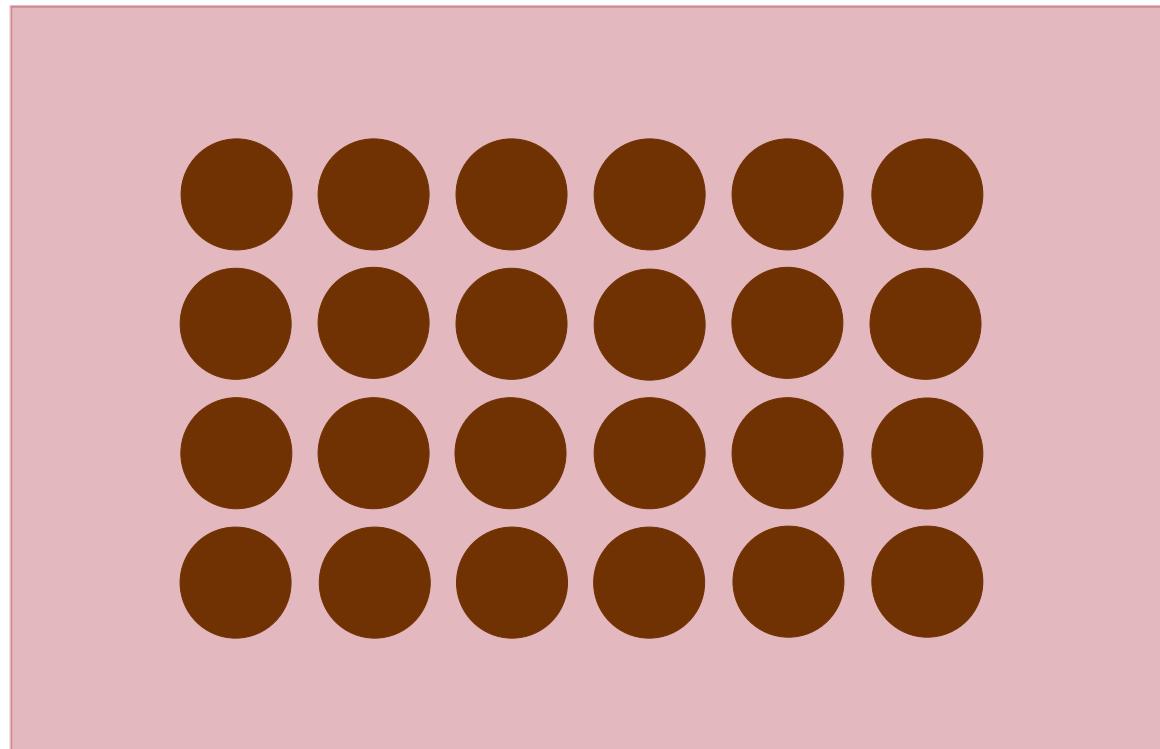
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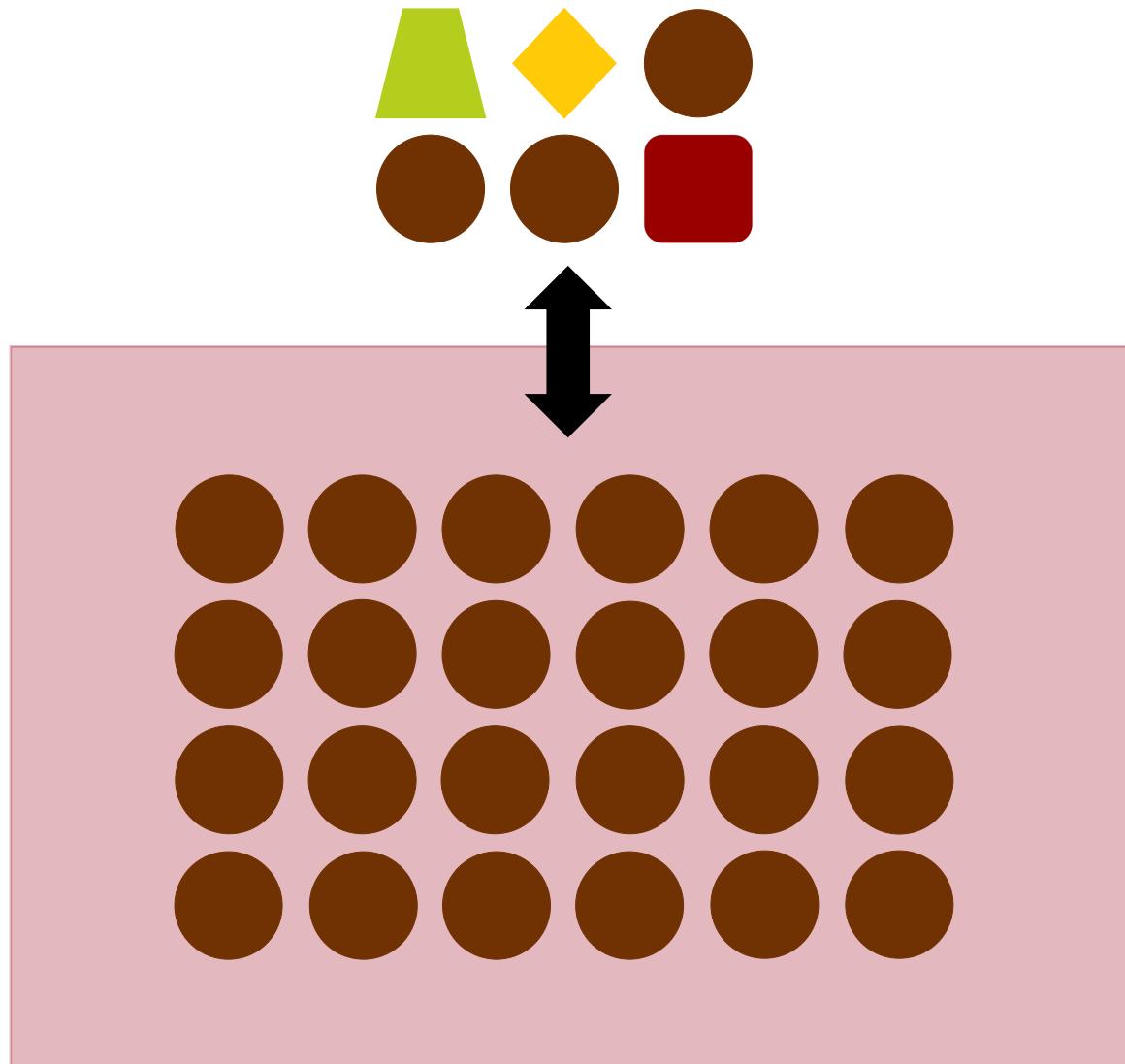
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- filtragem ecológica
- **deriva ecológica**
- migração
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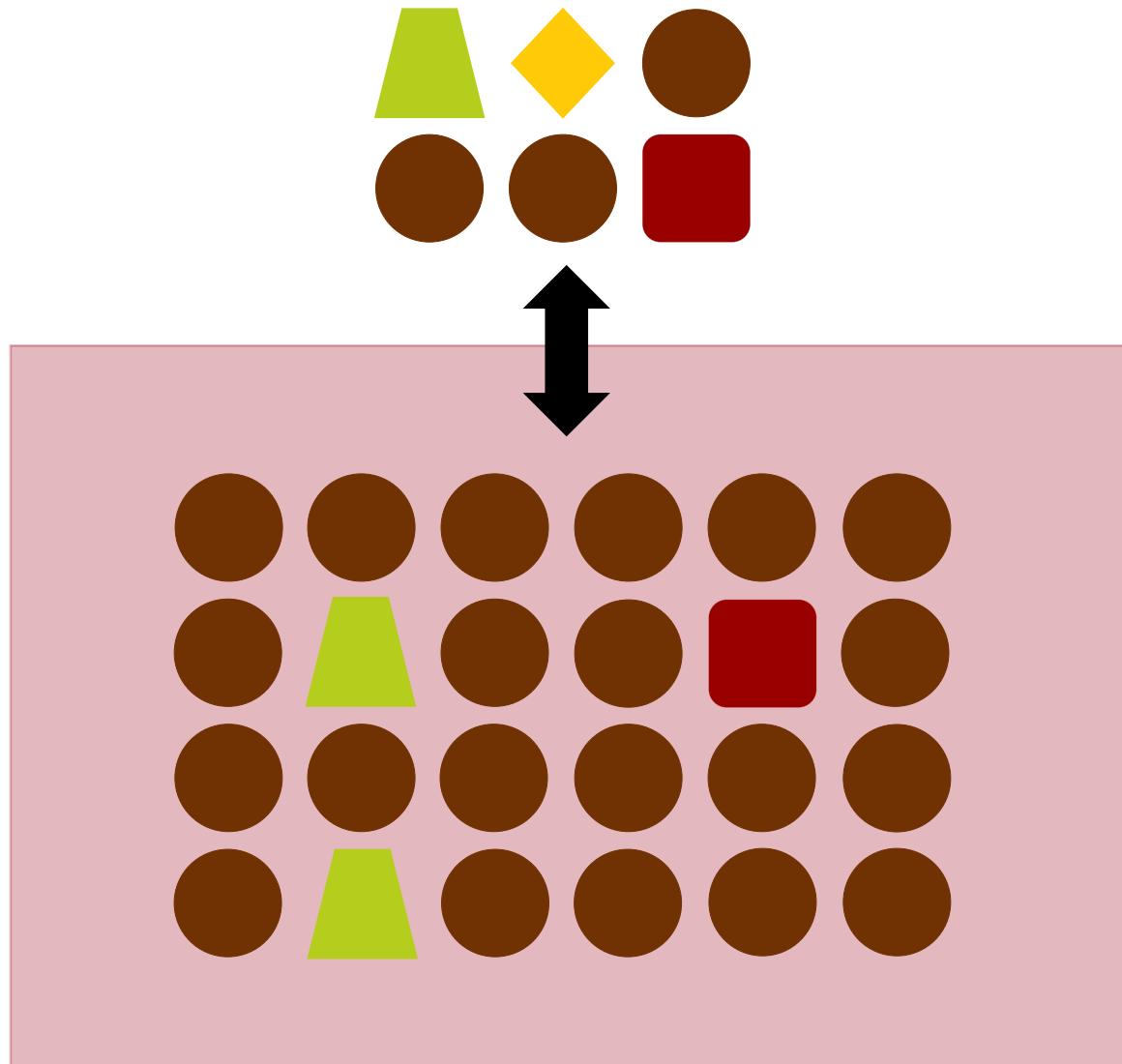
## dinâmica ecológica

- filtragem ecológica
- deriva ecológica
- **migração**
- especiação



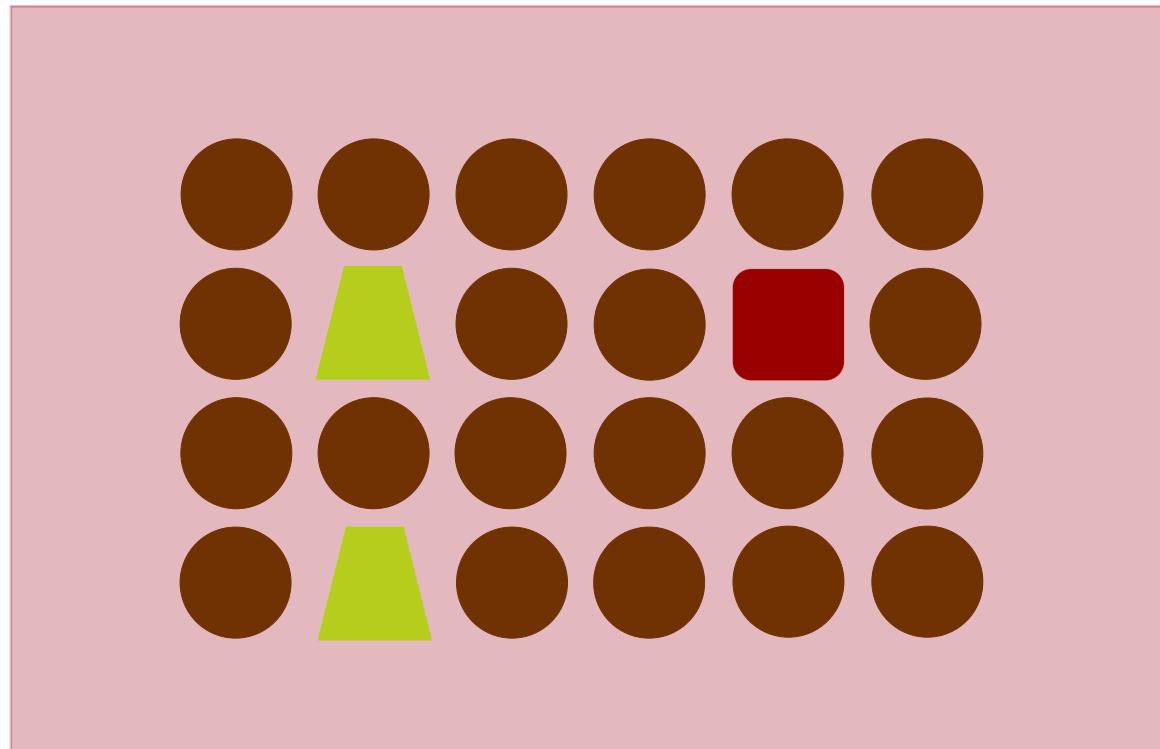
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- filtragem ecológica
- deriva ecológica
- **migração**
- especiação



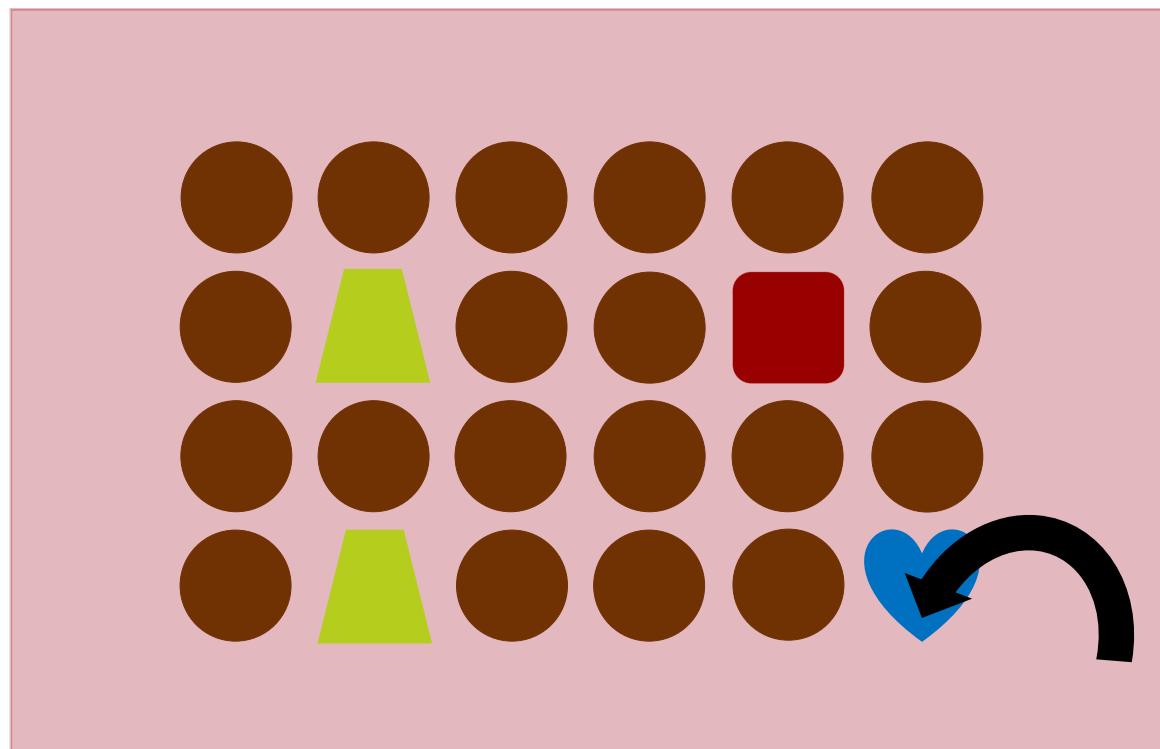
## dinâmica ecológica

- filtragem ecológica
- deriva ecológica
- **migração**
- especiação



## dinâmica ecológica

- filtragem ecológica
- deriva ecológica
- migração
- **especiação**



## dinâmica ecológica

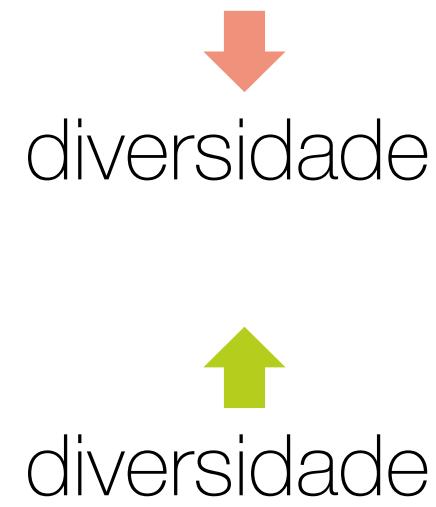
- filtragem ecológica
- deriva ecológica
- migração
- **especiação**

## dinâmica ecológica

diversidade



- filtragem ecológica
- deriva ecológica
- migração
- especiação



## dinâmica ecológica

- filtragem ecológica
- deriva ecológica
- migração
- especiação

## dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

diversidade  
↓  
diversidade  
↑

## dinâmica ecológica

- filtragem ecológica
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva



dinâmica  
ecológica

- seleção
- deriva genética
- fluxo gênico
- mutação
- filtragem ecológica
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

dinâmica  
eco-evolutiva

dinâmica  
ecológica



- seleção
- deriva genética
- fluxo gênico
- mutação
- filtragem ecológica
- deriva ecológica
- migração
- especiação



- seleção ←
- deriva genética
- fluxo gênico
- mutação
- filtragem ecológica
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

dinâmica  
eco-evolutiva

dinâmica  
ecológica



- seleção ← melhores competidores = mais aptos
- deriva genética
- fluxo gênico
- mutação
- filtragem ecológica
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

dinâmica  
eco-evolutiva

dinâmica  
ecológica



- seleção →
- deriva genética
- fluxo gênico
- mutação
- filtragem ecológica
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

dinâmica  
eco-evolutiva

dinâmica  
ecológica



mudança nos atributos =  
mudança nas interações

- seleção
- deriva genética
- fluxo gênico
- mutação
- filtragem ecológica
- deriva ecológica
- migração
- especiação



- seleção ← → • filtragem ecológica
- deriva genética
- fluxo gênico
- mutação
- deriva ecológica
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- especiação

dinâmica  
evolutiva

dinâmica  
eco-evolutiva

dinâmica  
ecológica



- seleção
  - deriva genética
  - fluxo gênico
  - mutação
  - filtragem ecológica
  - deriva ecológica
  - migração
  - especiação
-



- seleção
  - deriva genética
  - fluxo gênico
  - mutação
- filtragem ecológica
  - deriva ecológica
  - migração
  - especiação



- seleção ←
- deriva genética
- fluxo gênico
- mutação →
- filtragem ecológica
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

dinâmica  
ecológica

## **estratégia de vida**





## estratégia de vida

aptidão

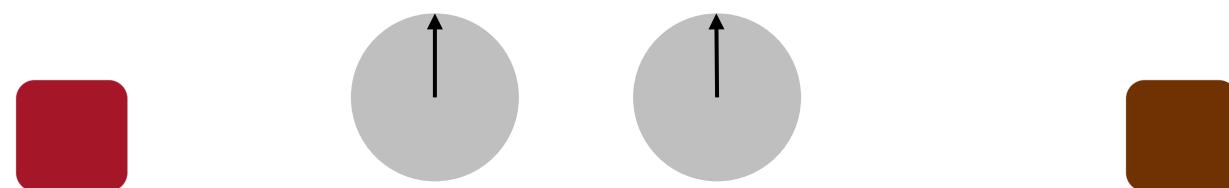
habilidade  
competitiva

## estratégia de vida

sobrevivência  reprodução

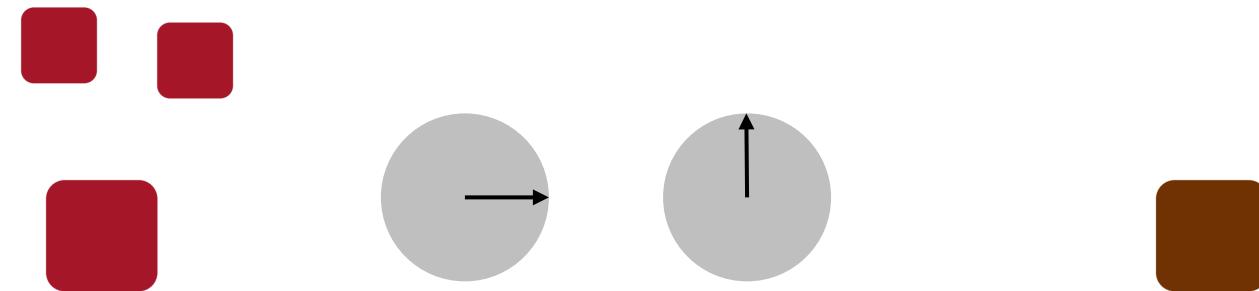
## estratégia de vida

sobrevivência ← → reprodução



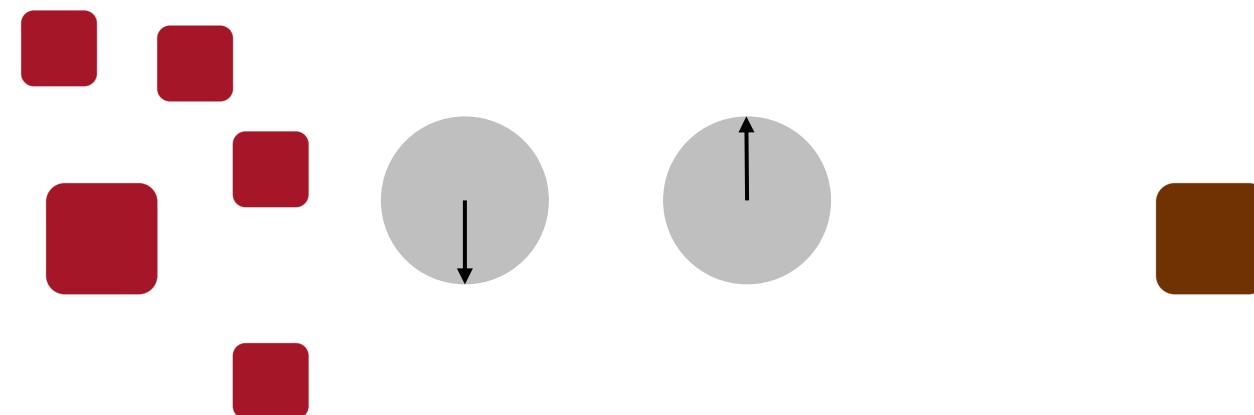
## estratégia de vida

sobrevivência ← → reprodução



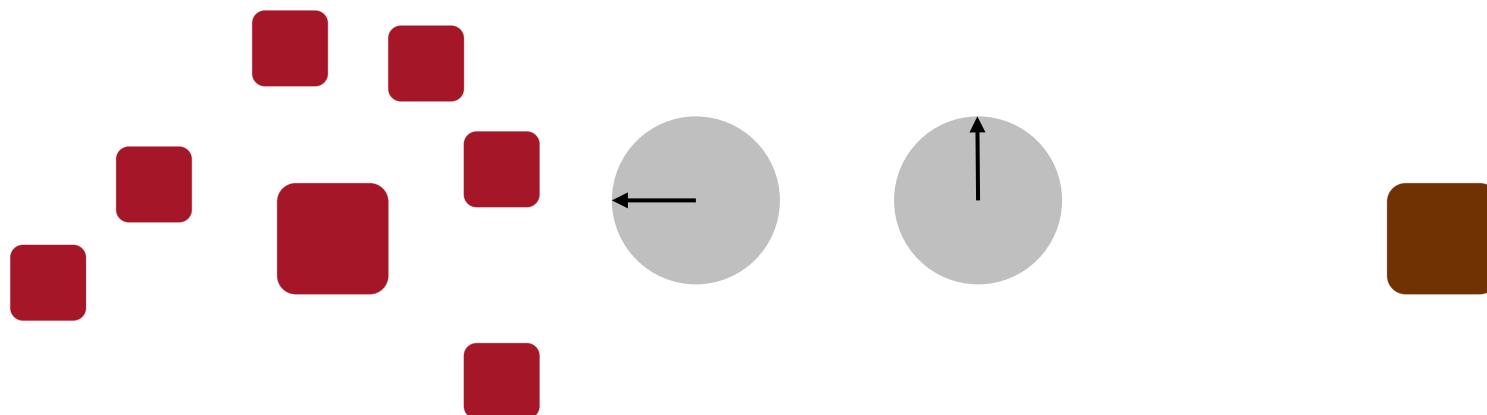
## estratégia de vida

sobrevivência ← → reprodução



## estratégia de vida

sobrevivência ← → reprodução

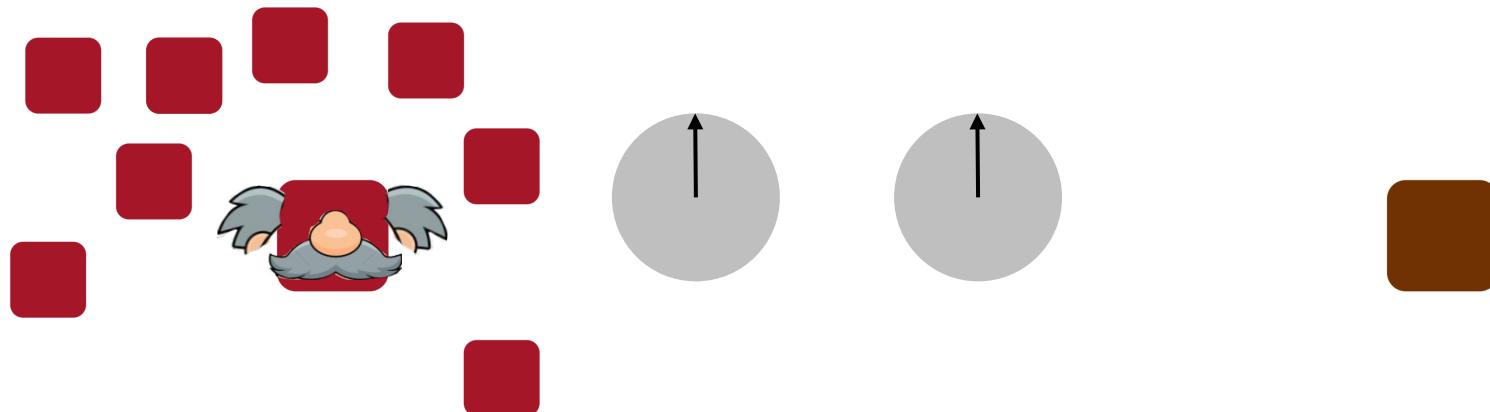


## estratégia de vida

sobrevivência



reprodução

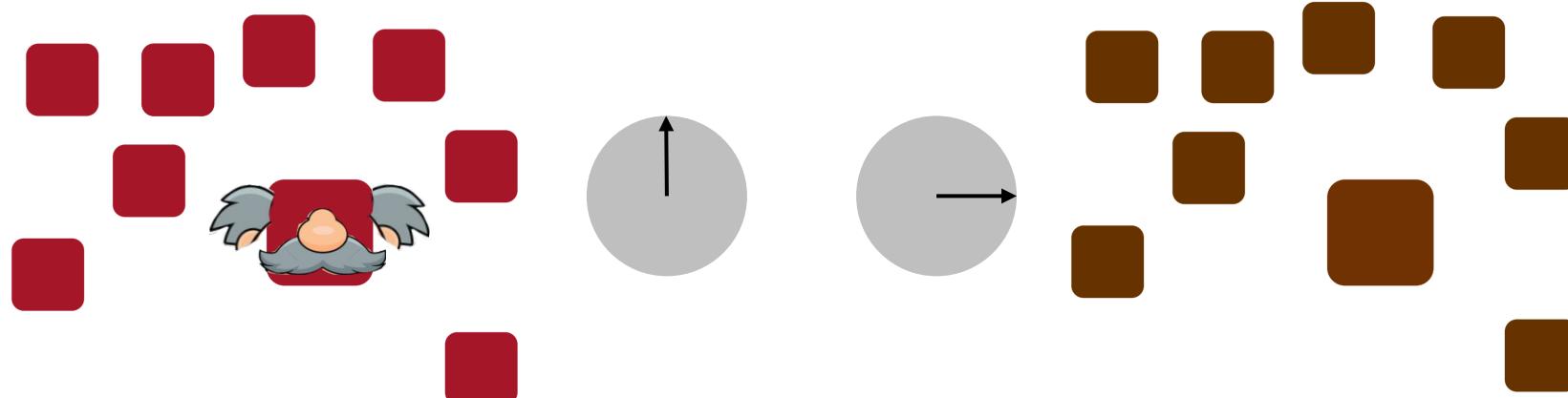


## estratégia de vida

sobrevivência



reprodução

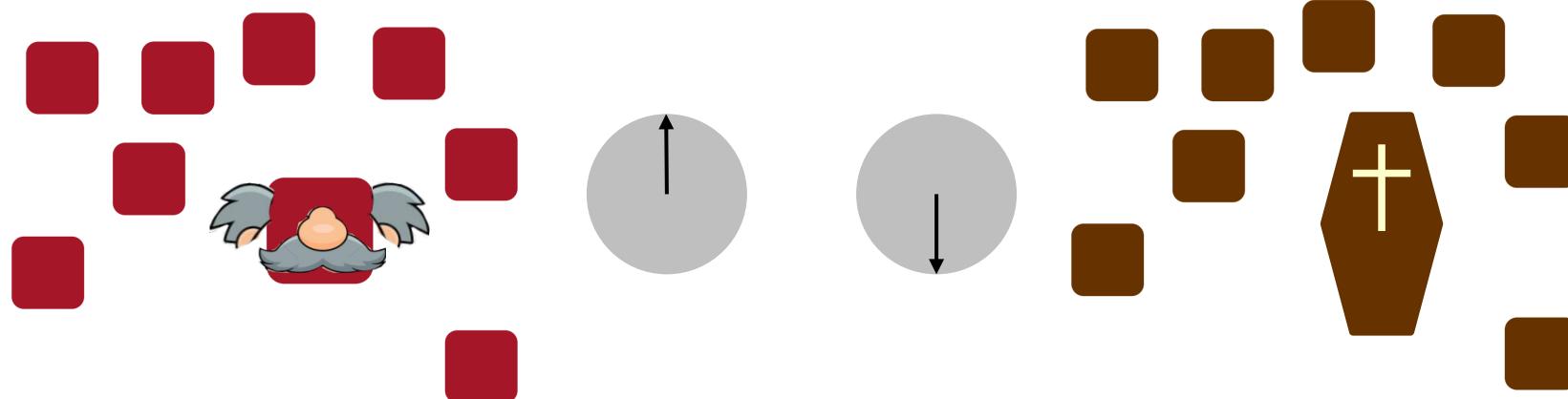


## estratégia de vida

sobrevivência



reprodução

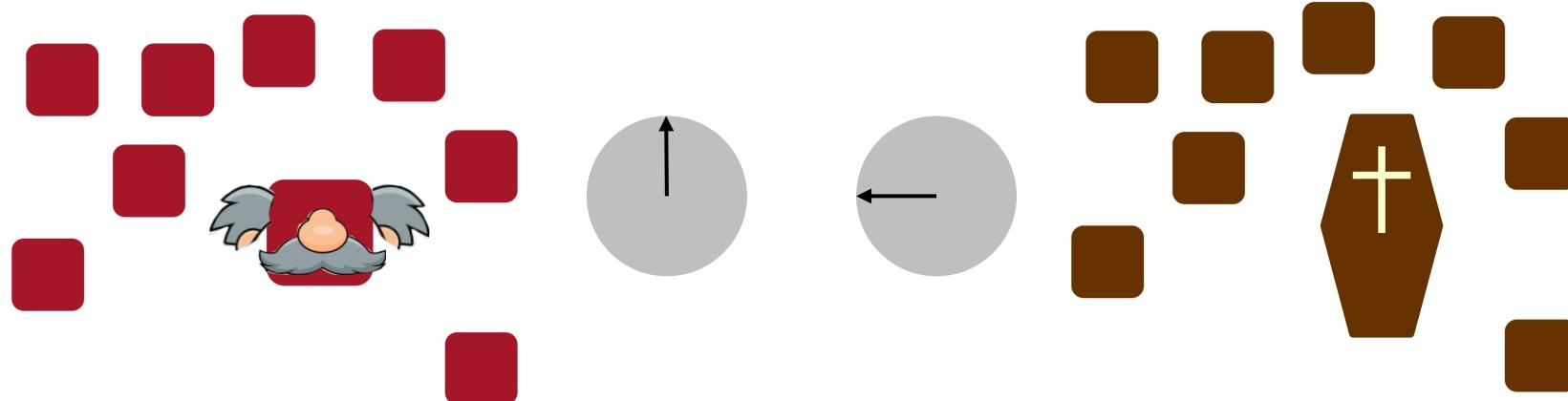


## estratégia de vida

sobrevivência



reprodução

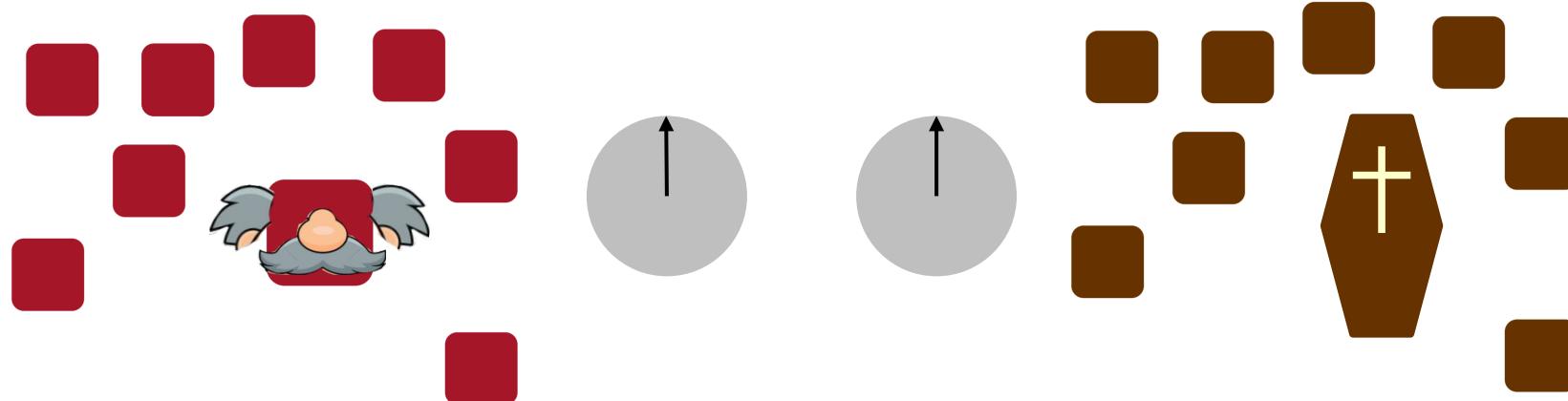


## estratégia de vida

sobrevivência



reprodução

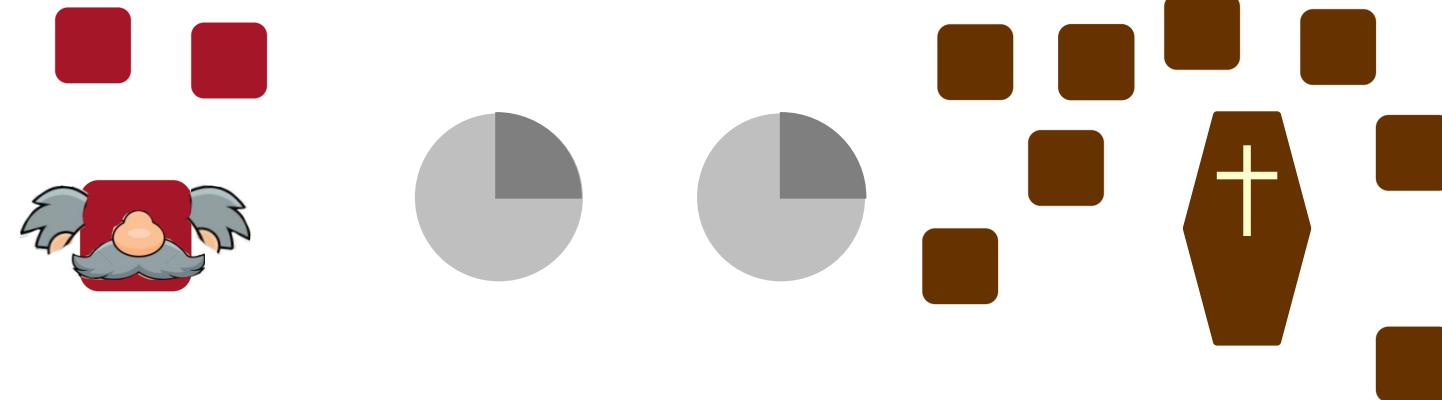


## estratégia de vida

sobrevivência



reprodução







aptidão



número de  
descendentes

## estratégia de vida



número de  
descendentes

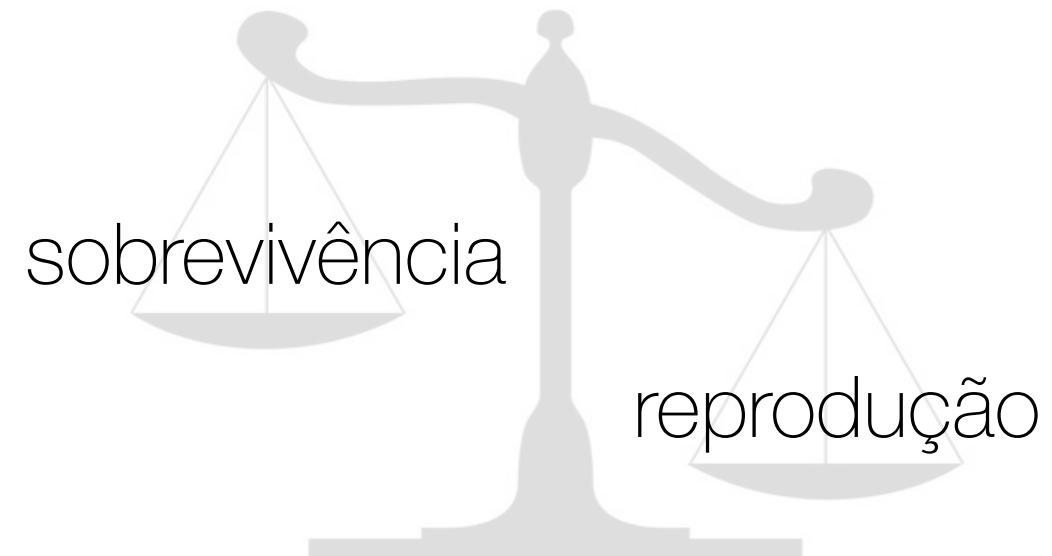
habilidade  
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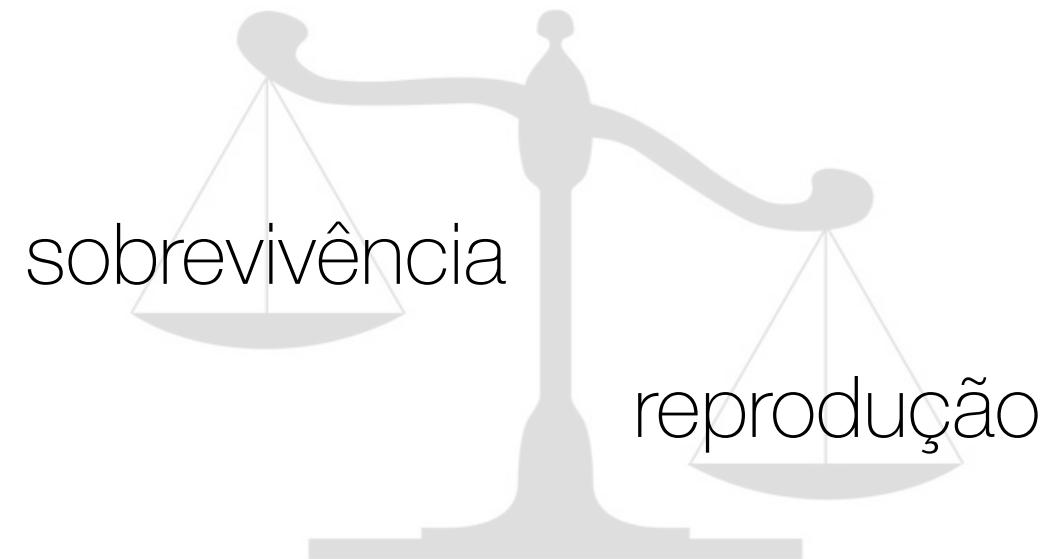


número de  
descendentes

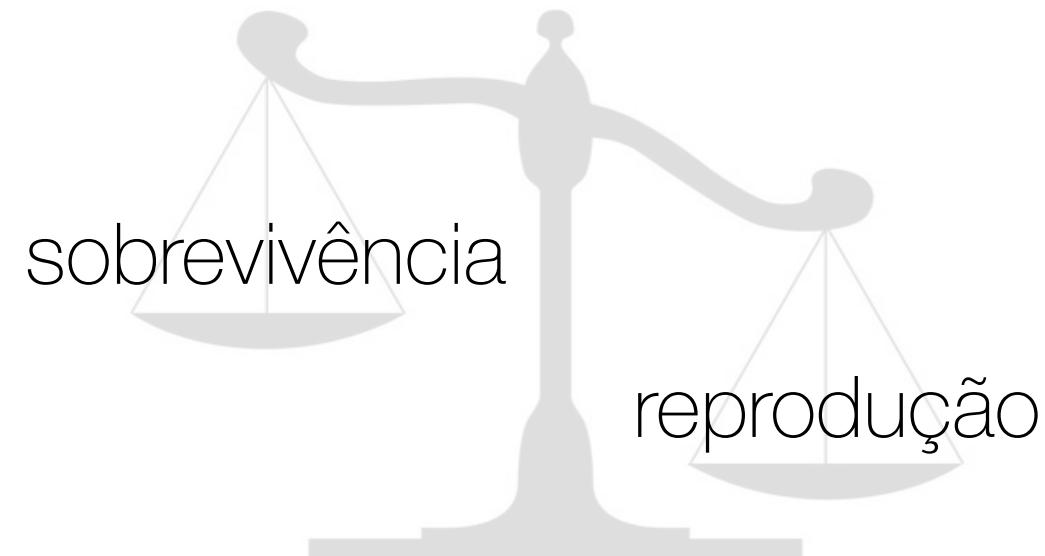
uso eficiente do  
recurso

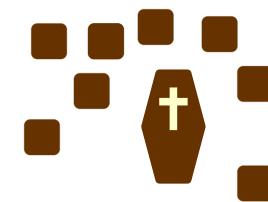
# estratégia de vida





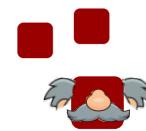
# fatores ambientais





↓ recurso

reprodução



**sobrevivência**

# distúrbio



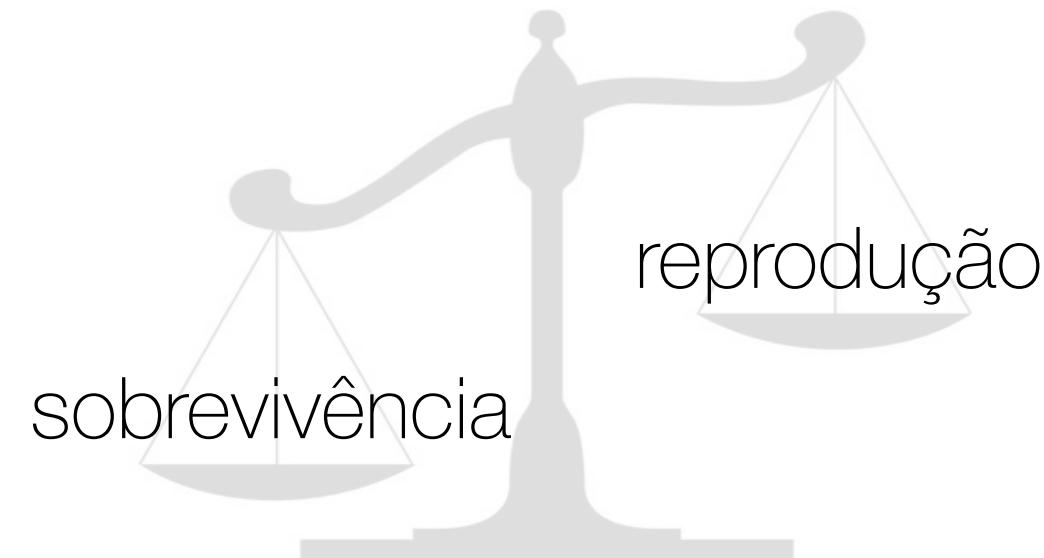
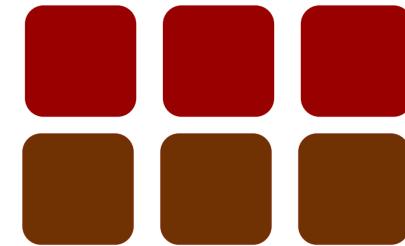
recurso



# distúrbio



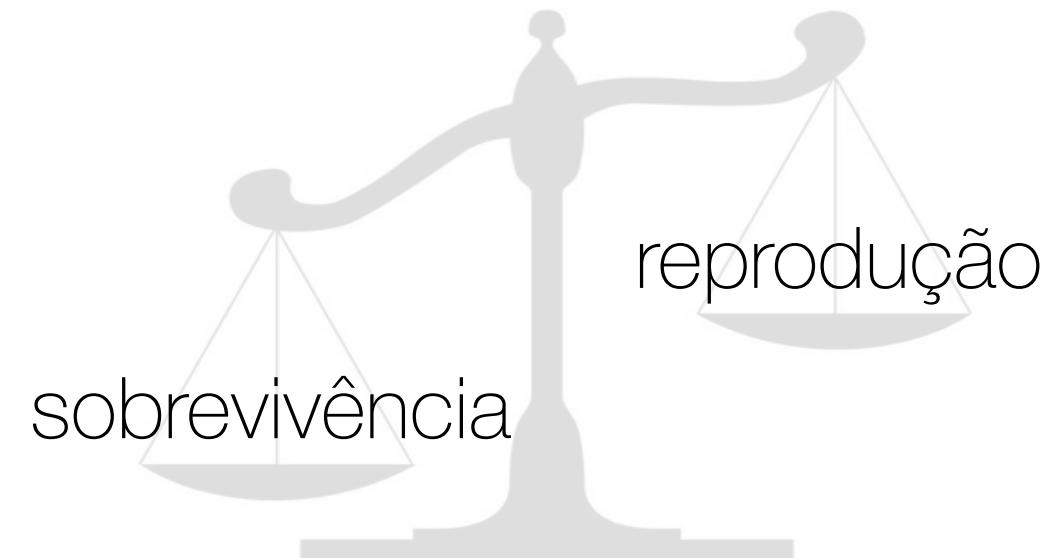
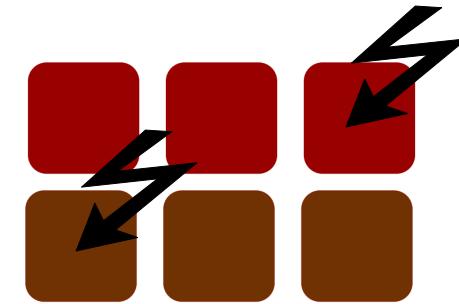
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# distúrbio



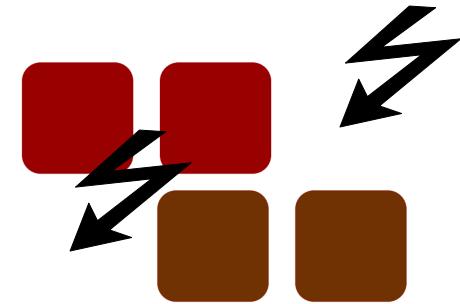
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# distúrbio



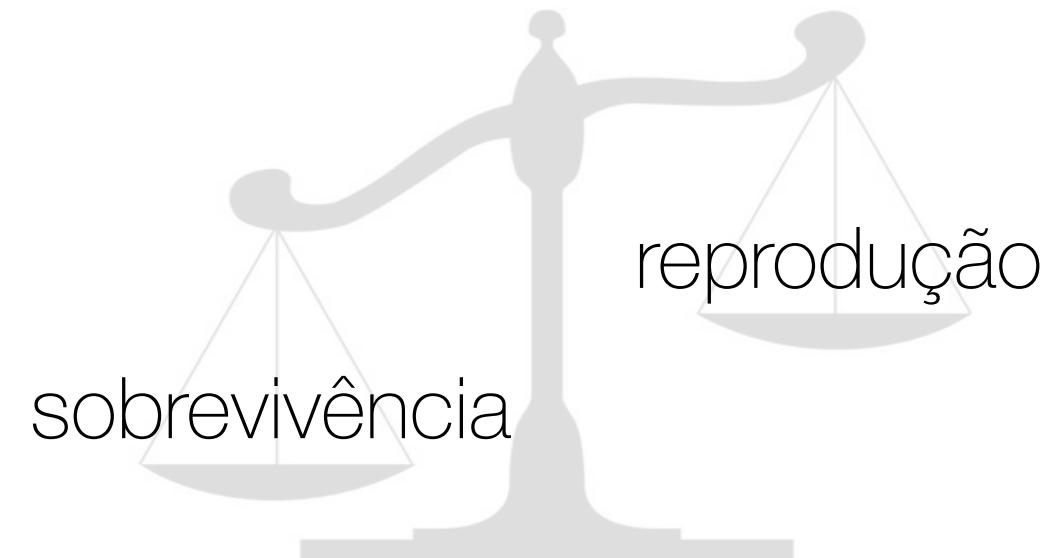
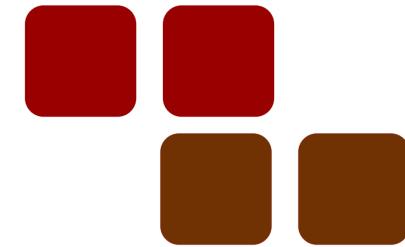
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# distúrbio



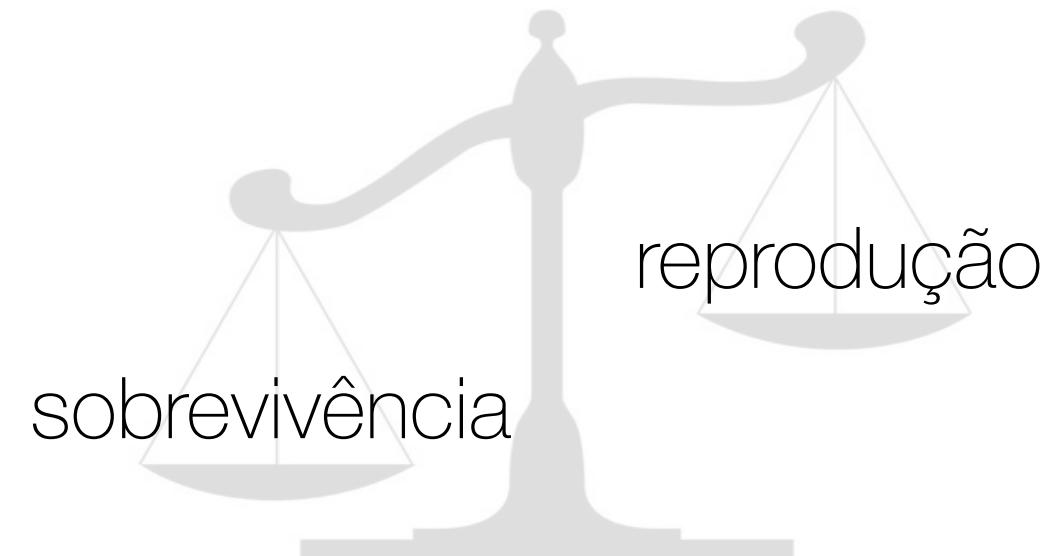
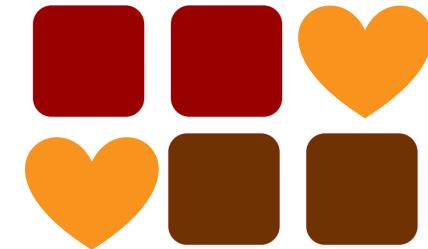
recurso



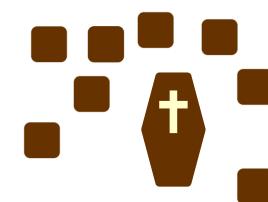
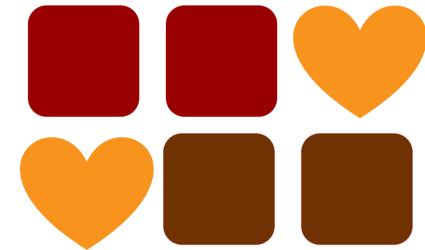
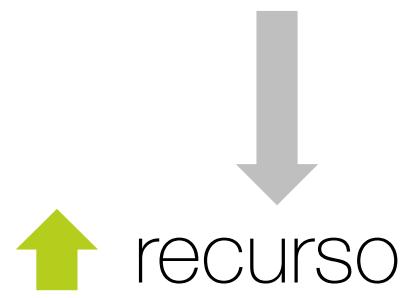
# distúrbio



recurso



# distúrbio





# **distúrbio**

- abundância
- recurso

# distúrbio

dinâmica  
evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

- abundância
- recurso

dinâmica  
ecológica

- filtragem
- deriva ecológica
- migração
- especiação

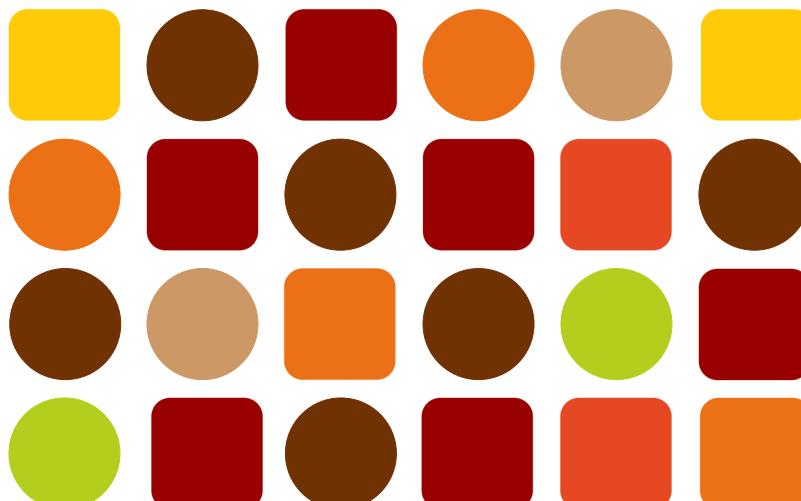
# distúrbio

dinâmica  
evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

- abundância
- recurso

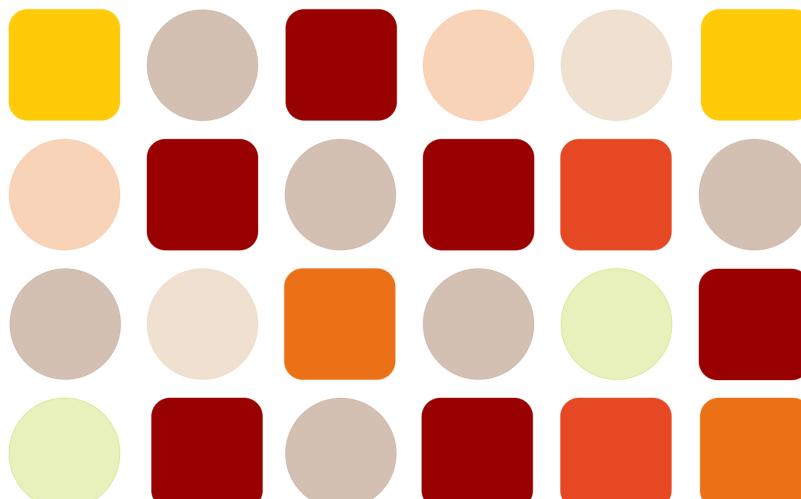
dinâmica  
ecológica



- filtragem
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação



## distúrbio

- abundância
- recurso

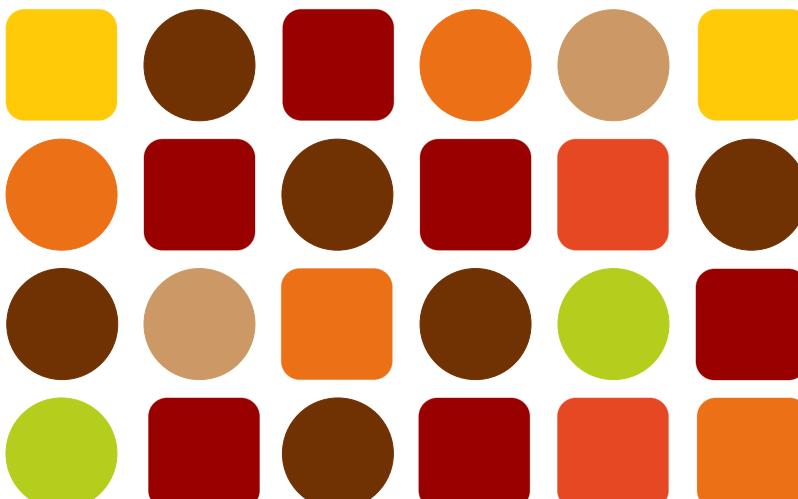
dinâmica  
ecológica

- filtragem
- deriva ecológica
- migração
- especiação

# distúrbio

dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação



- abundância
- recurso

dinâmica ecológica

- filtragem
- deriva ecológica
- migração
- especiação

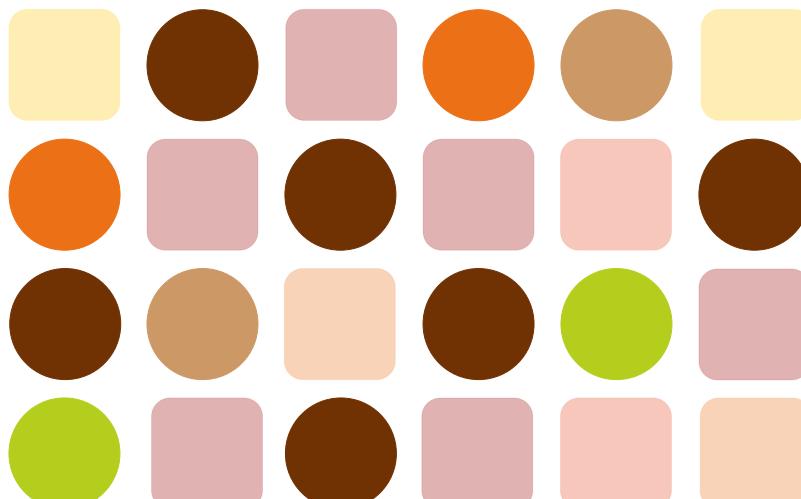
# distúrbio

dinâmica  
evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

- abundância
- recurso

dinâmica  
ecológica

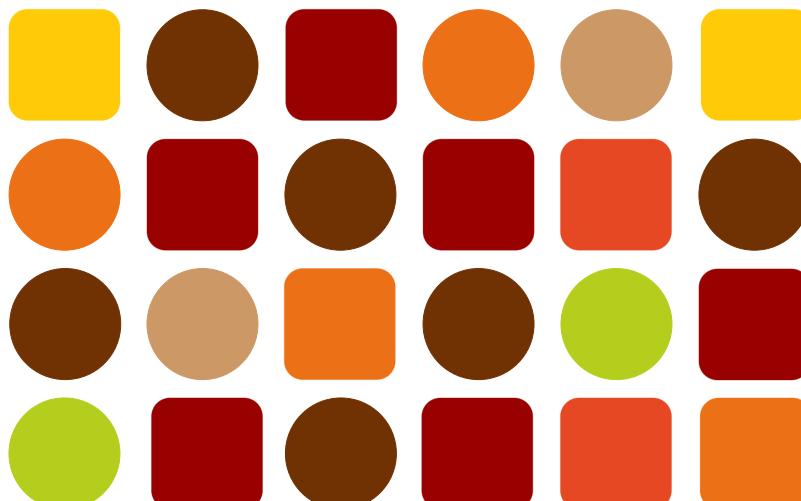


- filtragem
- deriva ecológica
- migração
- especiação

# distúrbio

dinâmica  
evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação



- abundância
- recurso

dinâmica  
ecológica

- filtragem
- deriva ecológica
- migração
- especiação

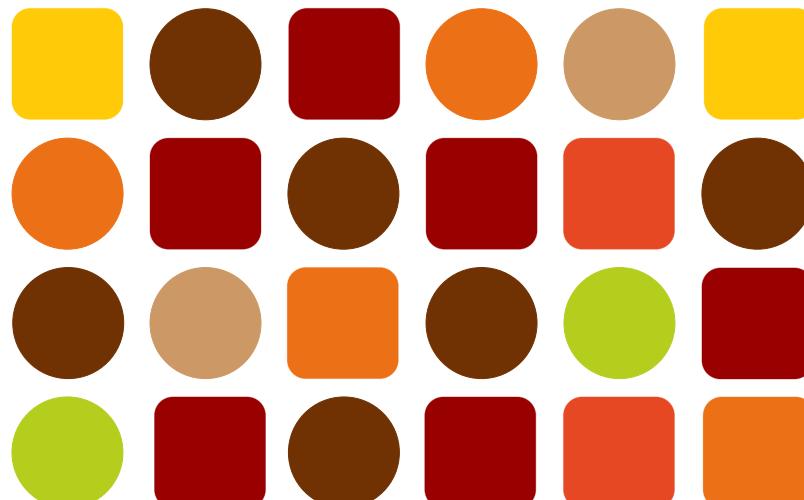
# distúrbio

- abundância
- recurso



dinâmica  
evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação



dinâmica  
ecológica

- filtragem
- deriva ecológica
- migração
- especiação

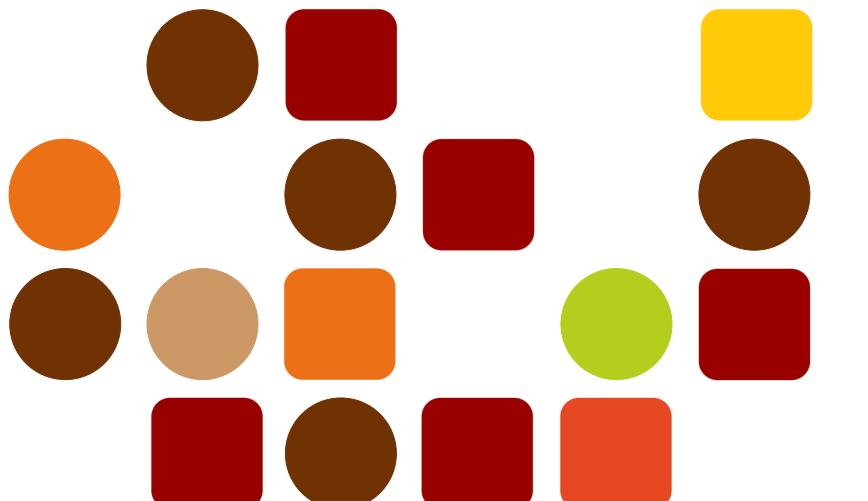
# distúrbio

dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

- abundância
- recurso

dinâmica ecológica



- filtragem
- deriva ecológica
- migração
- especiação

# distúrbio

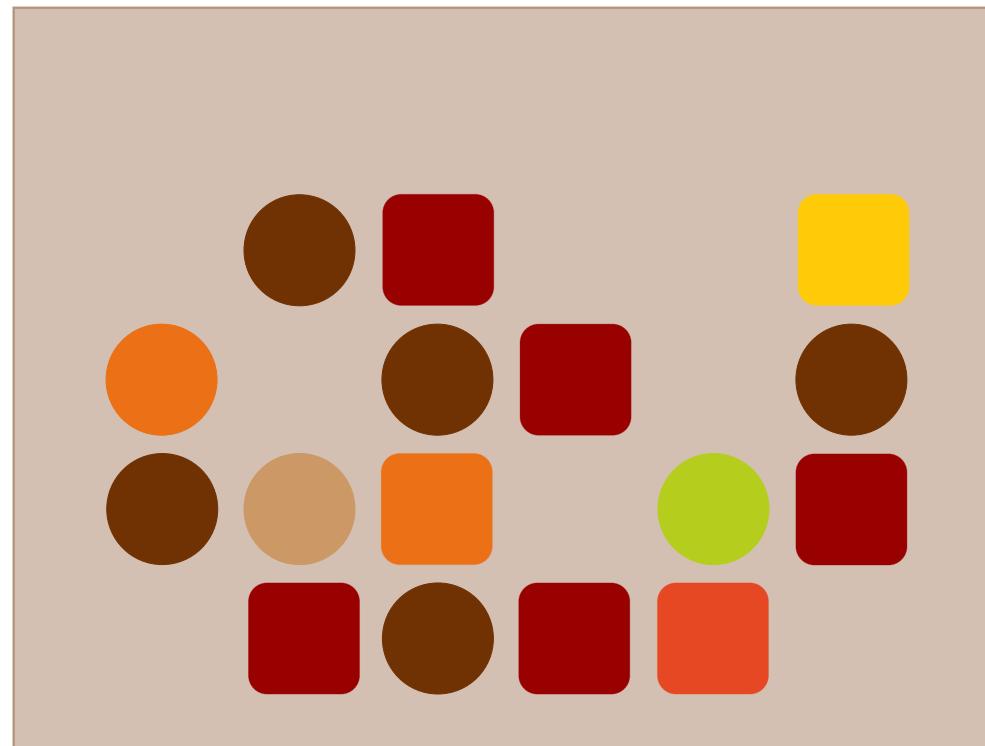
- abundância
- recurso

dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

dinâmica ecológica

- filtragem
- deriva ecológica
- migração
- especiação



# distúrbio

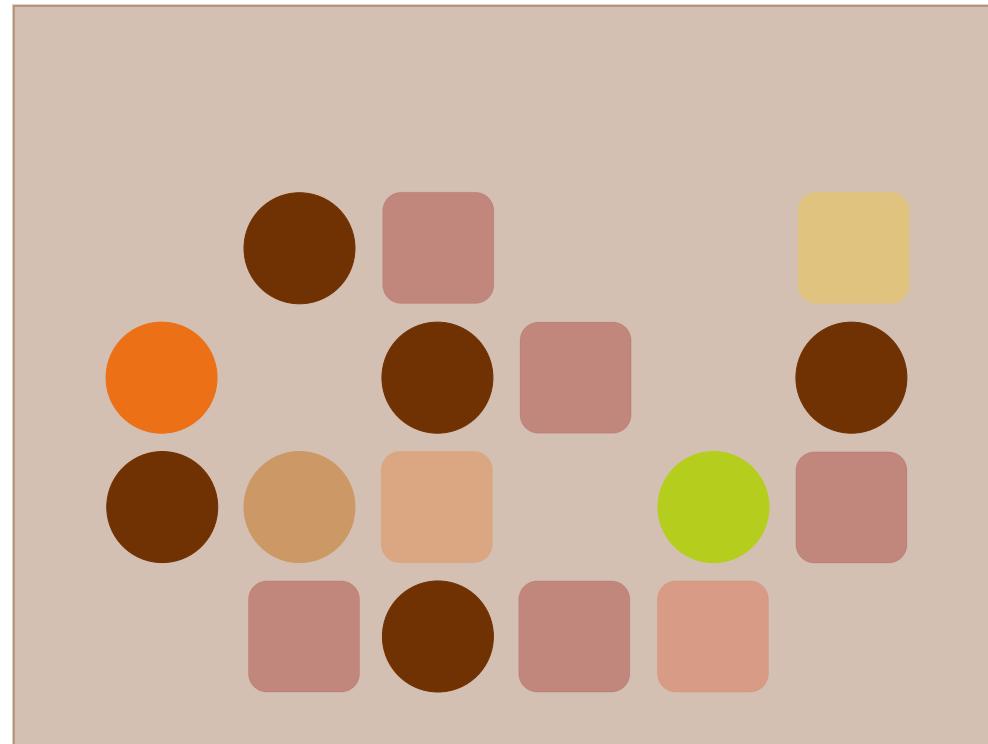
- abundância
- recurso

dinâmica evolutiva

- seleção
- deriva genética
- fluxo gênico
- mutação

dinâmica ecológica

- filtragem
- deriva ecológica
- migração
- especiação



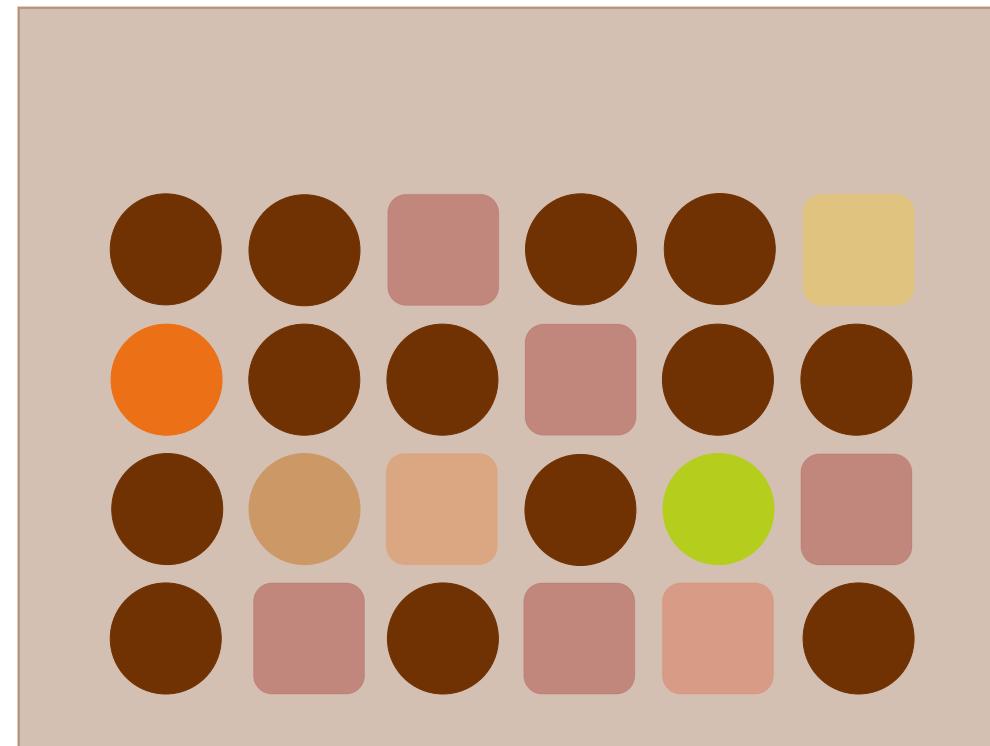
# distúrbio

- abundância
- recurso

dinâmica evolutiva

- **seleção**
- deriva genética
- fluxo gênico
- mutação

dinâmica ecológica



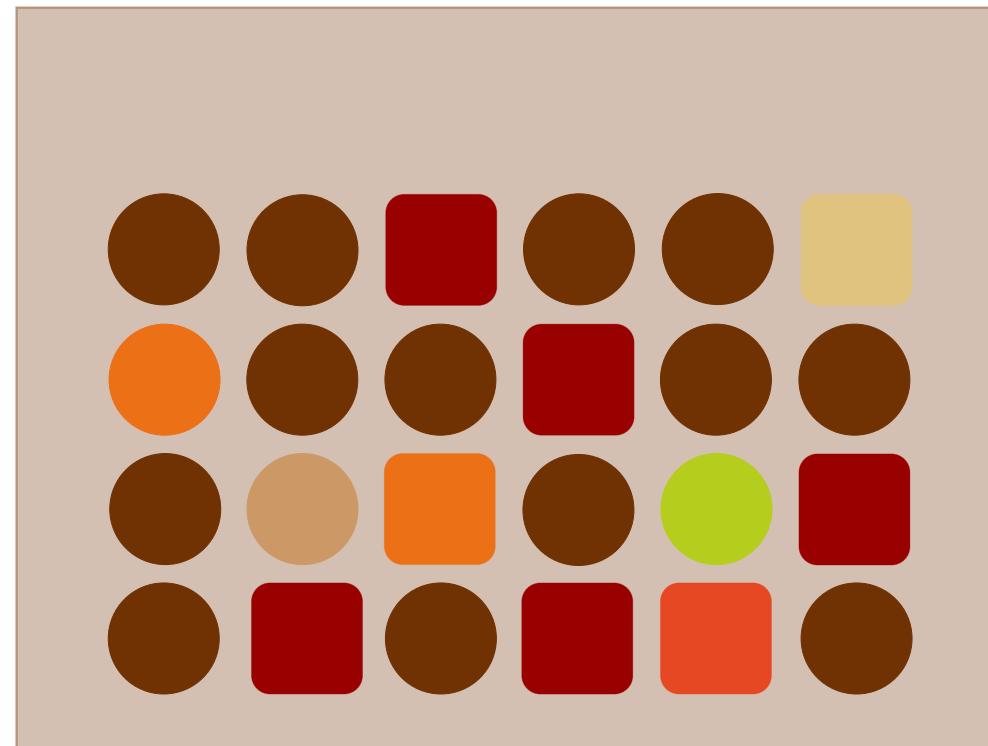
- filtragem
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

- **seleção**
- deriva genética
- fluxo gênico
- mutação

## distúrbio

- abundância
- recurso



dinâmica  
ecológica

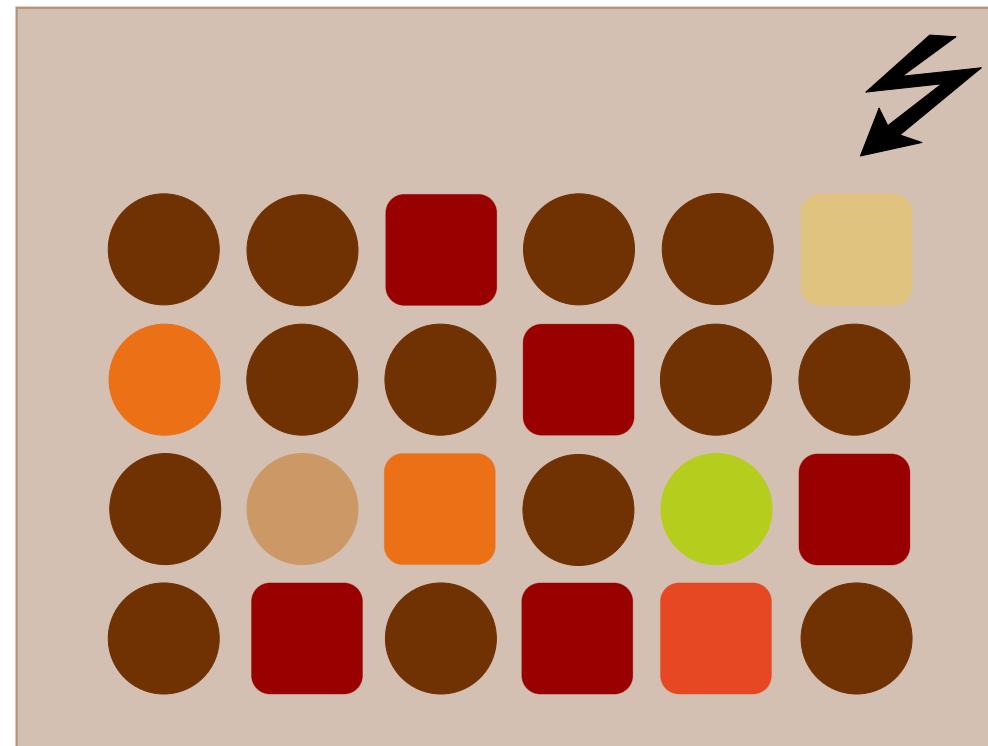
- filtragem
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

- **seleção**
- deriva genética
- fluxo gênico
- mutação

# distúrbio

- abundância
- recurso



dinâmica  
ecológica

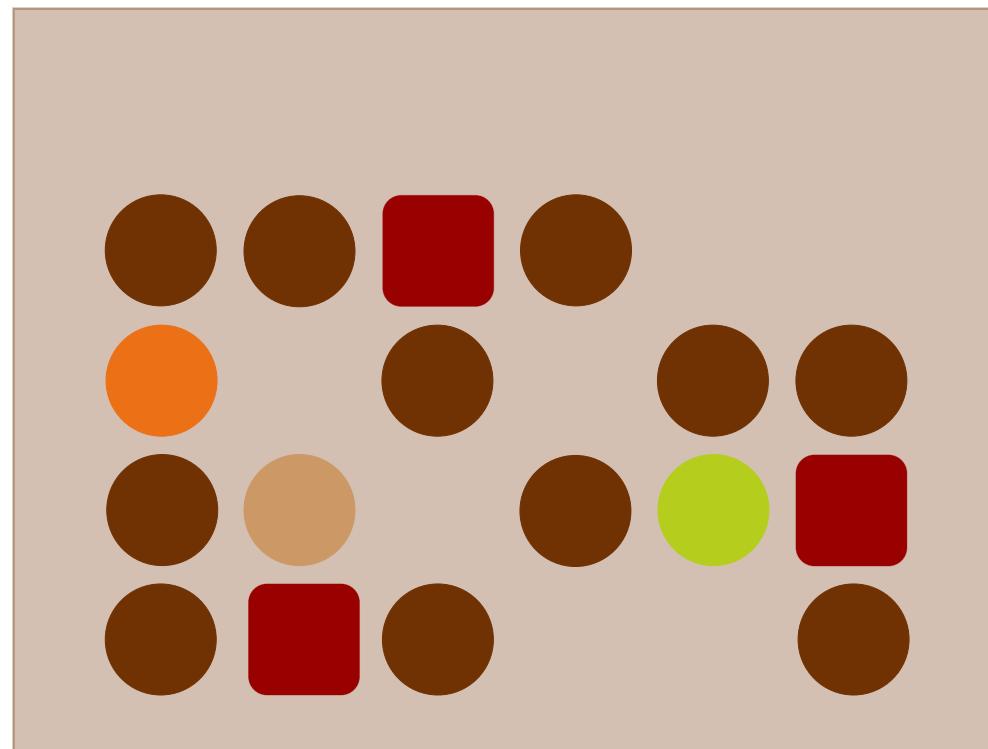
- filtragem
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

- **seleção**
- deriva genética
- fluxo gênico
- mutação

# distúrbio

- abundância
- recurso



dinâmica  
ecológica

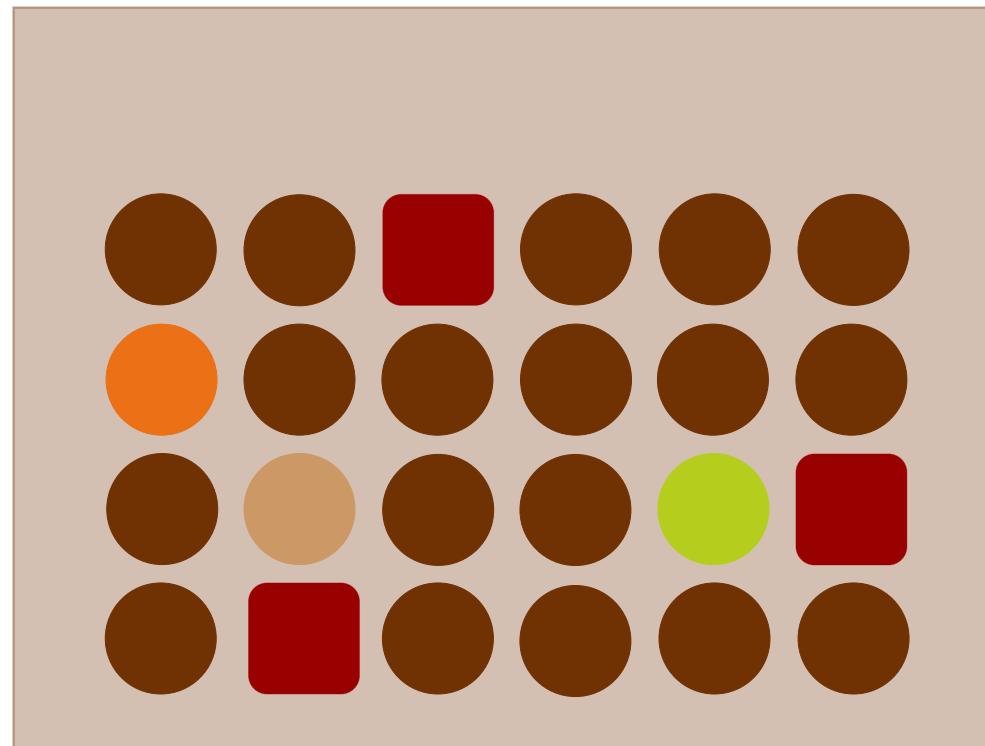
- filtragem
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

- **seleção**
- deriva genética
- fluxo gênico
- mutação

## distúrbio

- abundância
- recurso



dinâmica  
ecológica

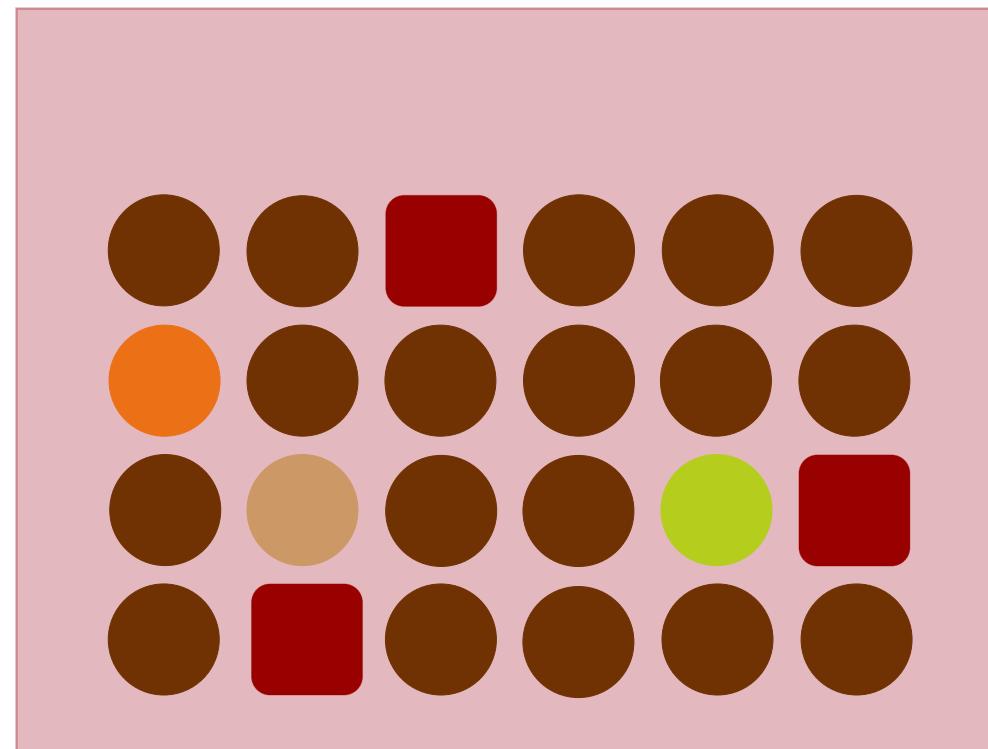
- **filtragem**
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

- **seleção**
- deriva genética
- fluxo gênico
- mutação

## distúrbio

- abundância
- recurso



dinâmica  
ecológica

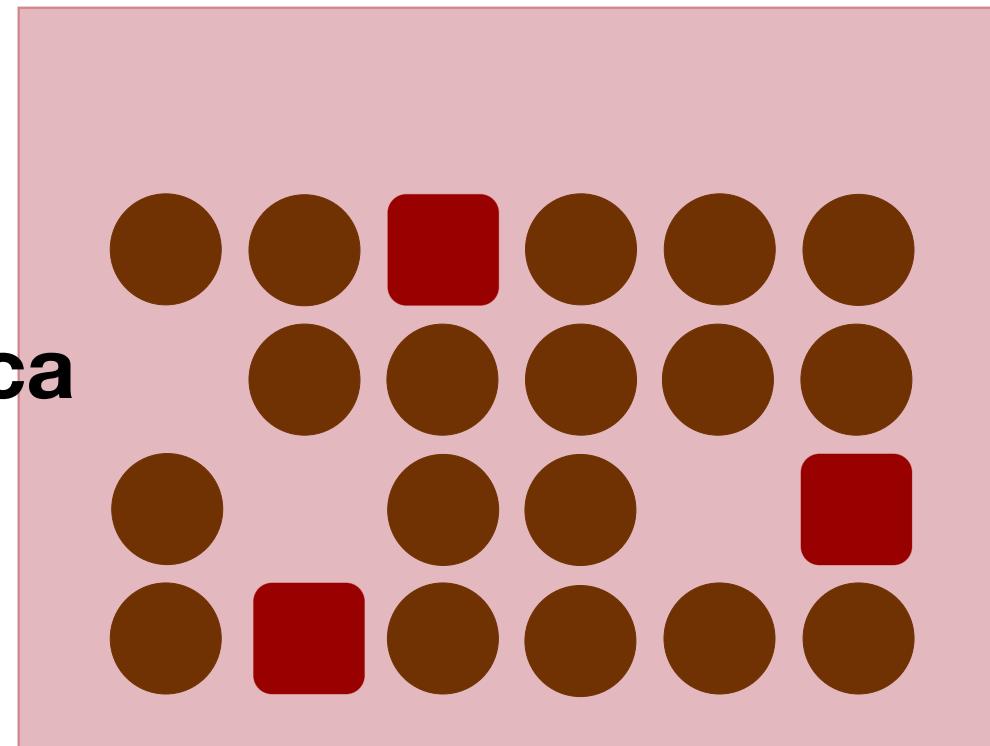
- **filtragem**
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

- **seleção**
- **deriva genética**
- fluxo gênico
- mutação

## distúrbio

- abundância
- recurso



dinâmica  
ecológica

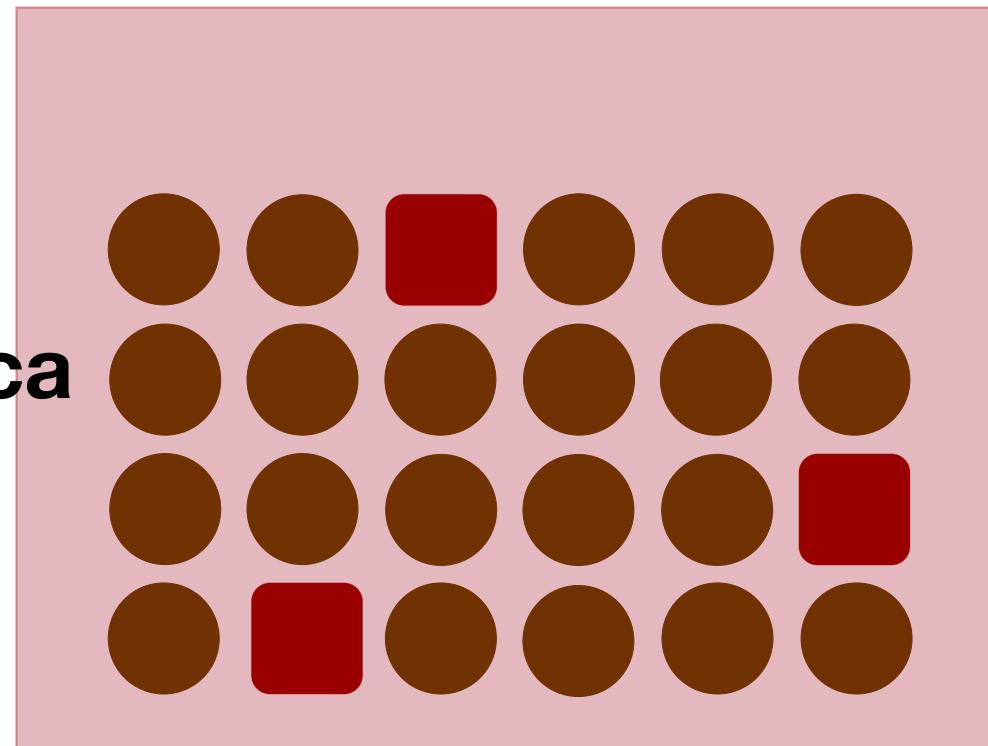
- **filtragem**
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

- **seleção**
- **deriva genética**
- fluxo gênico
- mutação

## distúrbio

- abundância
- recurso



dinâmica  
ecológica

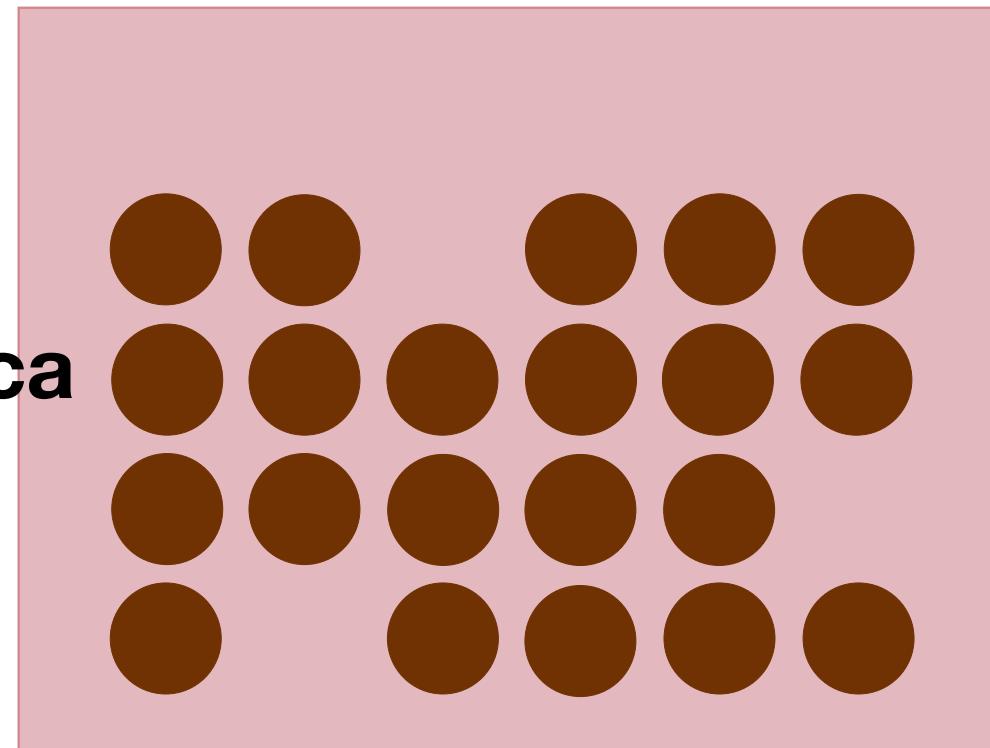
- **filtragem**
- deriva ecológica
- migração
- especiação

dinâmica  
evolutiva

- **seleção**
- **deriva genética**
- fluxo gênico
- mutação

## distúrbio

- abundância
- recurso



dinâmica  
ecológica

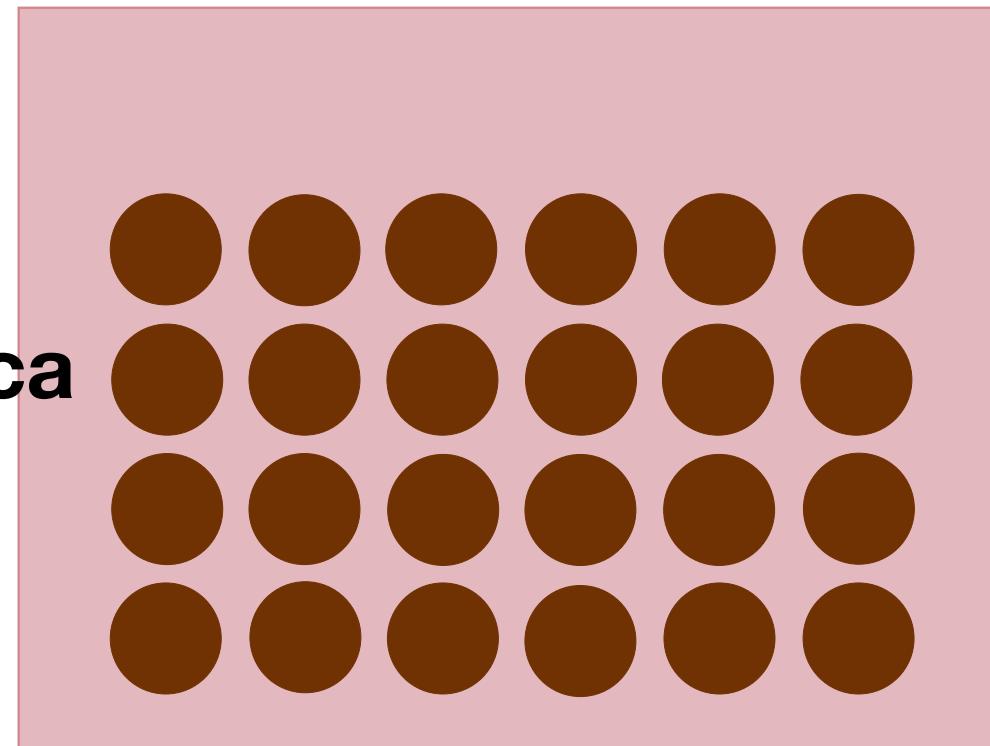
- **filtragem**
- **deriva ecológica**
- migração
- especiação

dinâmica  
evolutiva

- **seleção**
- **deriva genética**
- fluxo gênico
- mutação

## distúrbio

- abundância
- recurso



dinâmica  
ecológica

- **filtragem**
- **deriva ecológica**
- migração
- especiação

# distúrbio

Biologia  
Evolutiva

- população
- adaptação

Ecologia de  
Comunidades

- comunidade
- exclusão competitiva  
de populações

porém...

dinâmica  
evolutiva



dinâmica  
ecológica

porém...

dinâmica  
evolutiva



dinâmica  
eco-evolutiva

dinâmica  
ecológica

porém...

dinâmica  
evolutiva



dinâmica  
eco-evolutiva

dinâmica  
ecológica

- contextos multiespecíficos
- espécies sob evolução

logo...

dinâmica  
evolutiva



dinâmica  
eco-evolutiva

dinâmica  
ecológica

logo...

dinâmica  
evolutiva

dinâmica  
eco-evolutiva

dinâmica  
ecológica



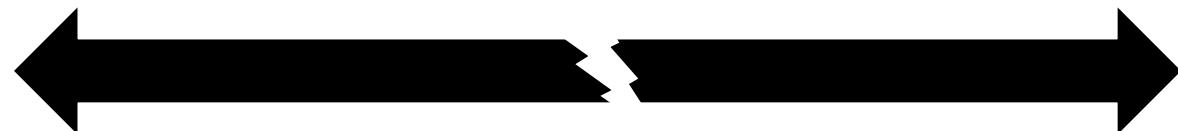
 **distúrbio**

logo...

dinâmica  
evolutiva

dinâmica  
eco-evolutiva

dinâmica  
ecológica



 **distúrbio**

predições  
distintas e imprecisas

logo...

dinâmica  
evolutiva

dinâmica  
eco-evolutiva

dinâmica  
ecológica



predições  
distintas e imprecisas

# Como o **distúrbio** determina

Como o **distúrbio**  determina  
as **estratégias de vida** presentes



Como o **distúrbio**  determina  
as **estratégias de vida** presentes  
  
em populações e comunidades sob **dinâmicas**

Como o **distúrbio** ⚡ determina  
as **estratégias de vida** presentes  
  
em populações e comunidades sob **dinâmicas**  
**evolutivas, ecológicas** e **eco-evolutivas?**

Falar: simulações, R, pacote...



# modelo baseado em indivíduo



# modelo baseado em indivíduo

***parâmetros***

# modelo baseado em indivíduo



***parâmetros***

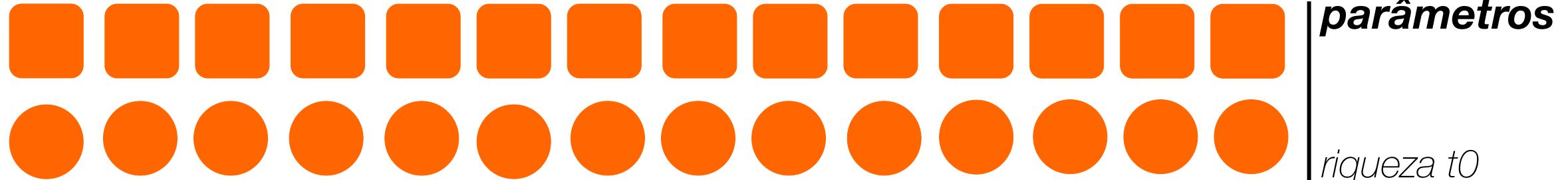
# modelo baseado em indivíduo



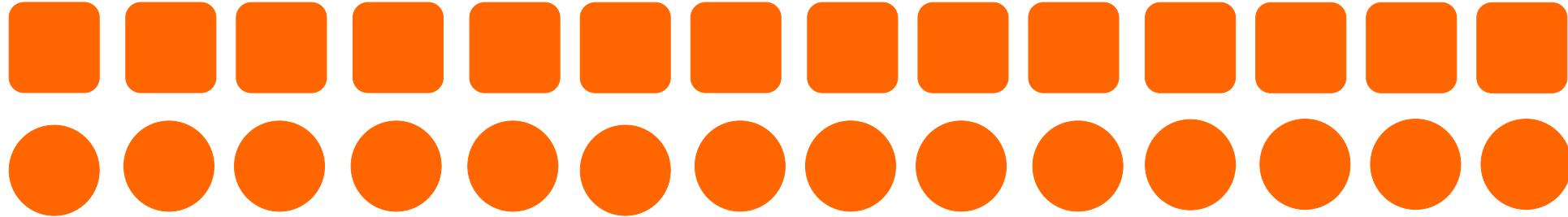
**parâmetros**

*riqueza  $t_0$*

# modelo baseado em indivíduo



# modelo baseado em indivíduo

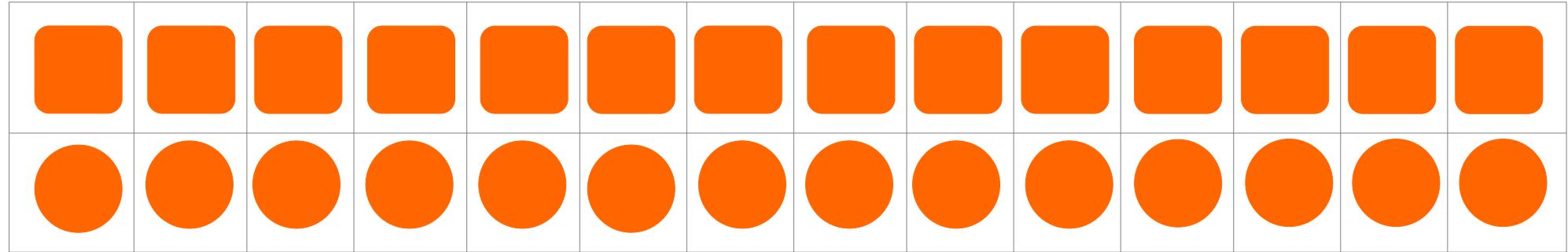


**parâmetros**

riqueza  $t_0$

abundância  $t_0$

# modelo baseado em indivíduo

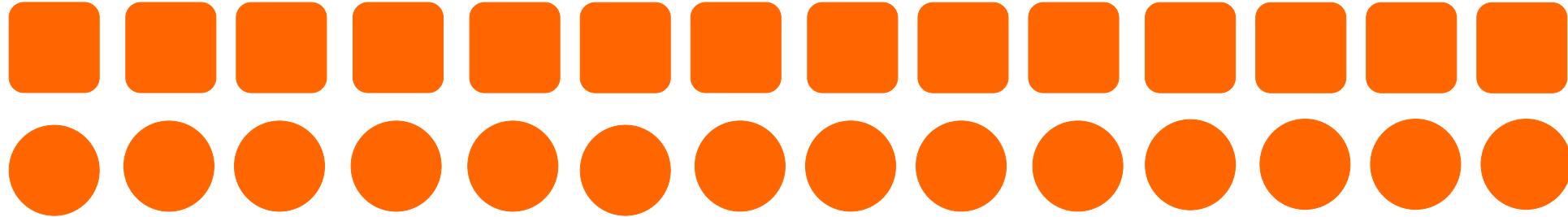


**parâmetros**

riqueza  $t_0$

abundância  $t_0$

# modelo baseado em indivíduo

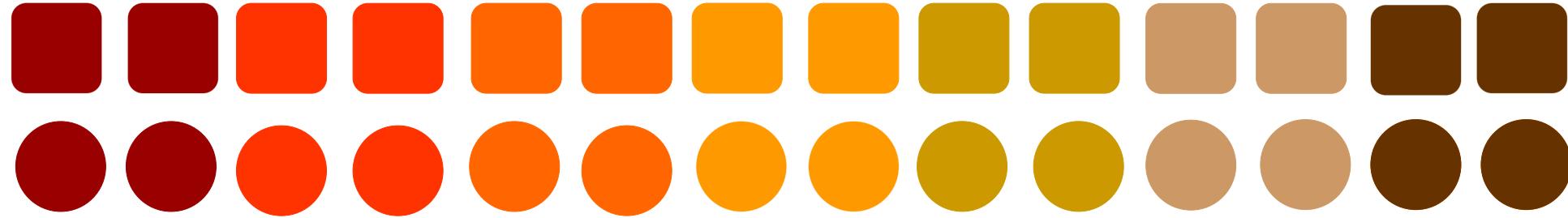


**parâmetros**

riqueza  $t_0$

abundância  $t_0$

# modelo baseado em indivíduo

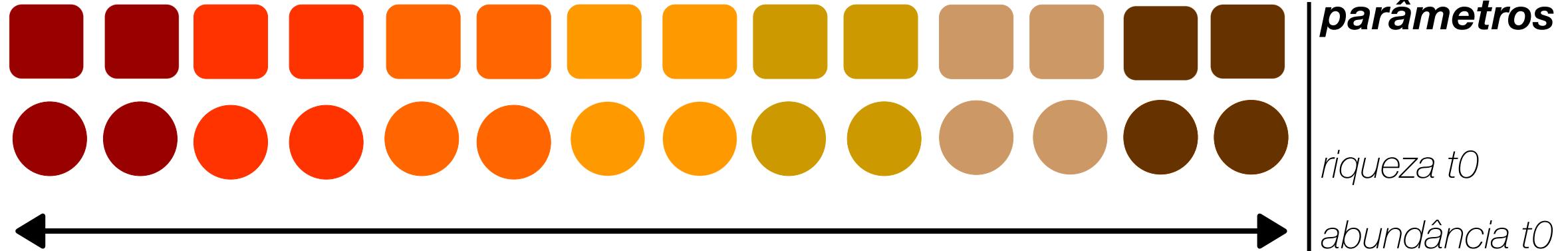


**parâmetros**

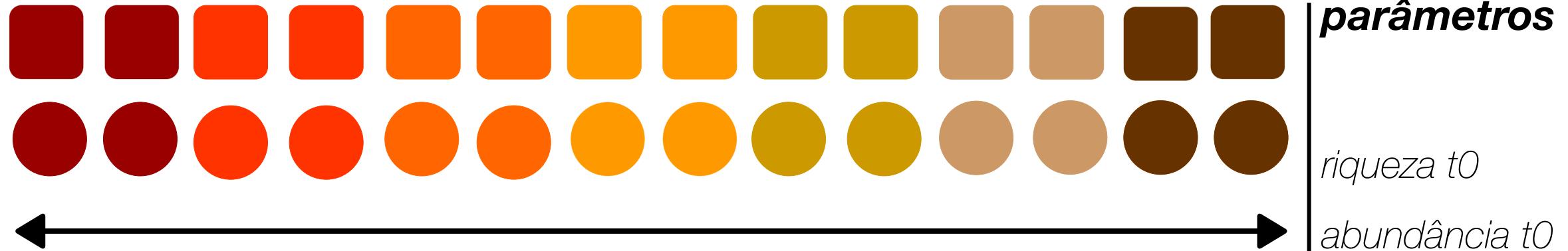
riqueza  $t_0$

abundância  $t_0$

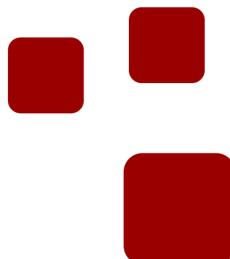
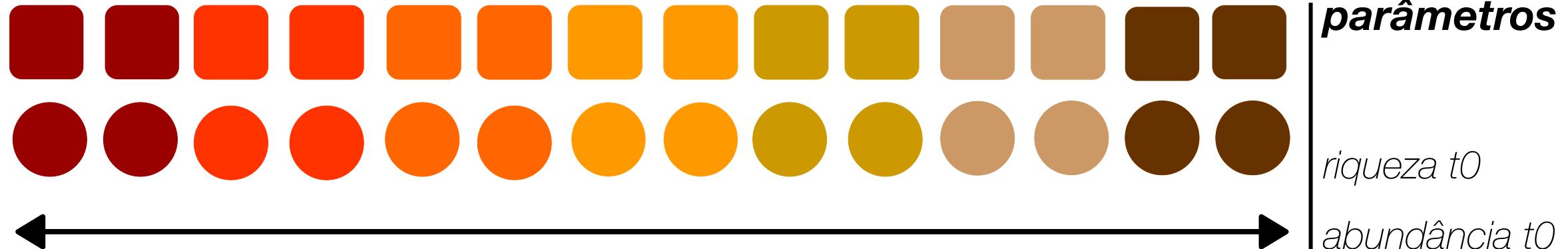
# modelo baseado em indivíduo



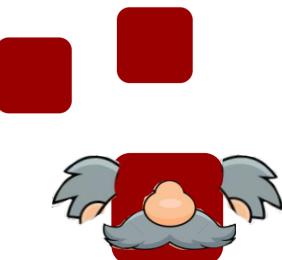
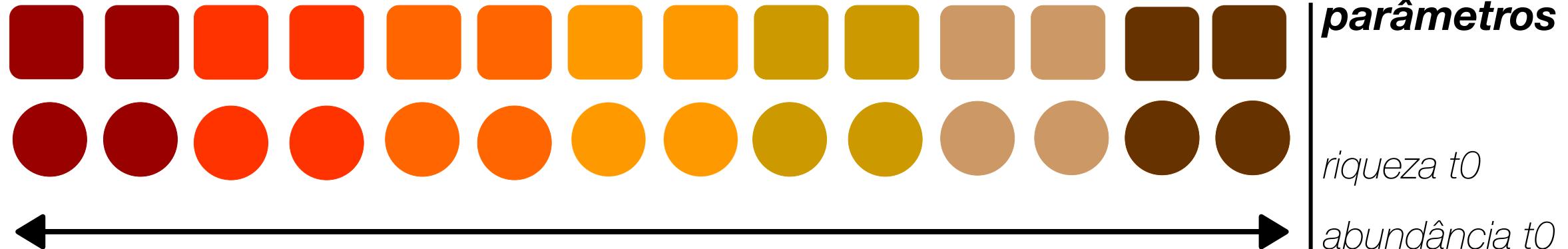
# modelo baseado em indivíduo



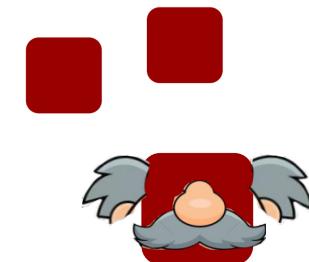
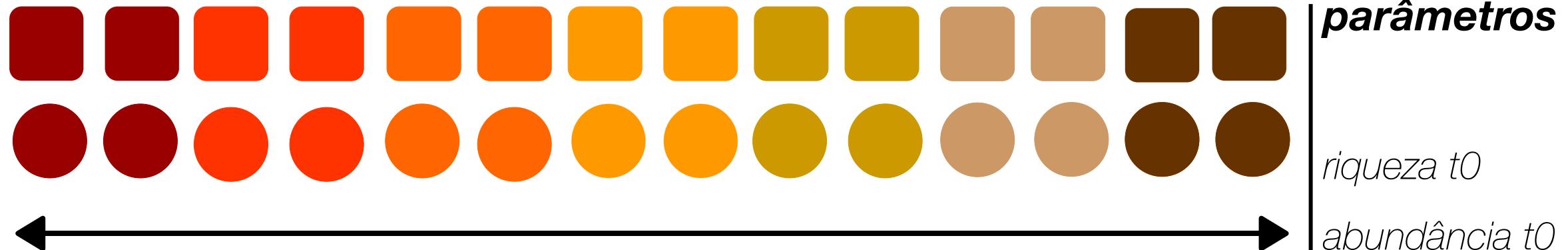
# modelo baseado em indivíduo



# modelo baseado em indivíduo



# modelo baseado em indivíduo

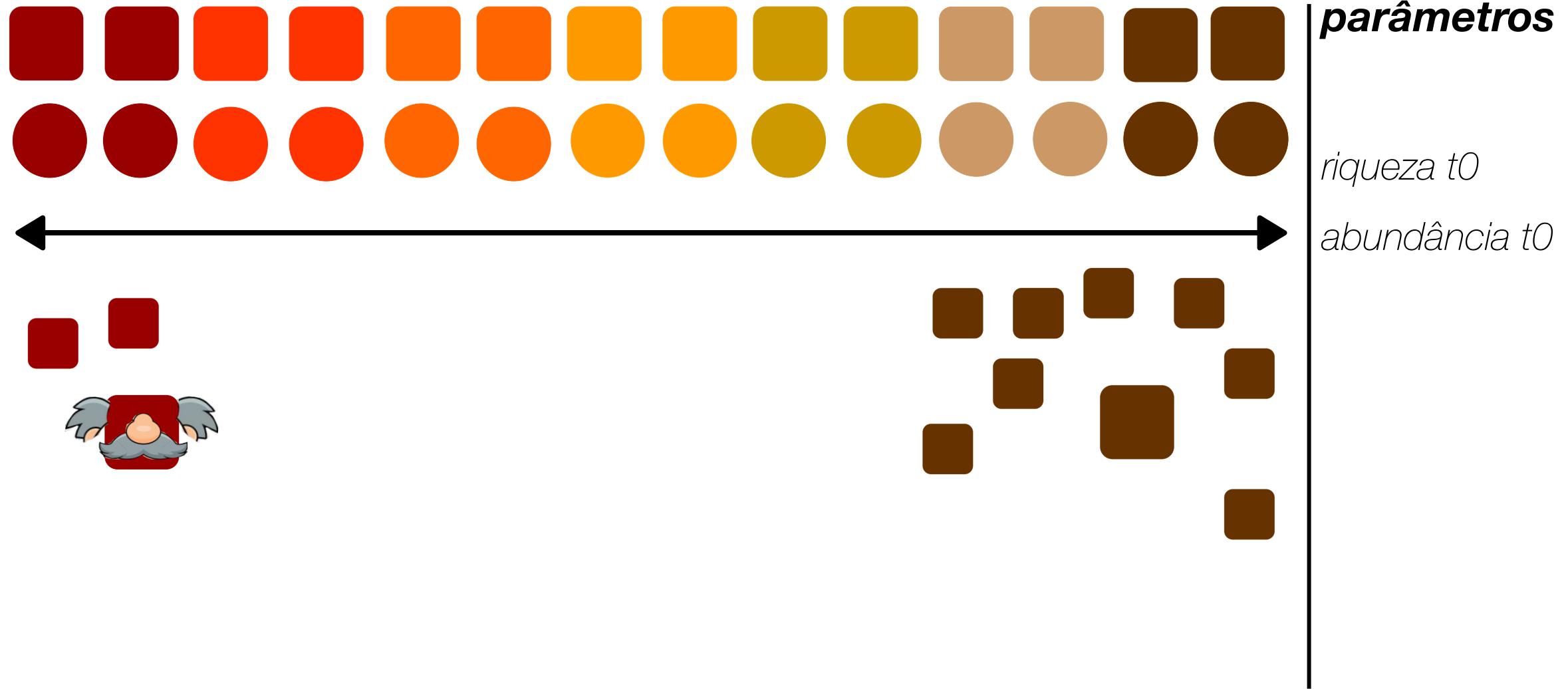


**parâmetros**

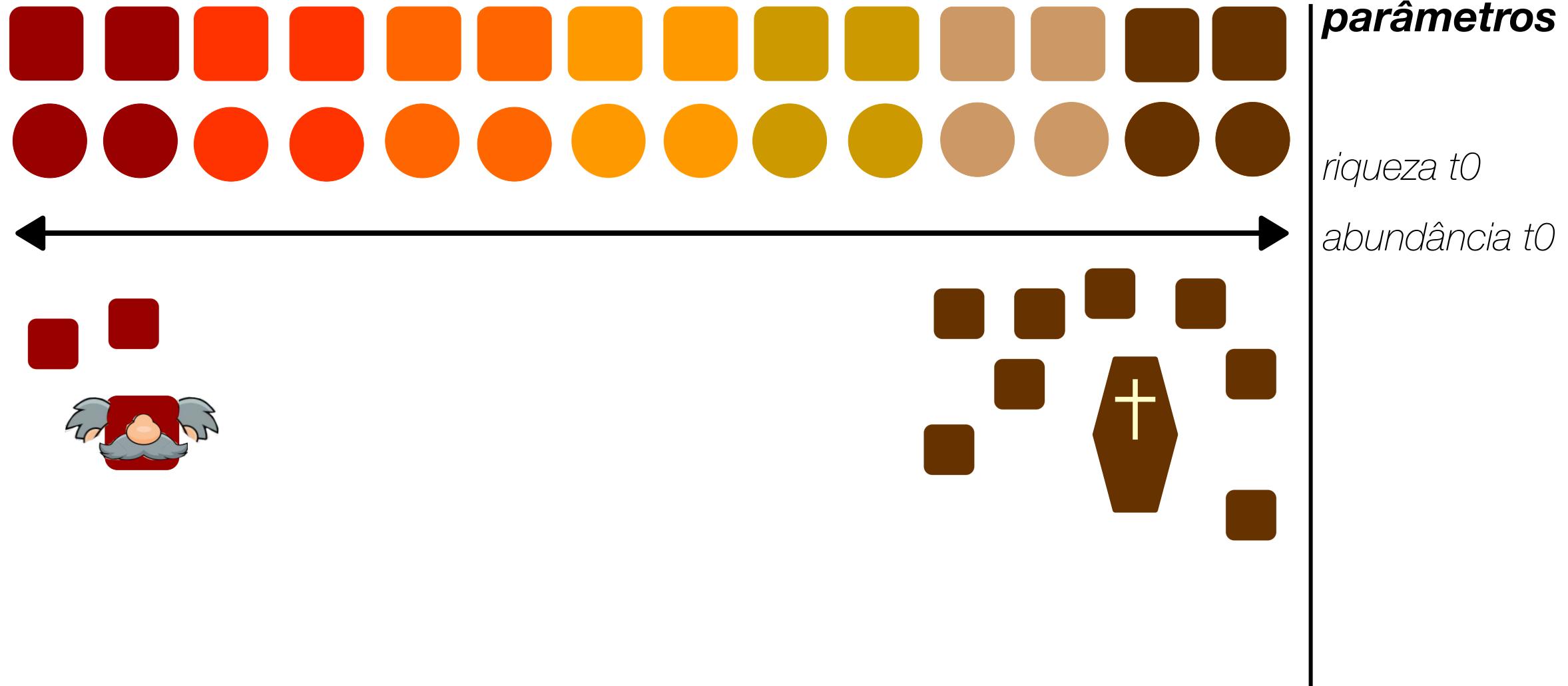
riqueza  $t_0$

abundância  $t_0$

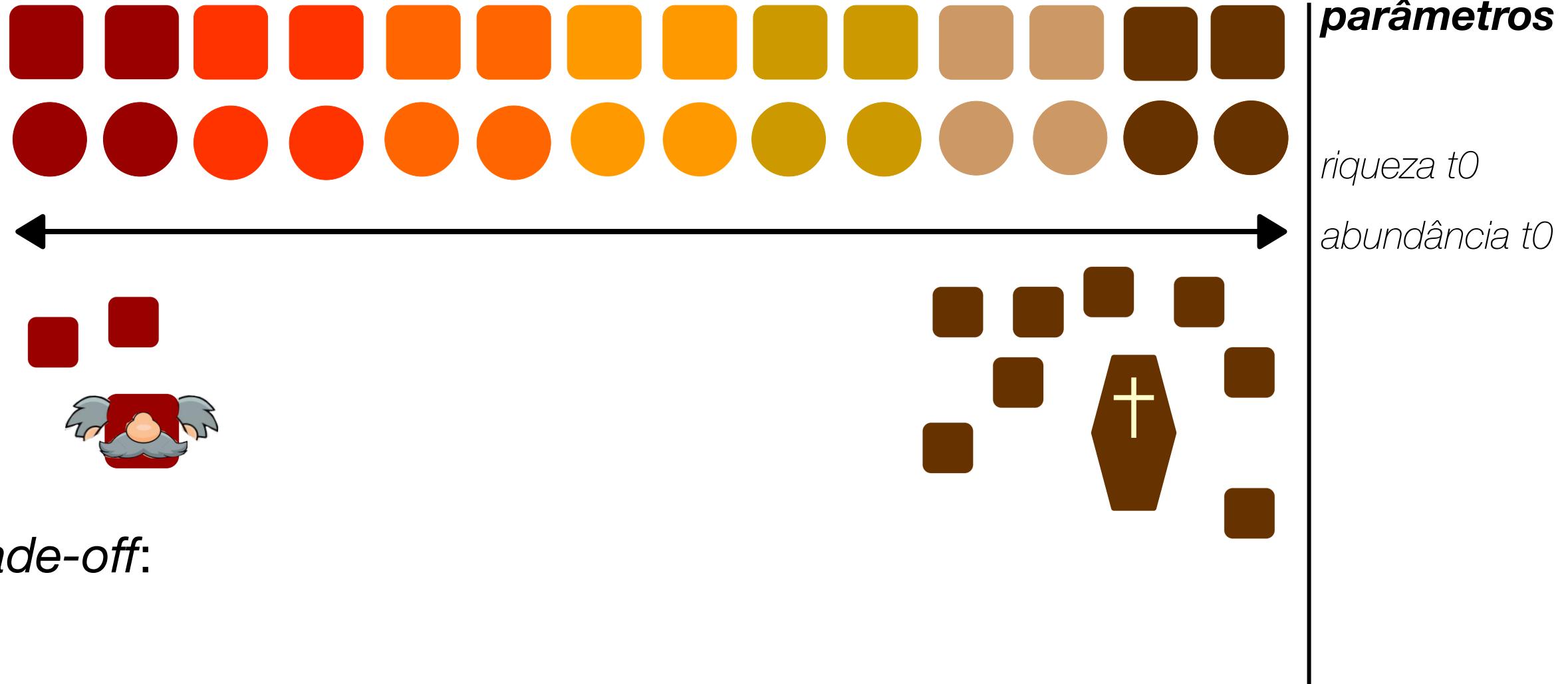
# modelo baseado em indivíduo



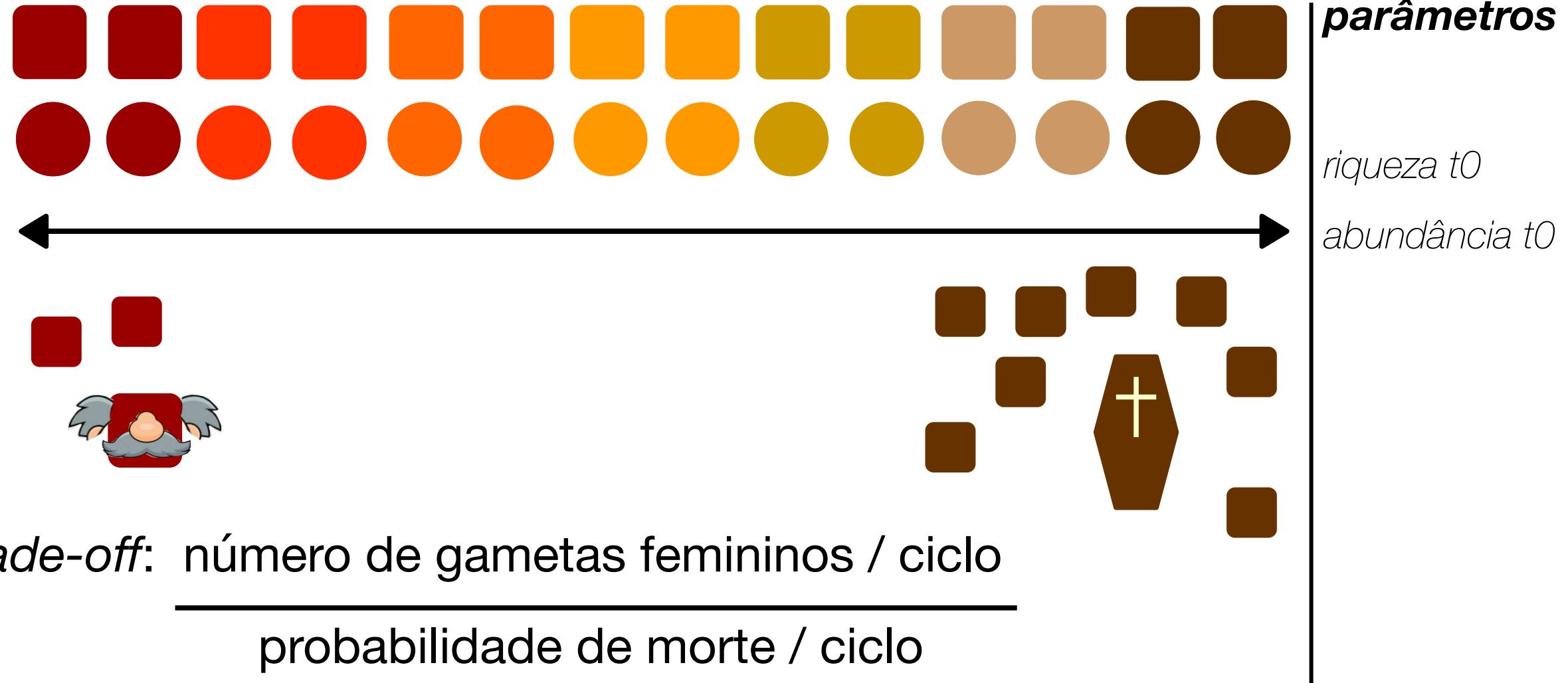
# modelo baseado em indivíduo



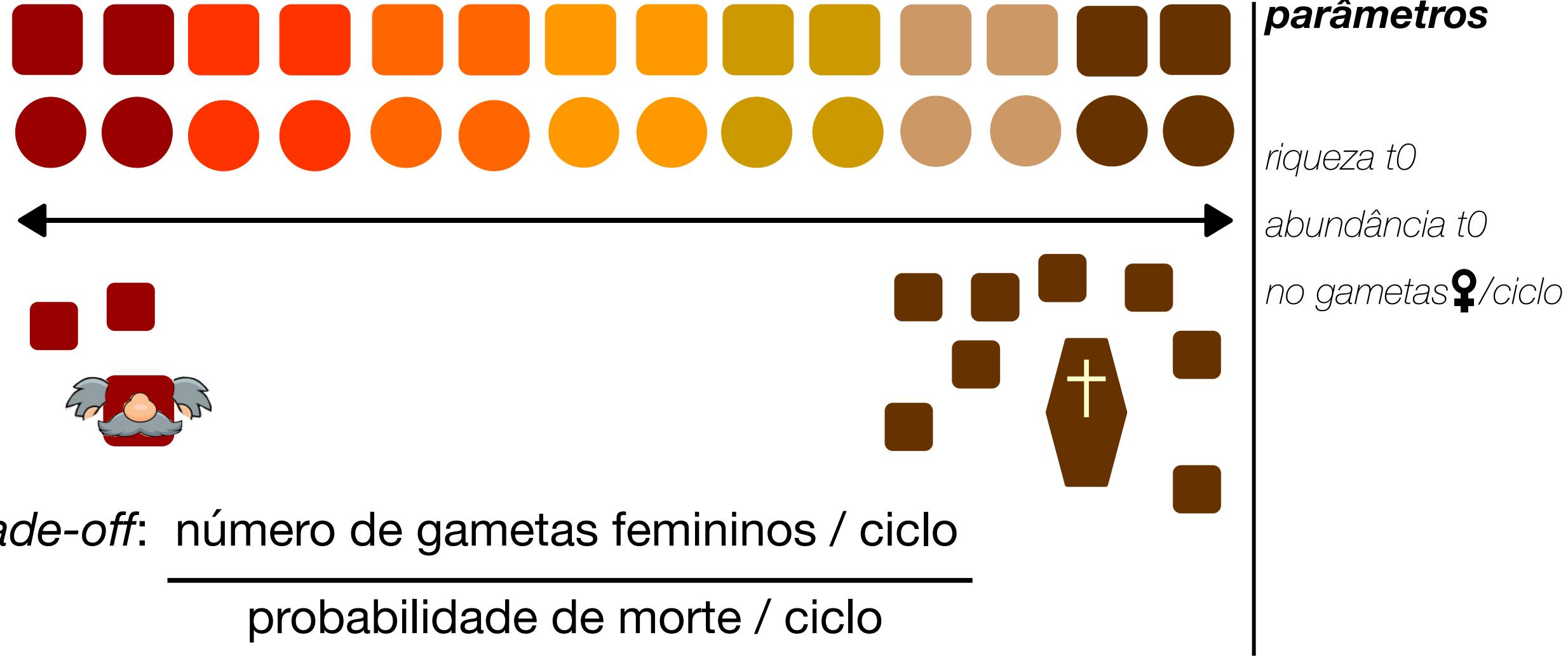
# modelo baseado em indivíduo



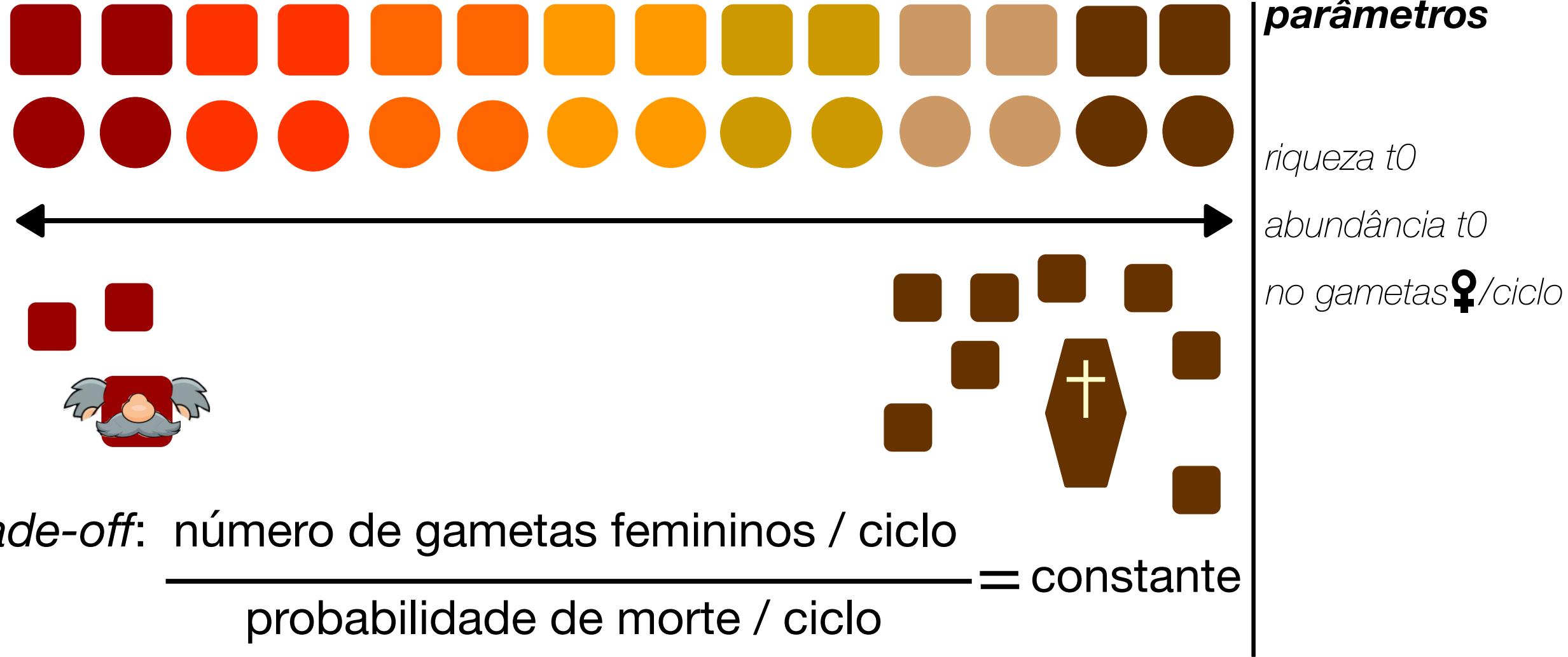
# modelo baseado em indivíduo



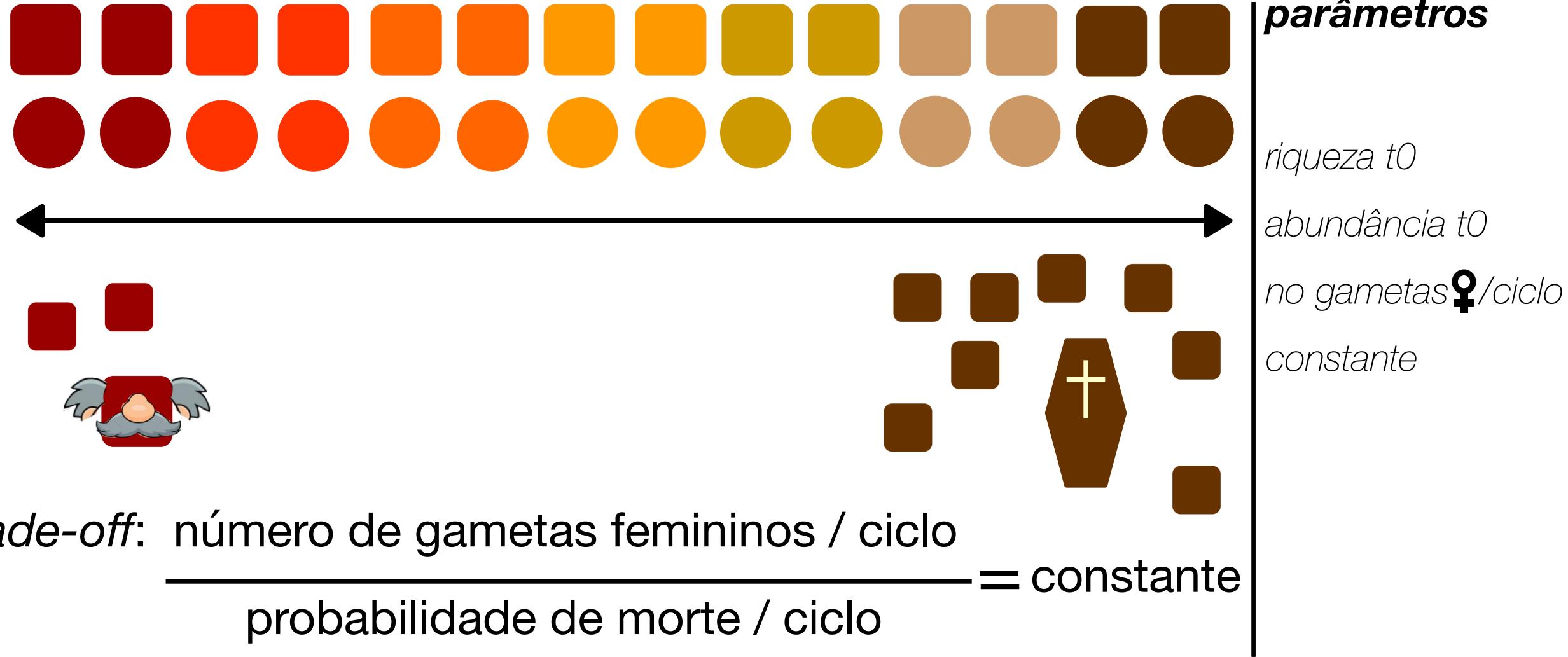
# modelo baseado em indivíduo



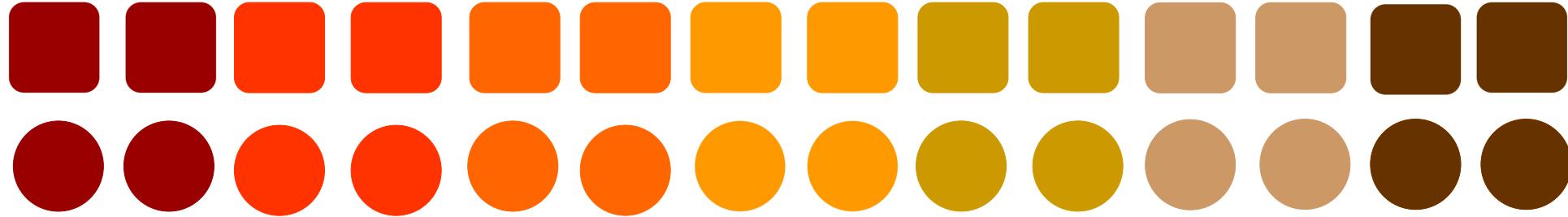
# modelo baseado em indivíduo



# modelo baseado em indivíduo



# modelo baseado em indivíduo



## **parâmetros**

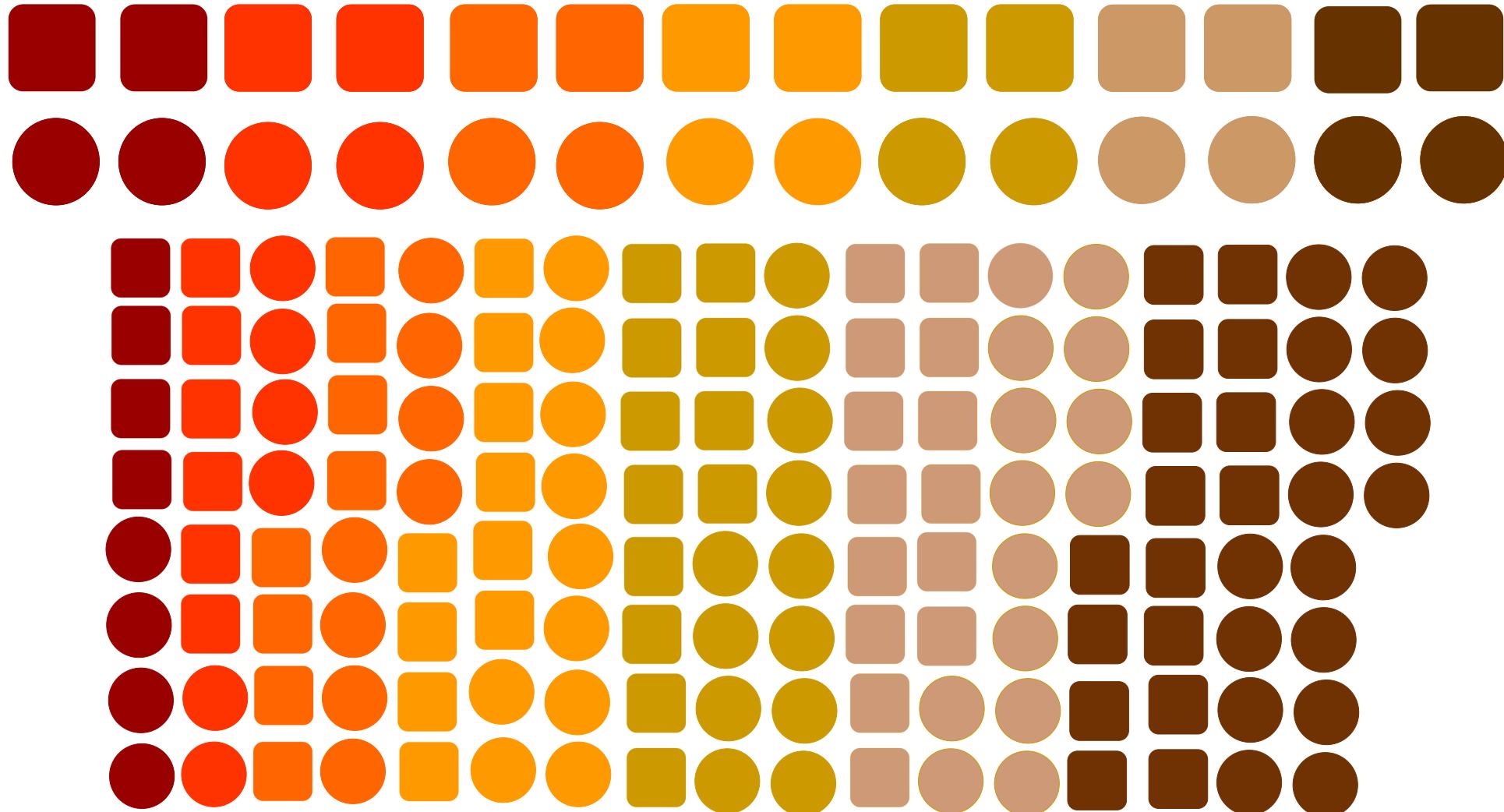
*riqueza  $t_0$*

*abundância  $t_0$*

*no gametas ♀/ciclo*

*constante*

# modelo baseado em indivíduo



## **parâmetros**

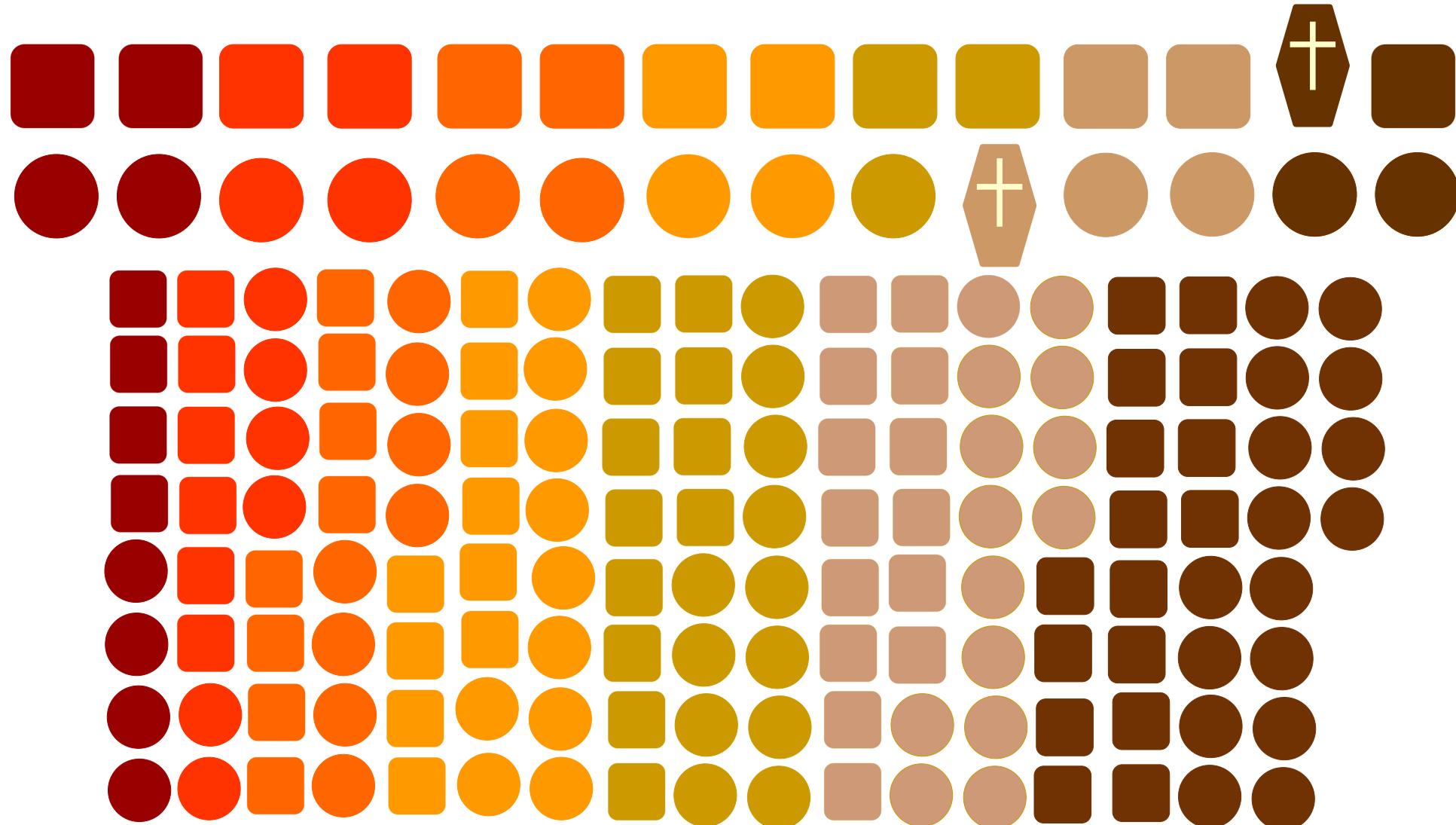
riqueza  $t_0$

abundância  $t_0$

no gametas ♀/ciclo

constante

# modelo baseado em indivíduo



**parâmetros**

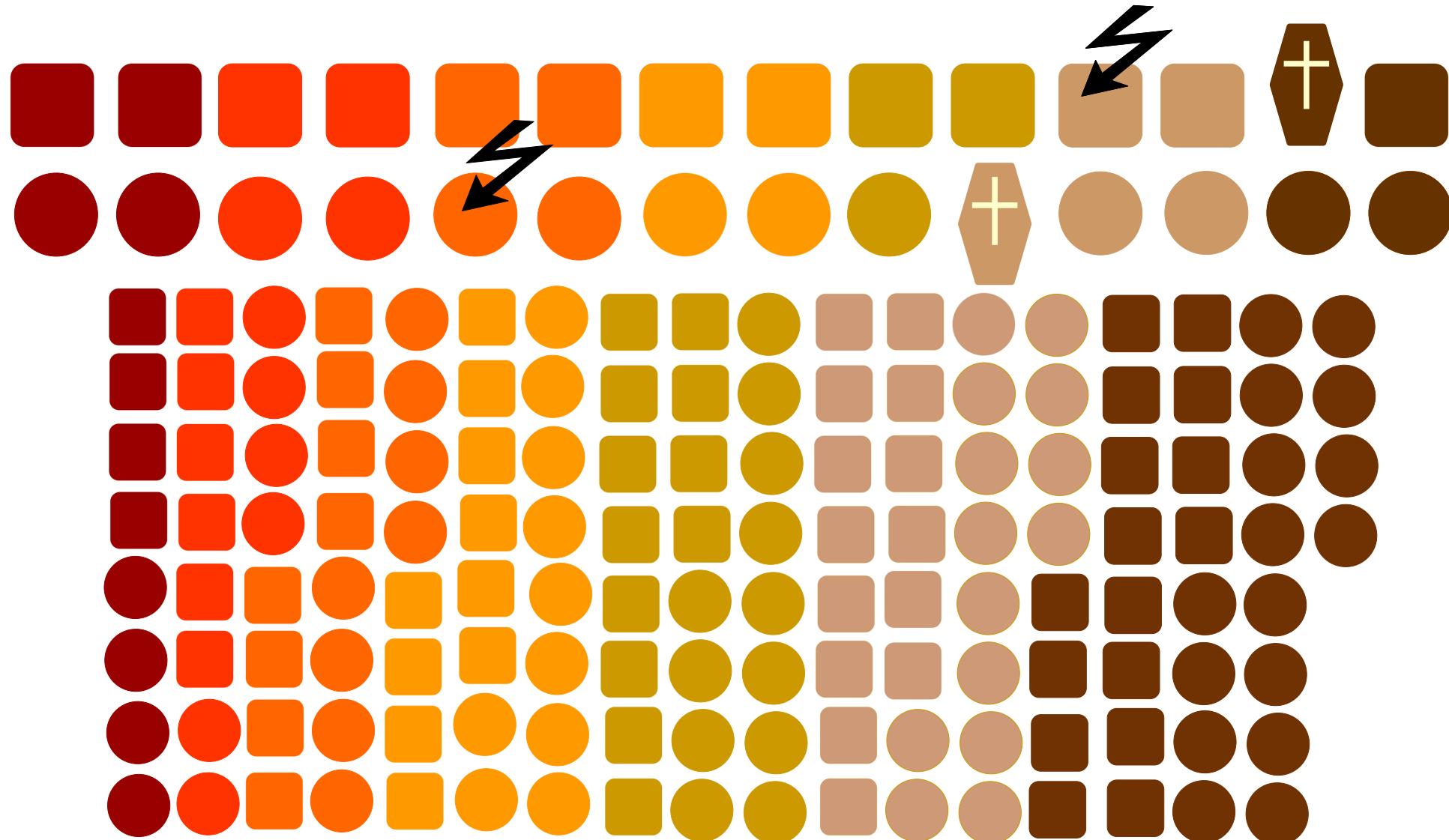
riqueza  $t_0$

abundância  $t_0$

no gametas ♀/ciclo

constante

# modelo baseado em indivíduo



## | parâmetros

*riqueza t0*

## *abundância t0*

no gametas ♀ / ciclo

constante

# modelo baseado em indivíduo



# | parâmetros

*riqueza t0*

*abundância t0*

no gametas ♀/ciclo

*constante*

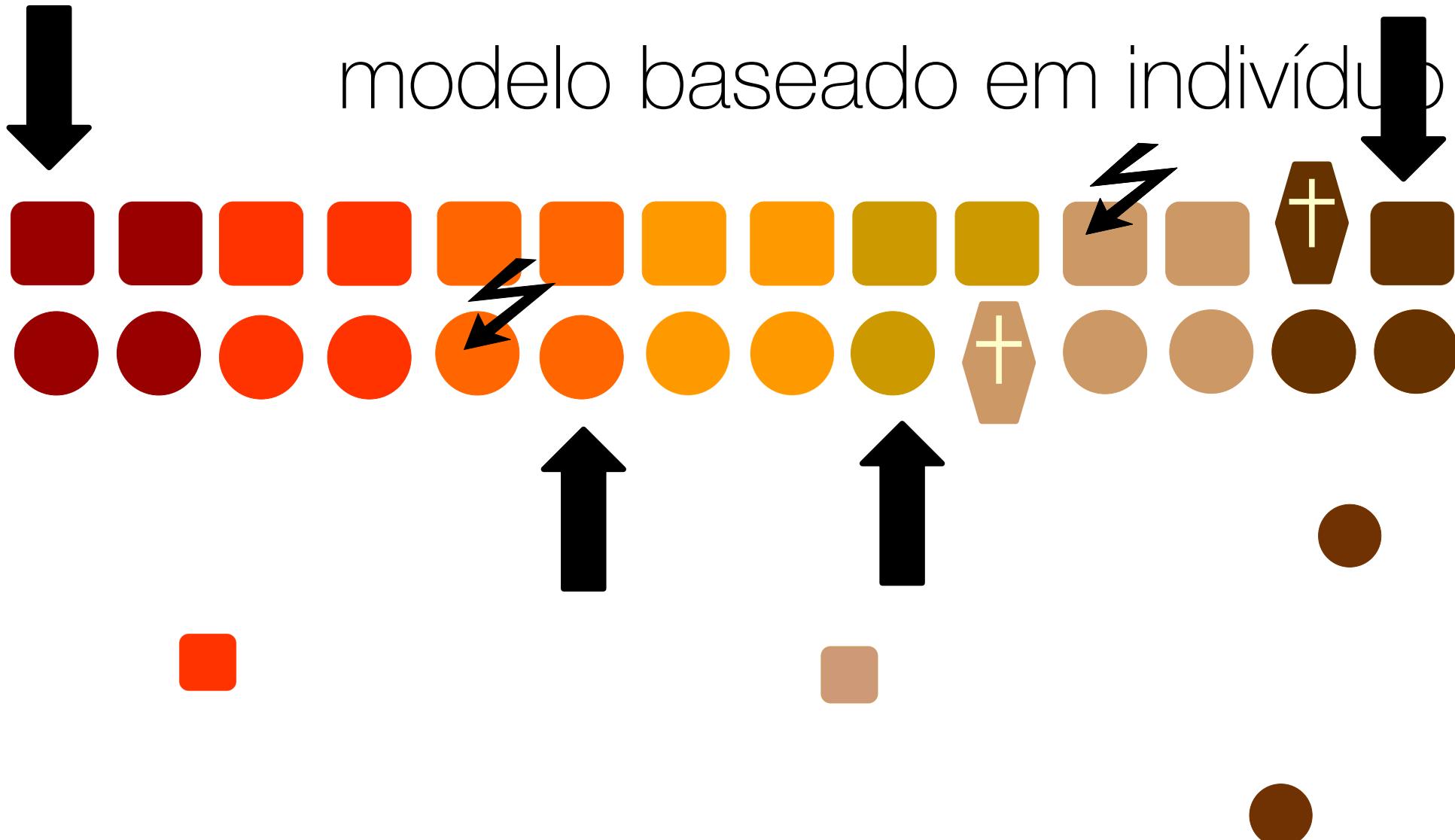
*no distúrbios*

% morta/distúrbio

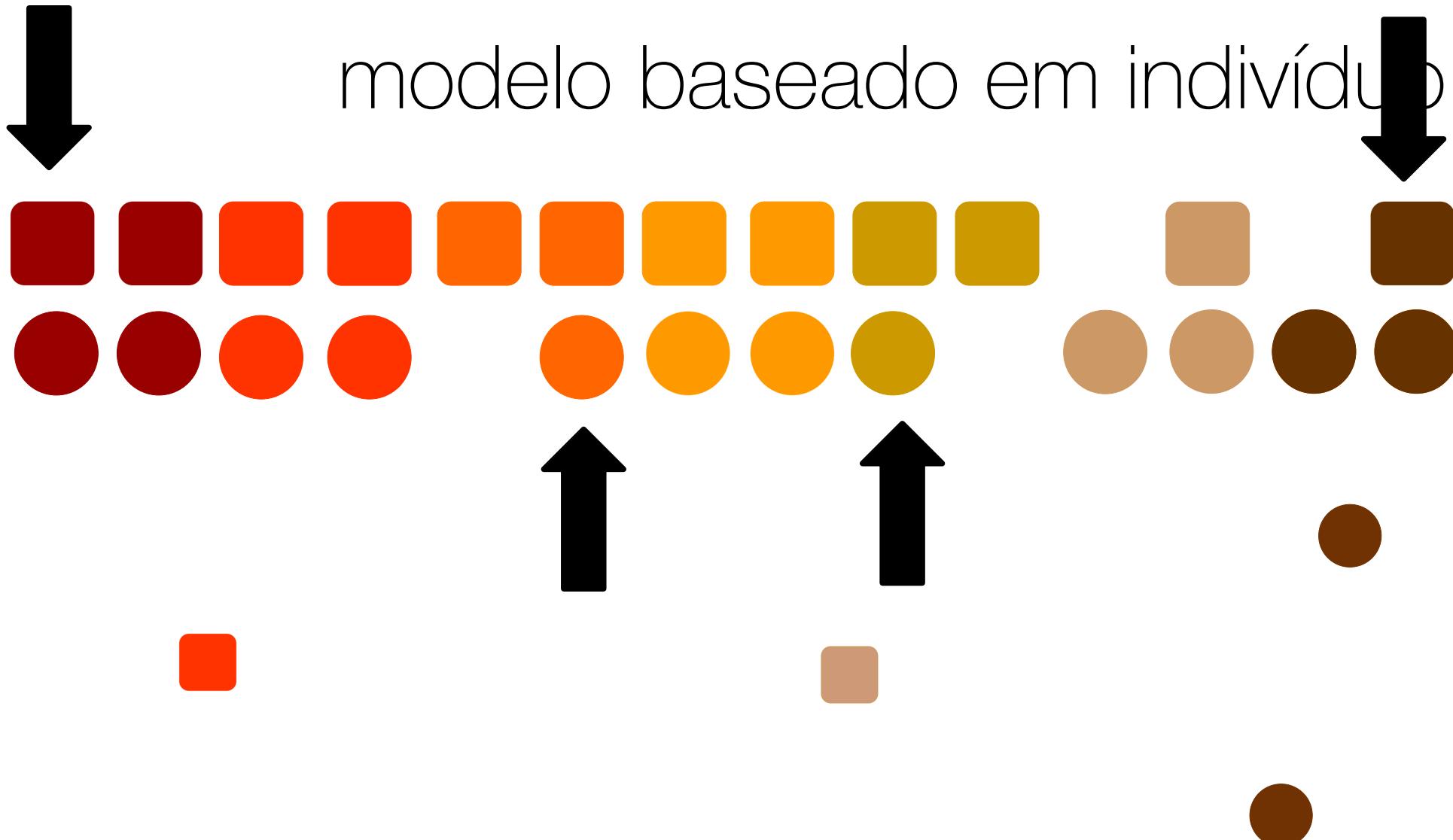
# modelo baseado em indivíduo



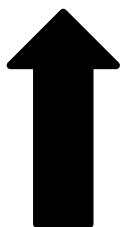
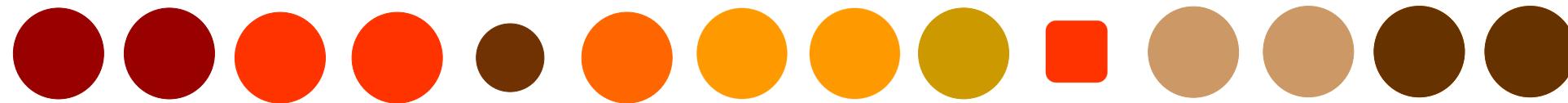
# modelo baseado em indivíduo



# modelo baseado em indivíduo



# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

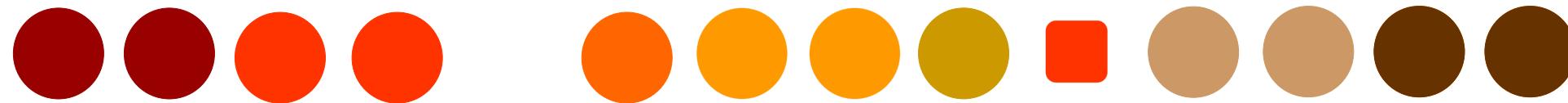
no gametas ♀/ciclo

constante

no distúrbios

% morta/distúrbio

# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

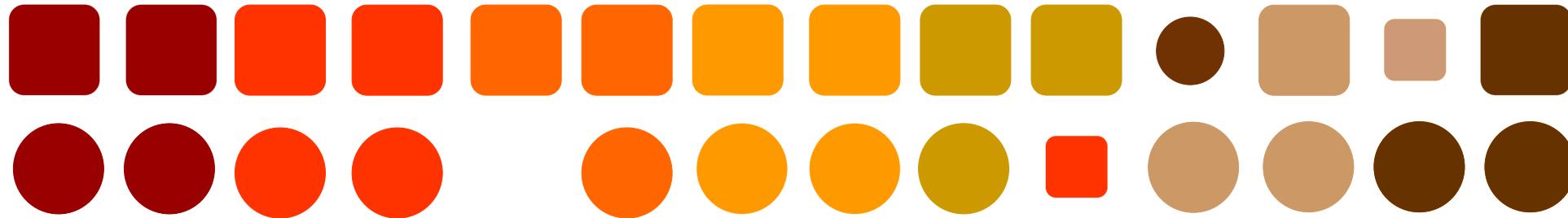
no gametas ♀/ciclo

constante

no distúrbios

% morta/distúrbio

# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

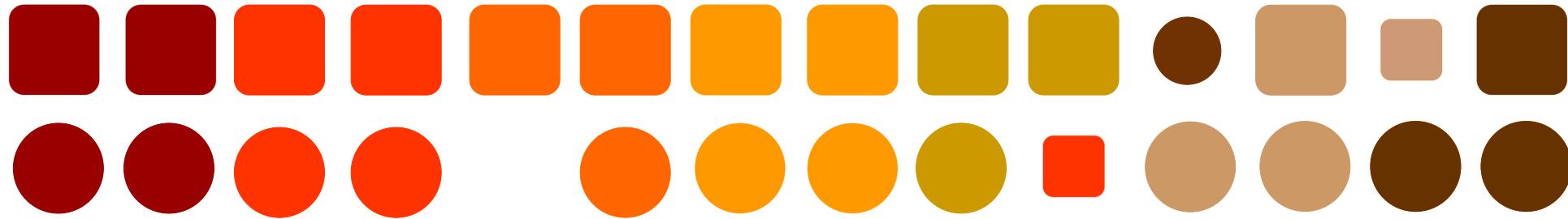
no gametas ♀/ciclo

constante

no distúrbios

% morta/distúrbio

# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

no gametas ♀/ciclo

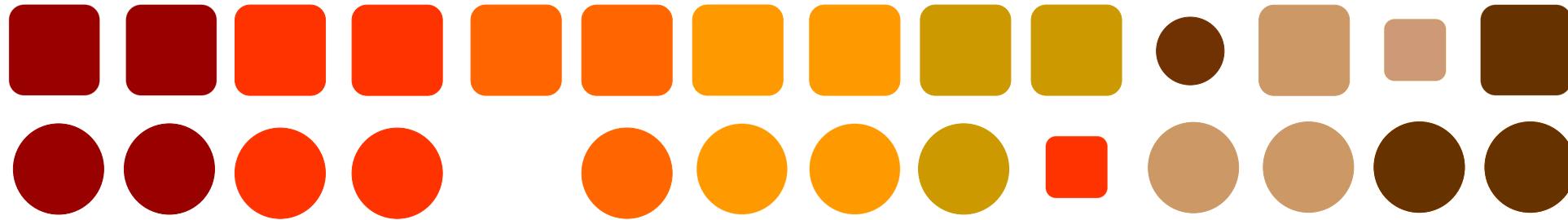
constante

no distúrbios

% morta/distúrbio



# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

no gametas ♀/ciclo

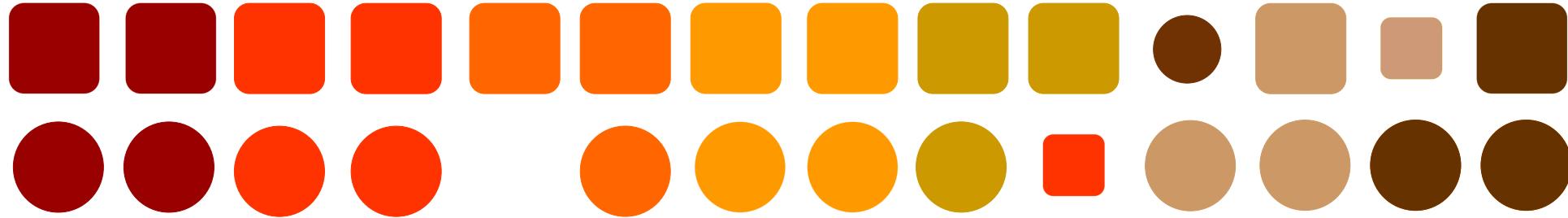
constante

no distúrbios

% morta/distúrbio

$$\frac{\bullet + \bullet}{2}$$

# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

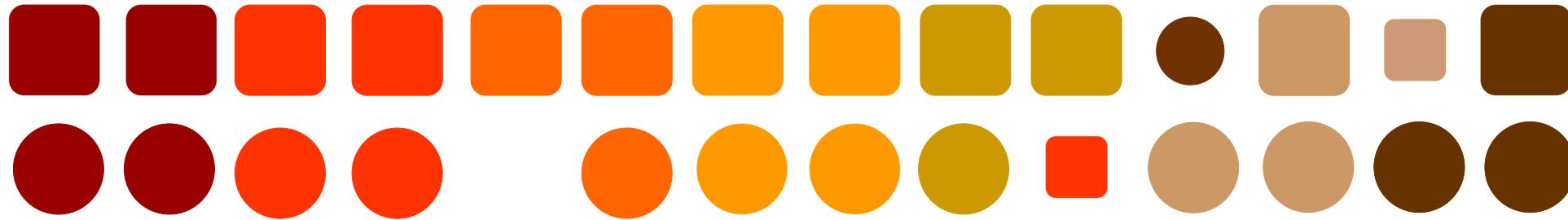
no gametas ♀/ciclo

constante

no distúrbios

% morta/distúrbio

# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

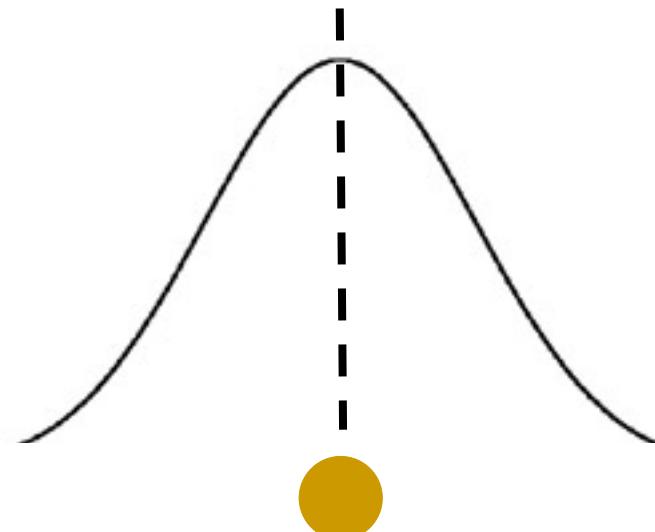
abundância  $t_0$

no gametas ♀/ciclo

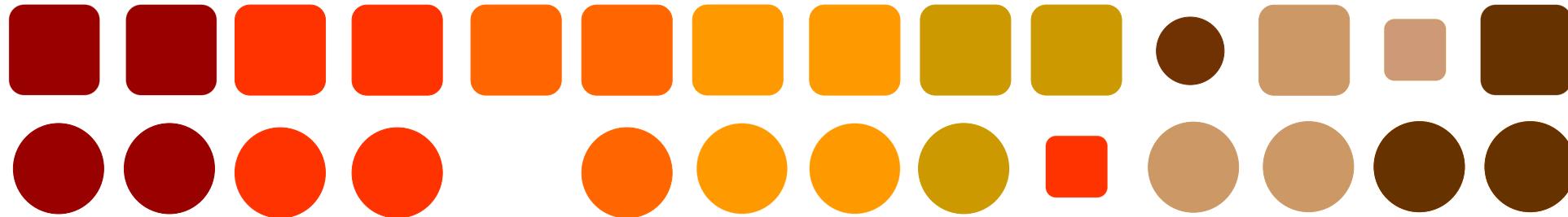
constante

no distúrbios

% morta/distúrbio



# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

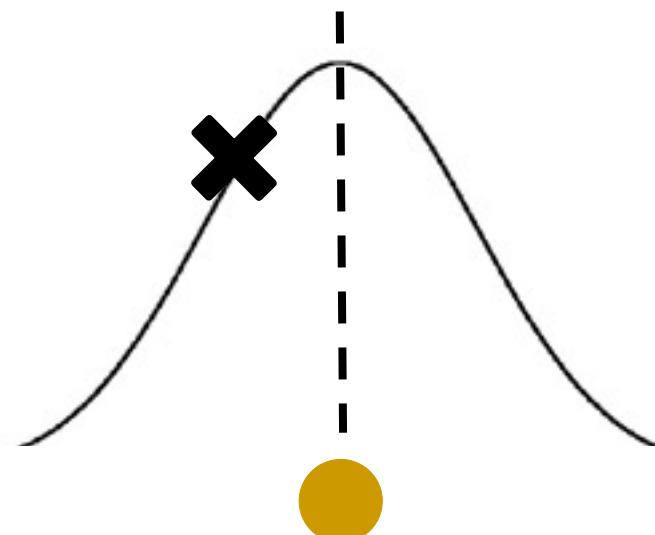
abundância  $t_0$

no gametas ♀/ciclo

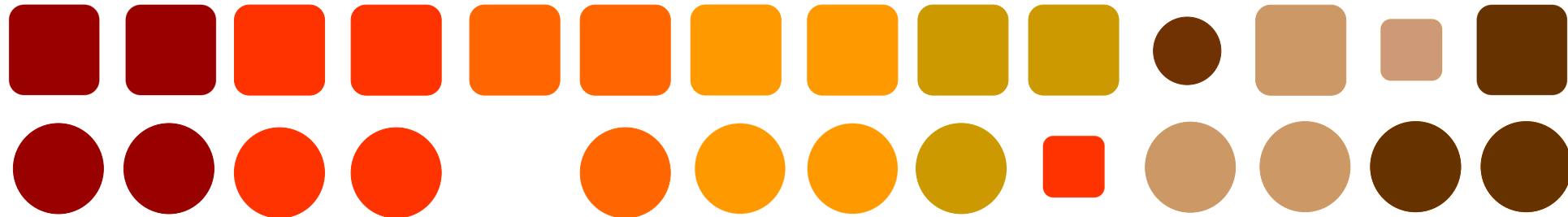
constante

no distúrbios

% morta/distúrbio



# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

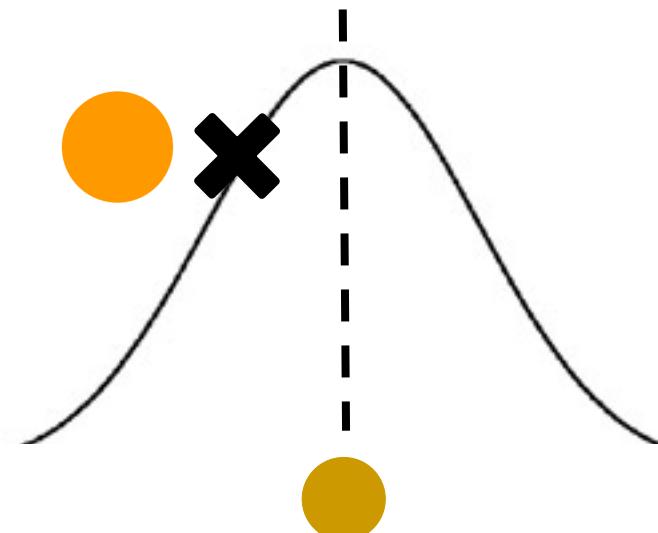
abundância  $t_0$

no gametas ♀/ciclo

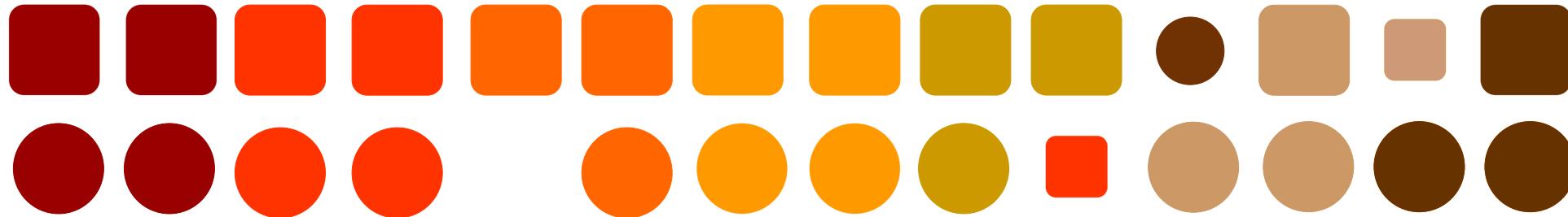
constante

no distúrbios

% morta/distúrbio



# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

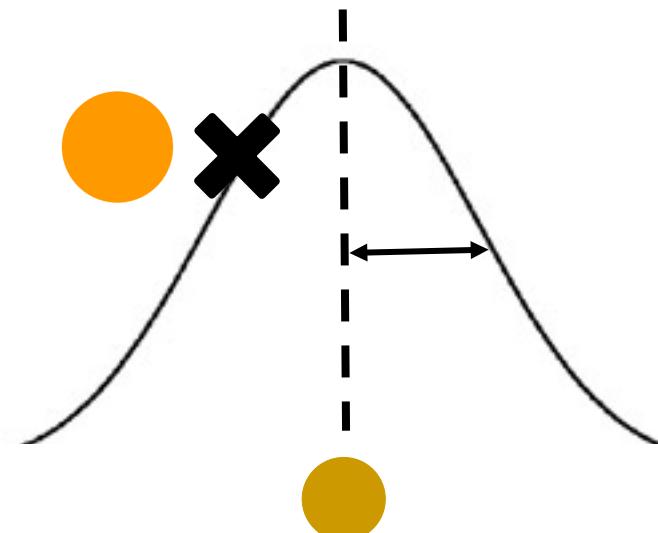
abundância  $t_0$

no gametas ♀/ciclo

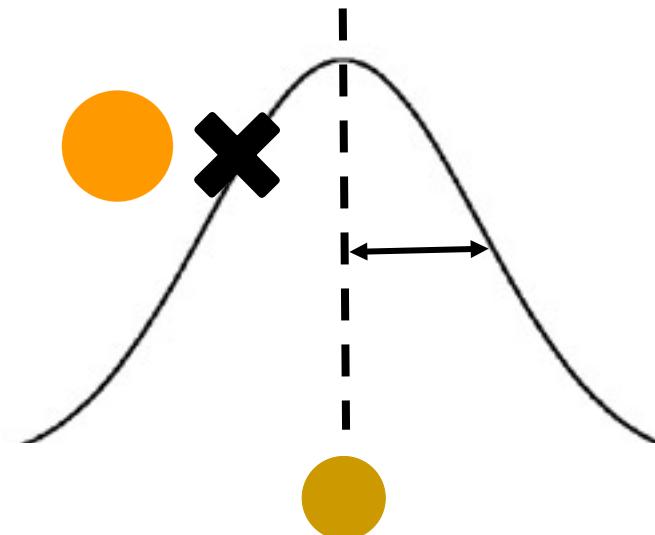
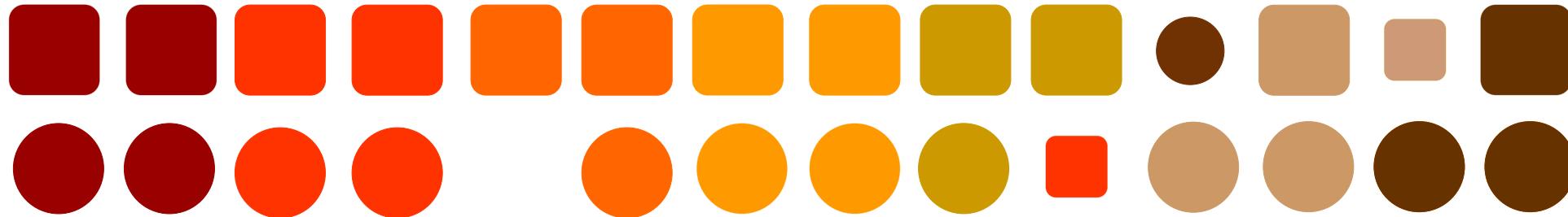
constante

no distúrbios

% morta/distúrbio



# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

no gametas ♀/ciclo

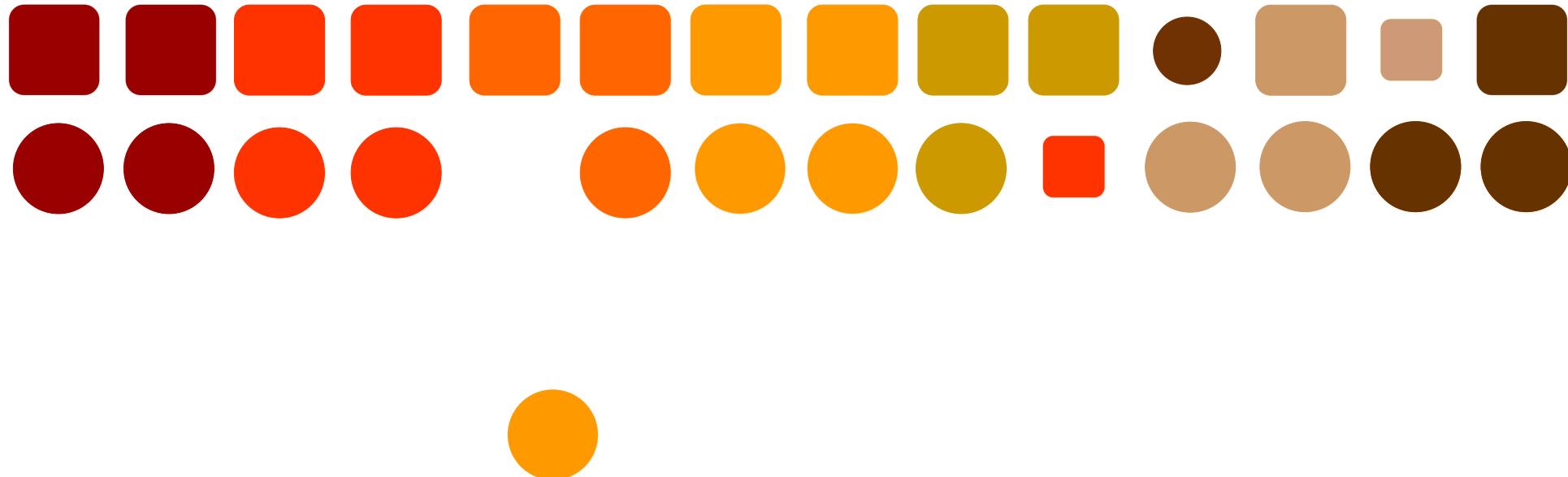
constante

no distúrbios

% morta/distúrbio

taxa de mutação

# modelo baseado em indivíduo



**parâmetros**

riqueza  $t_0$

abundância  $t_0$

no gametas ♀/ciclo

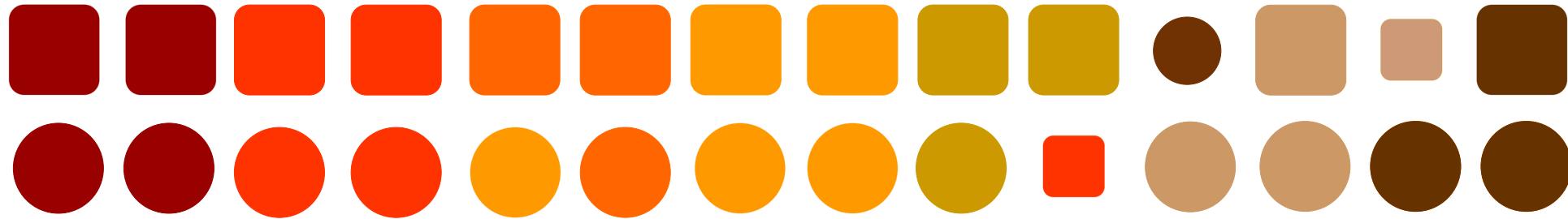
constante

no distúrbios

% morta/distúrbio

taxa de mutação

# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

no gametas ♀/ciclo

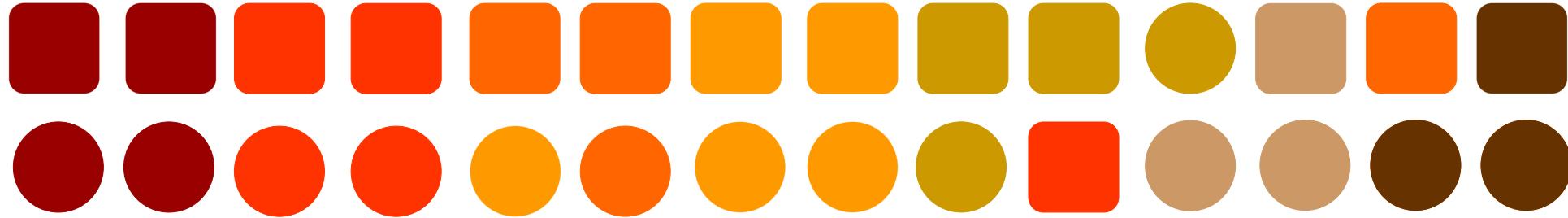
constante

no distúrbios

% morta/distúrbio

taxa de mutação

# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

no gametas ♀/ciclo

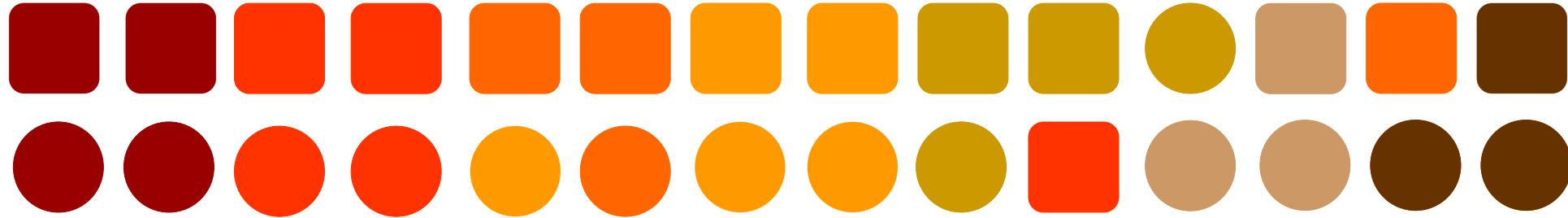
constante

no distúrbios

% morta/distúrbio

taxa de mutação

# modelo baseado em indivíduo



## **parâmetros**

riqueza  $t_0$

abundância  $t_0$

no gametas ♀/ciclo

constante

no distúrbios

% morta/distúrbio

taxa de mutação

no tempos



# cenários simulados



# cenários simulados

**evolutivo**

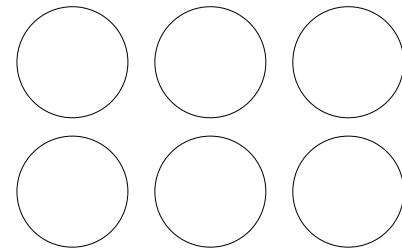
**ecológico**

**eco-evolutivo**



# cenários simulados

**evolutivo**

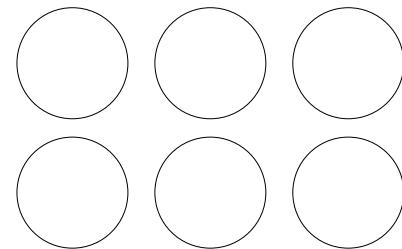


**ecológico**

**eco-evolutivo**

# cenários simulados

**evolutivo**



**ecológico**

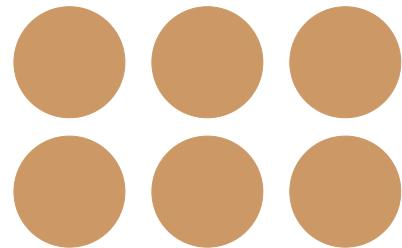
**eco-evolutivo**

1 espécie



# cenários simulados

**evolutivo**



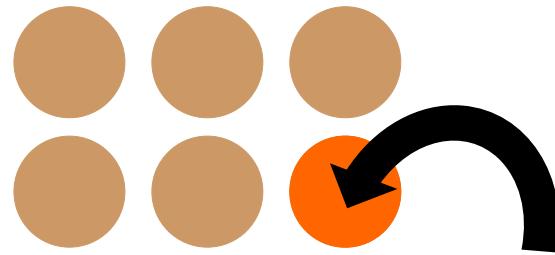
1 espécie

**ecológico**

**eco-evolutivo**

# cenários simulados

**evolutivo**



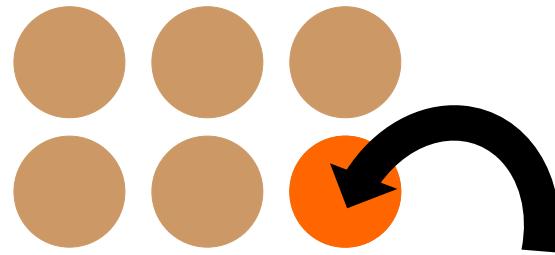
1 espécie

**ecológico**

**eco-evolutivo**

# cenários simulados

**evolutivo**



1 espécie

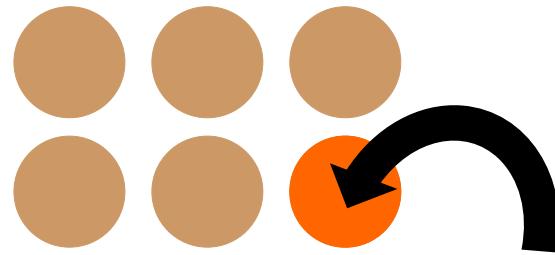
mutação > 0

**ecológico**

**eco-evolutivo**

# cenários simulados

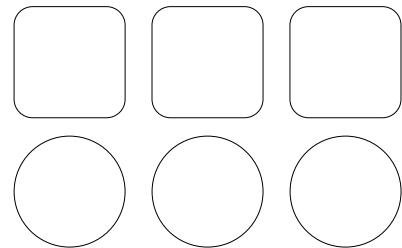
**evolutivo**



1 espécie

mutação > 0

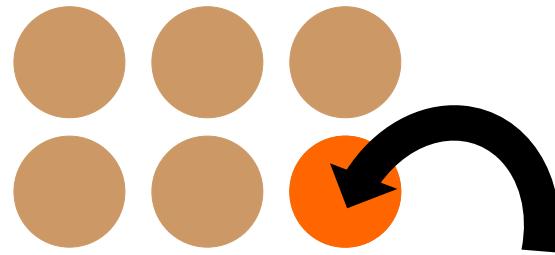
**ecológico**



**eco-evolutivo**

# cenários simulados

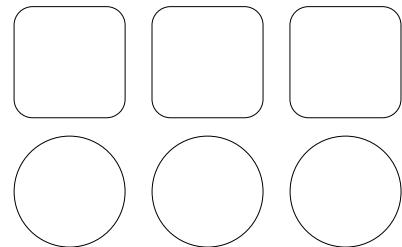
**evolutivo**



1 espécie

mutação > 0

**ecológico**

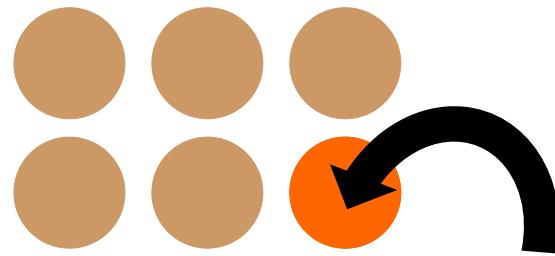


+ 1 espécie

**eco-evolutivo**

# cenários simulados

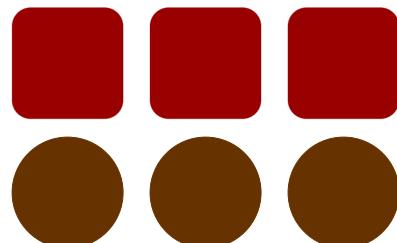
**evolutivo**



1 espécie

mutação > 0

**ecológico**

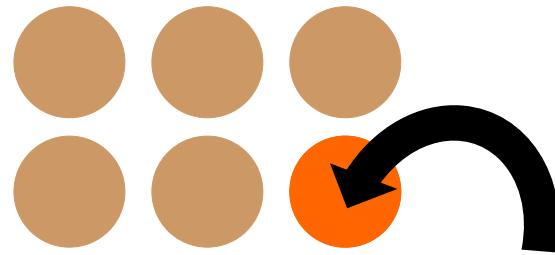


+ 1 espécie

**eco-evolutivo**

# cenários simulados

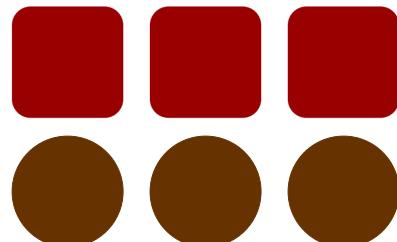
## evolutivo



1 espécie

mutação > 0

## ecológico



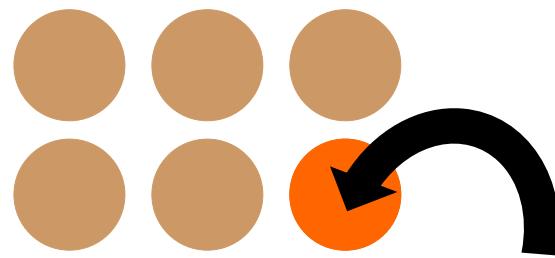
+ 1 espécie

mutação = 0

## eco-evolutivo

# cenários simulados

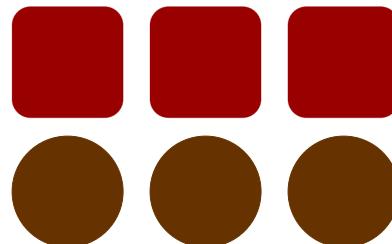
## evolutivo



1 espécie

mutação > 0

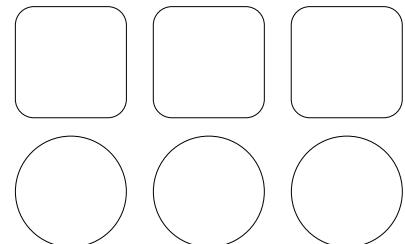
## ecológico



+ 1 espécie

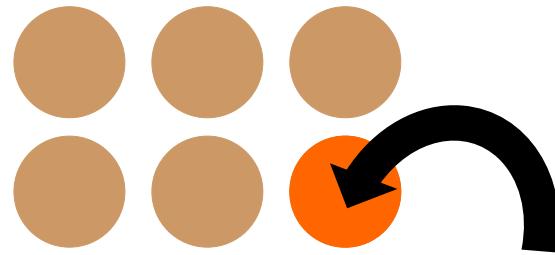
mutação = 0

## eco-evolutivo



# cenários simulados

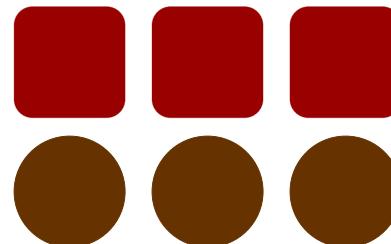
## evolutivo



1 espécie

mutação > 0

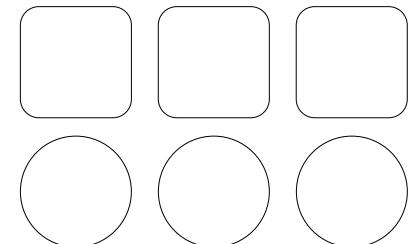
## ecológico



+ 1 espécie

mutação = 0

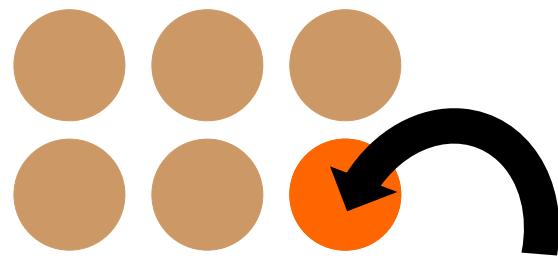
## eco-evolutivo



+ 1 espécie

# cenários simulados

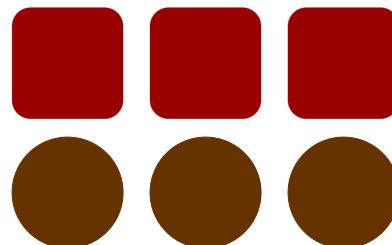
## evolutivo



1 espécie

mutação > 0

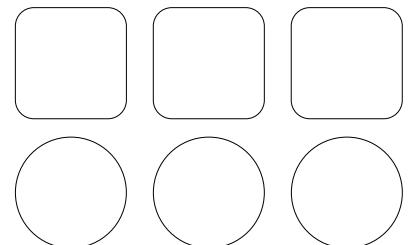
## ecológico



+ 1 espécie

mutação = 0

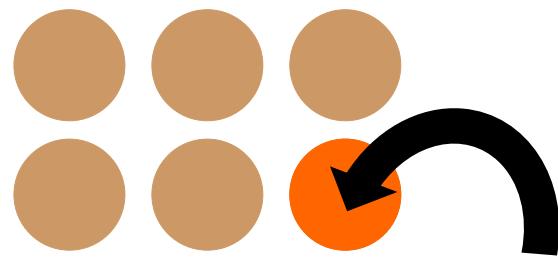
## eco-evolutivo



+ 1 espécie

# cenários simulados

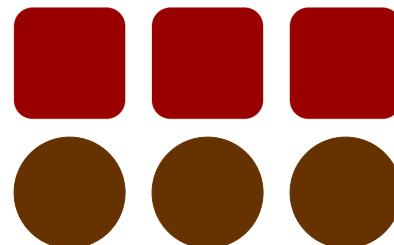
## evolutivo



1 espécie

mutação > 0

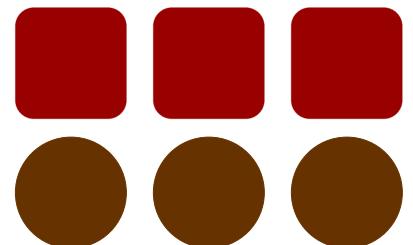
## ecológico



+ 1 espécie

mutação = 0

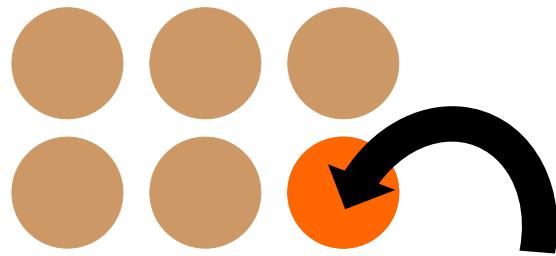
## eco-evolutivo



+ 1 espécie

# cenários simulados

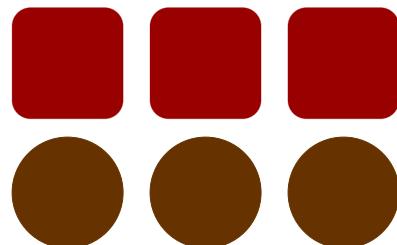
## evolutivo



1 espécie

mutação > 0

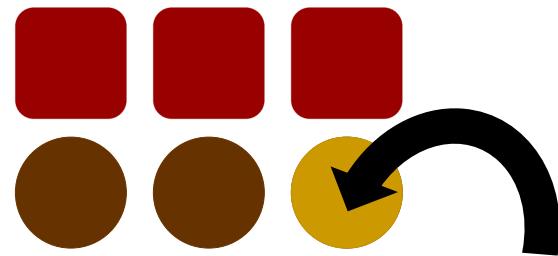
## ecológico



+ 1 espécie

mutação = 0

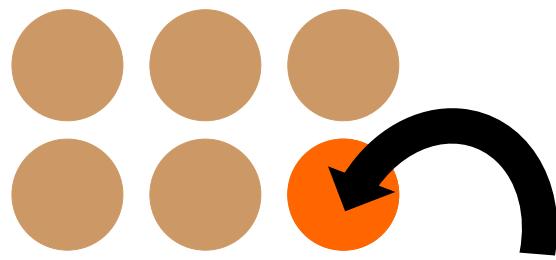
## eco-evolutivo



+ 1 espécie

# cenários simulados

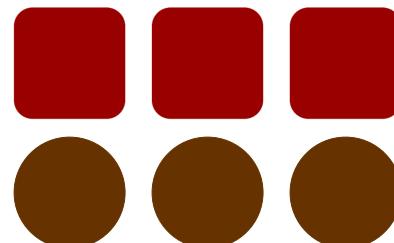
## evolutivo



1 espécie

mutação > 0

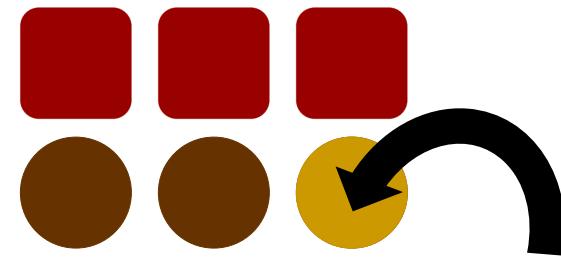
## ecológico



+ 1 espécie

mutação = 0

## eco-evolutivo

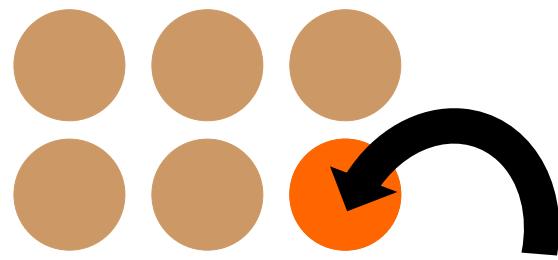


+ 1 espécie

mutação > 0

# cenários simulados

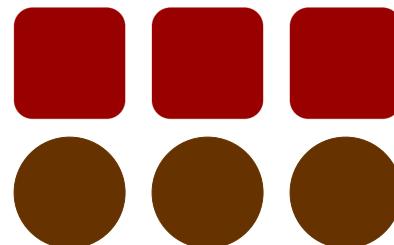
## evolutivo



1 espécie

**mutação > 0**

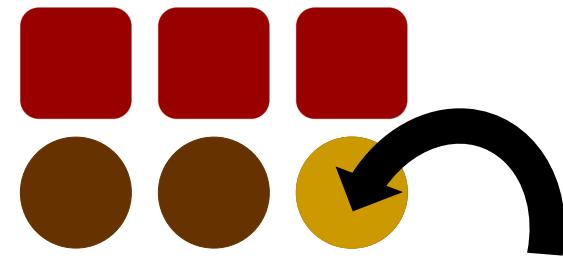
## ecológico



+ 1 espécie

mutação = 0

## eco-evolutivo



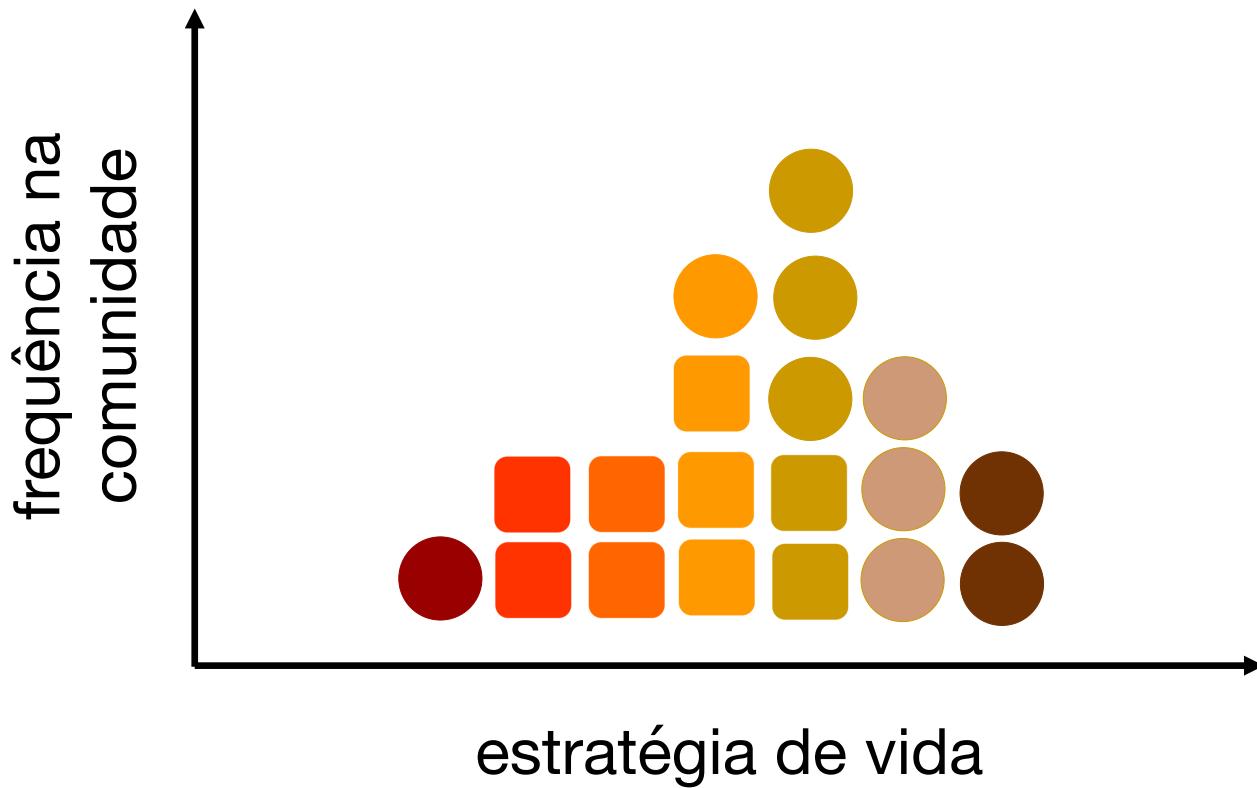
+ 1 espécie

**mutação > 0**

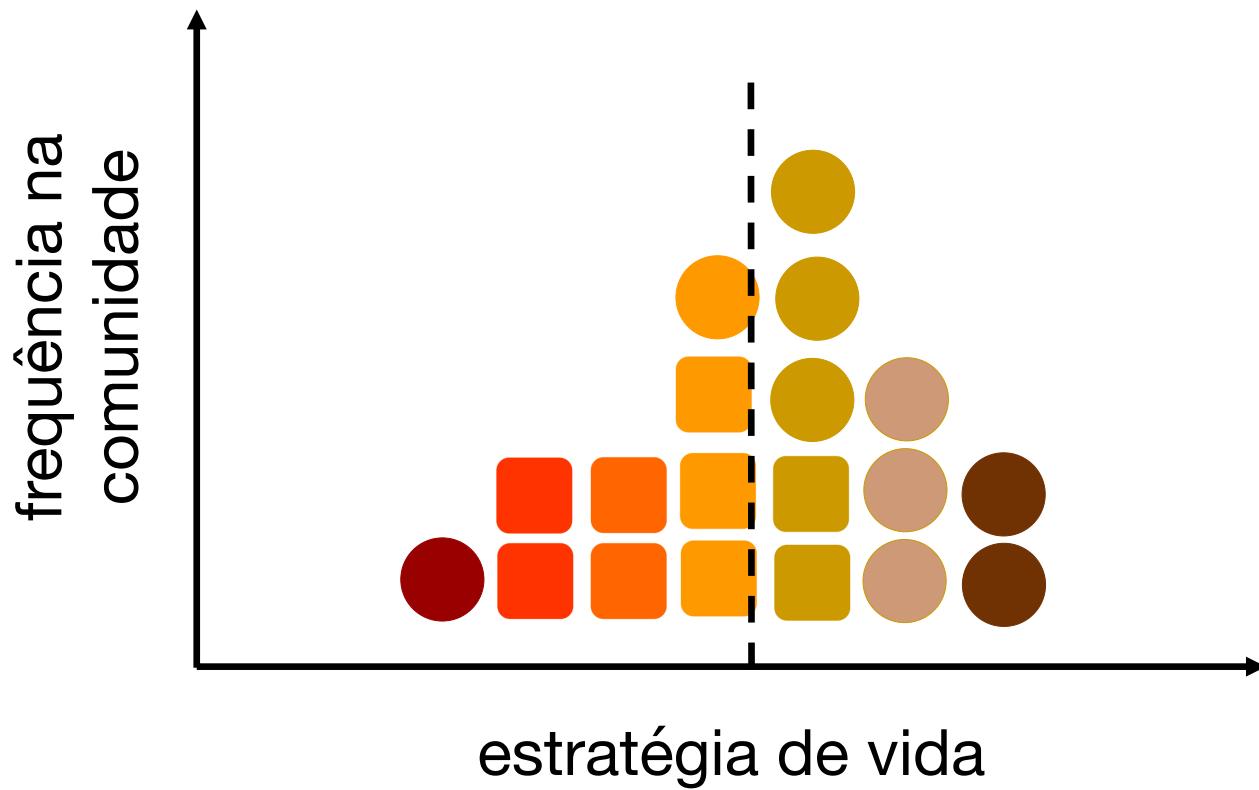
# variáveis de interesse

número de gerações = 2 mil

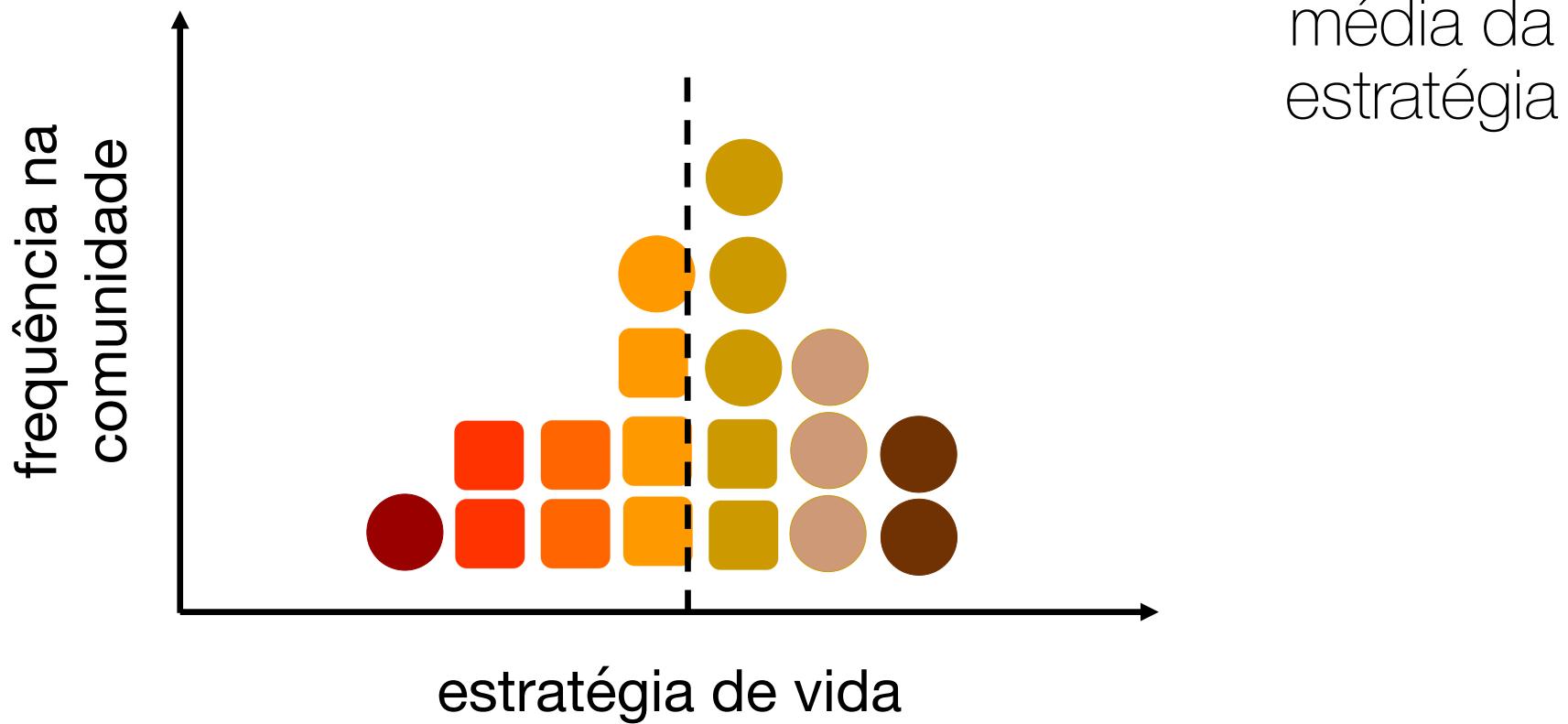
# variáveis de interesse



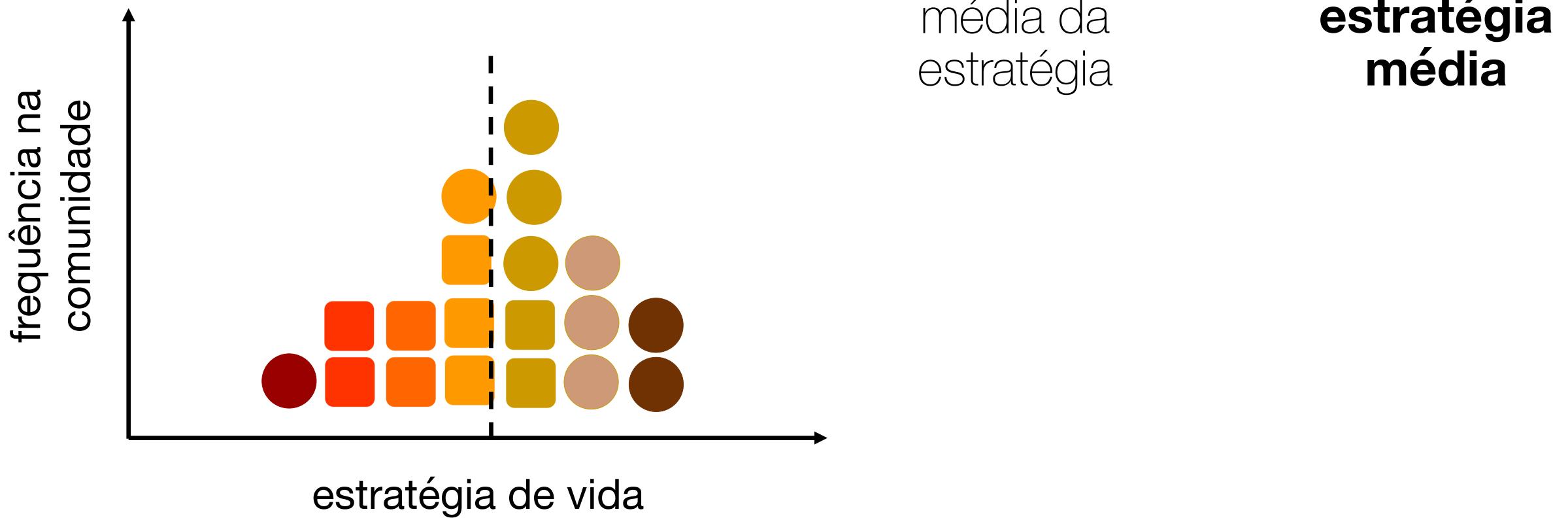
# variáveis de interesse



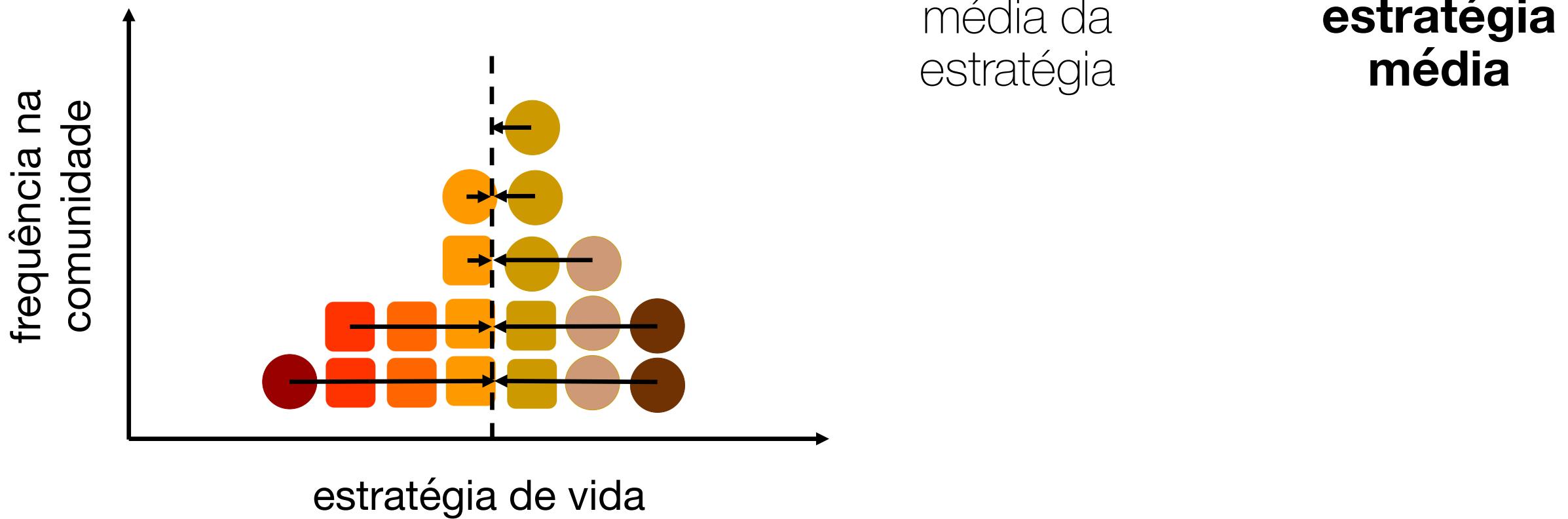
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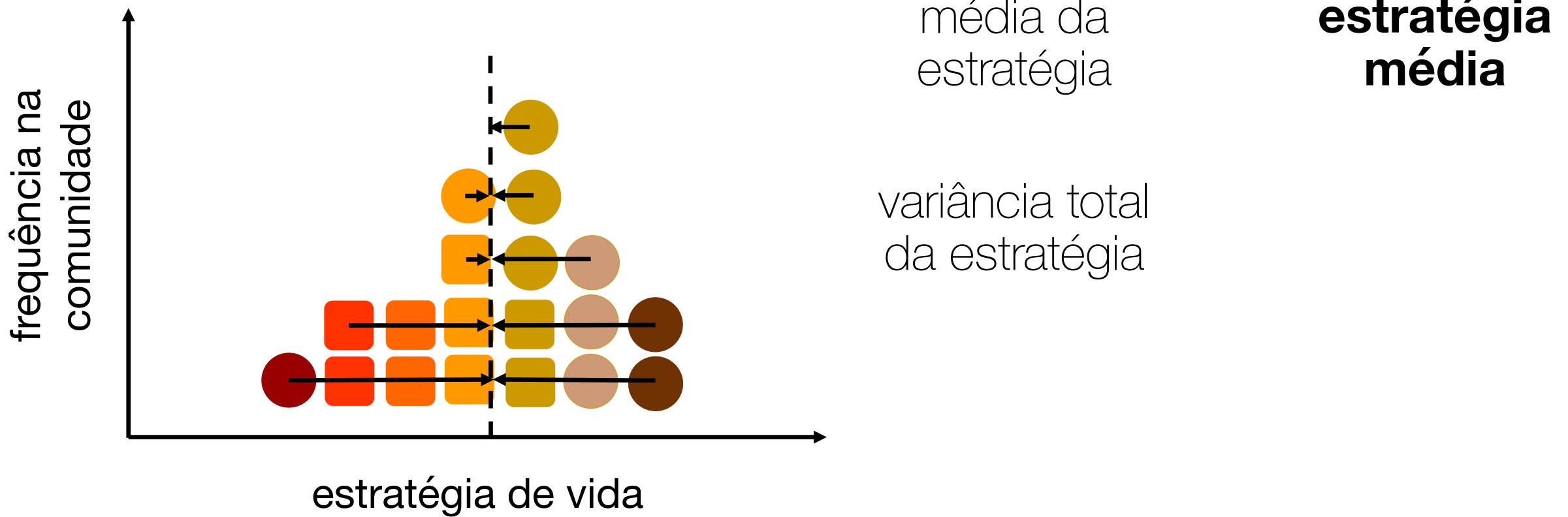
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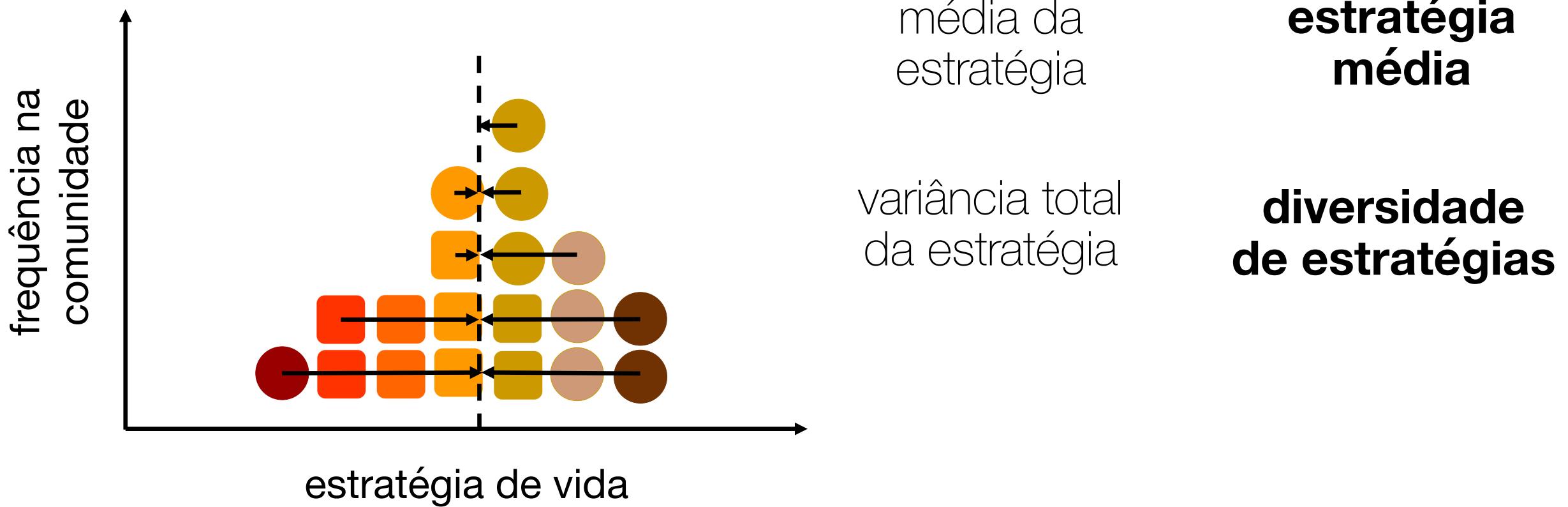
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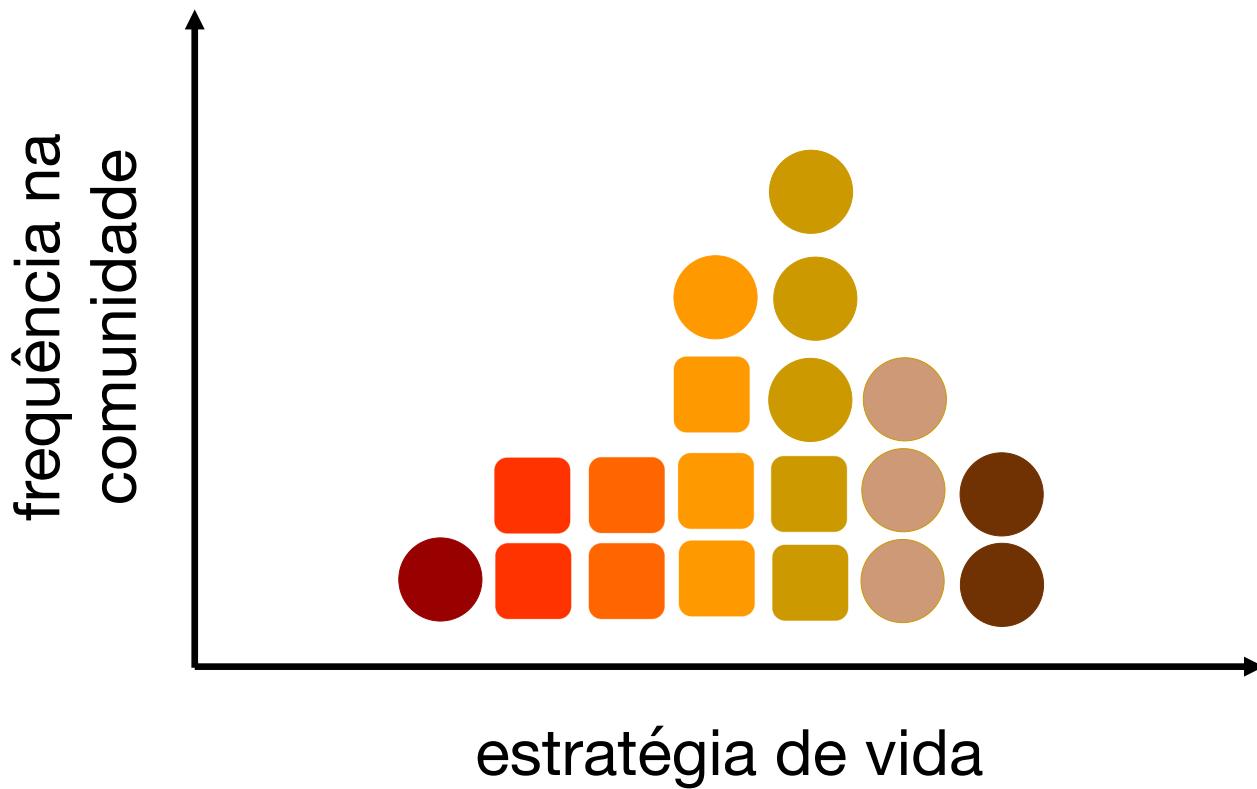
# variáveis de interesse



# variáveis de interesse



# variáveis de interesse



média da  
estratégia

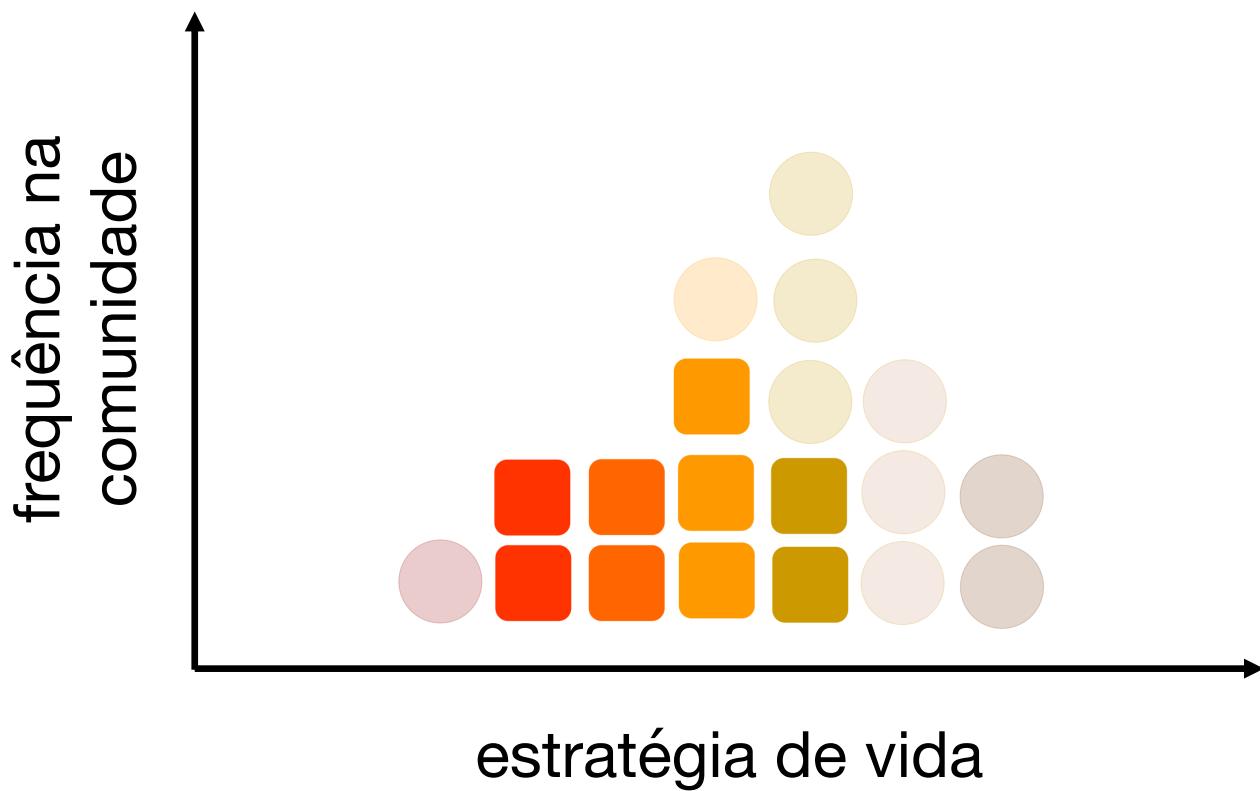
variância total  
da estratégia

**estratégia média**

**diversidade de estratégias**

estratégia de vida

# variáveis de interesse



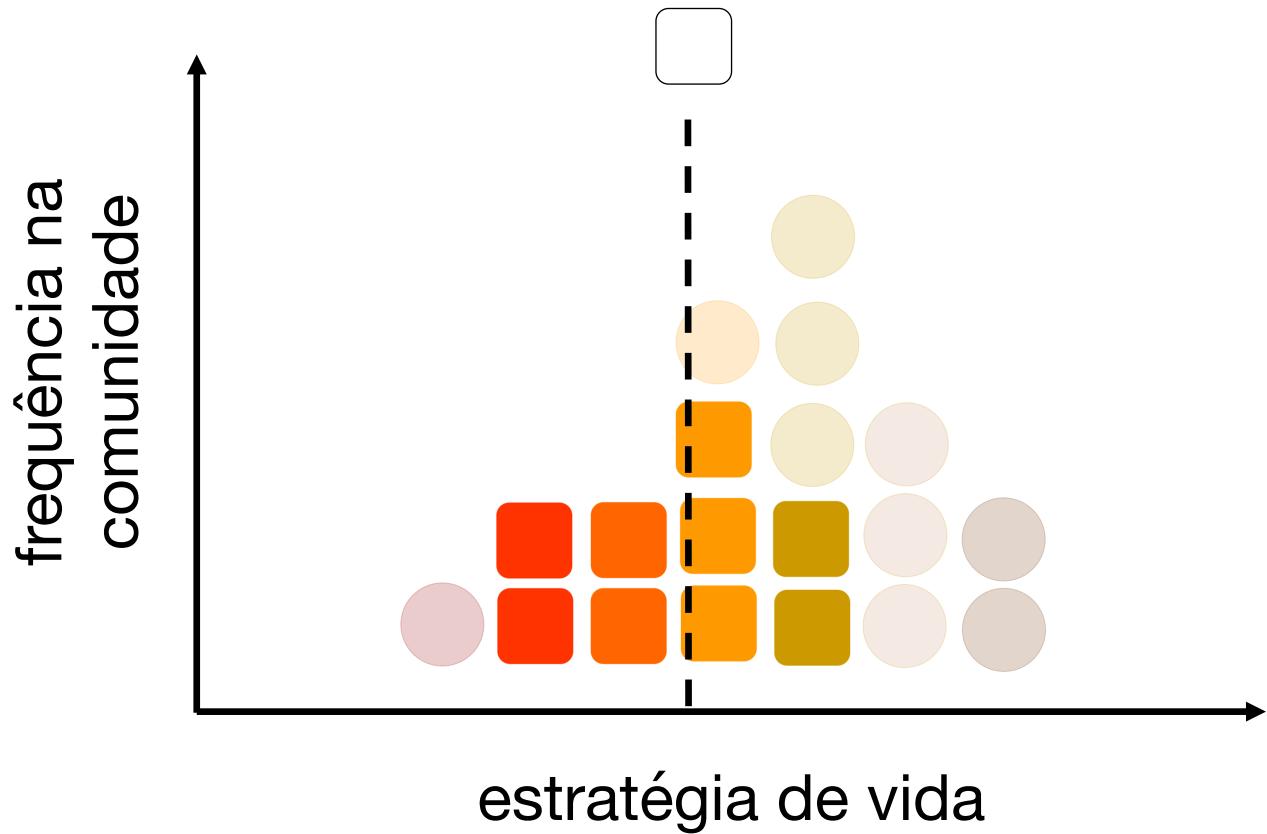
média da  
estratégia

variância total  
da estratégia

**estratégia  
média**

**diversidade  
de estratégias**

# variáveis de interesse



média da  
estratégia

variância total  
da estratégia

**estratégia  
média**

**diversidade  
de estratégias**

# variáveis de interesse

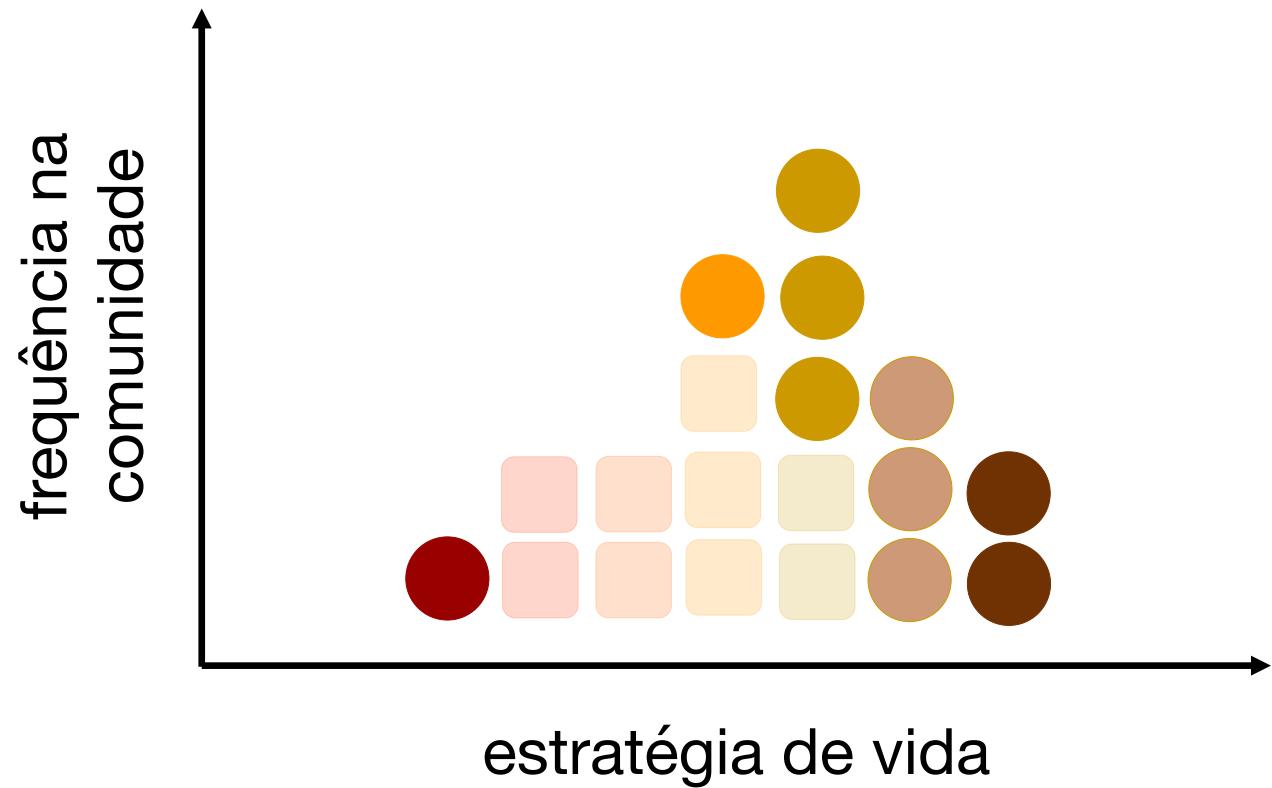


média da  
estratégia

variância total  
da estratégia

**diversidade  
de estratégias**

# variáveis de interesse



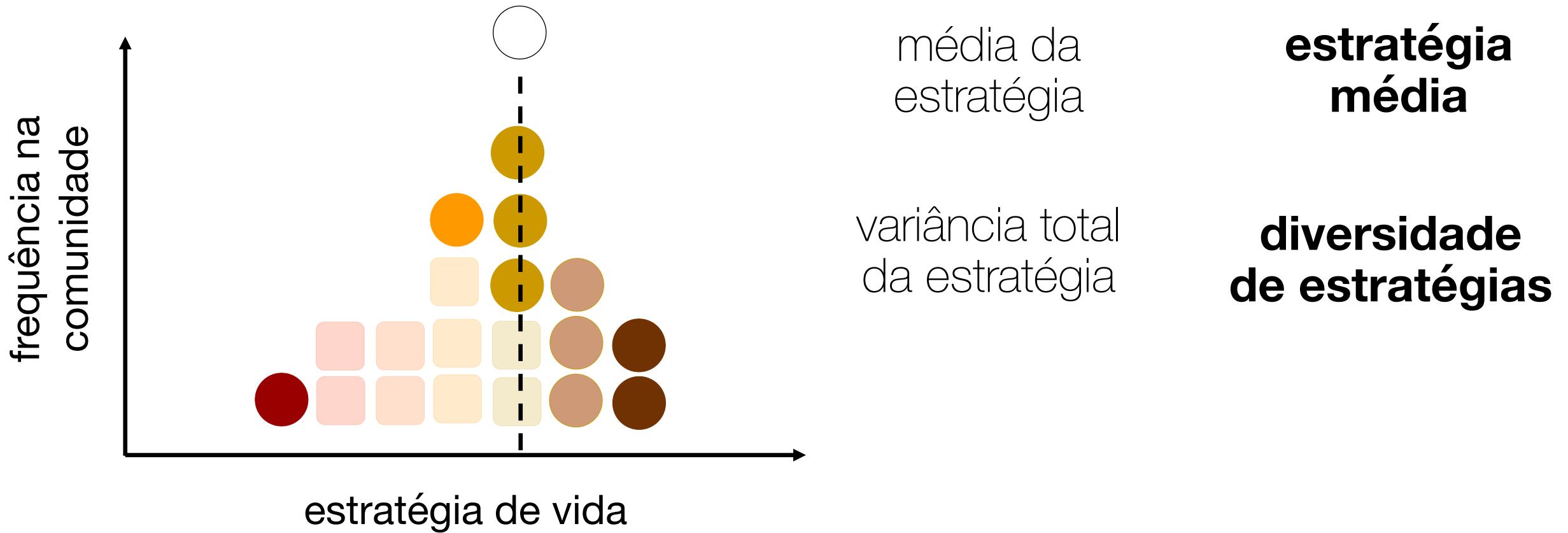
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variância total da estratégia

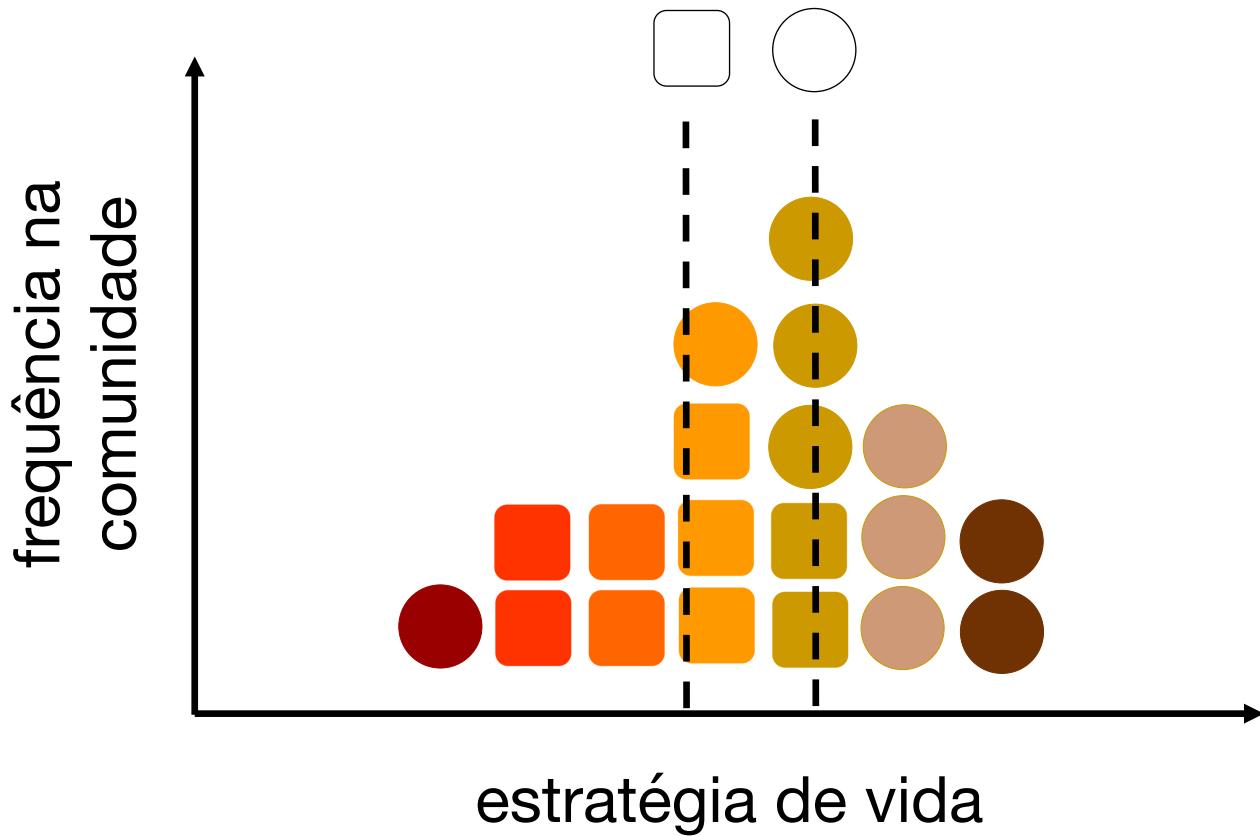
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**diversidade de estratégias**

# variáveis de interesse



# variáveis de interesse



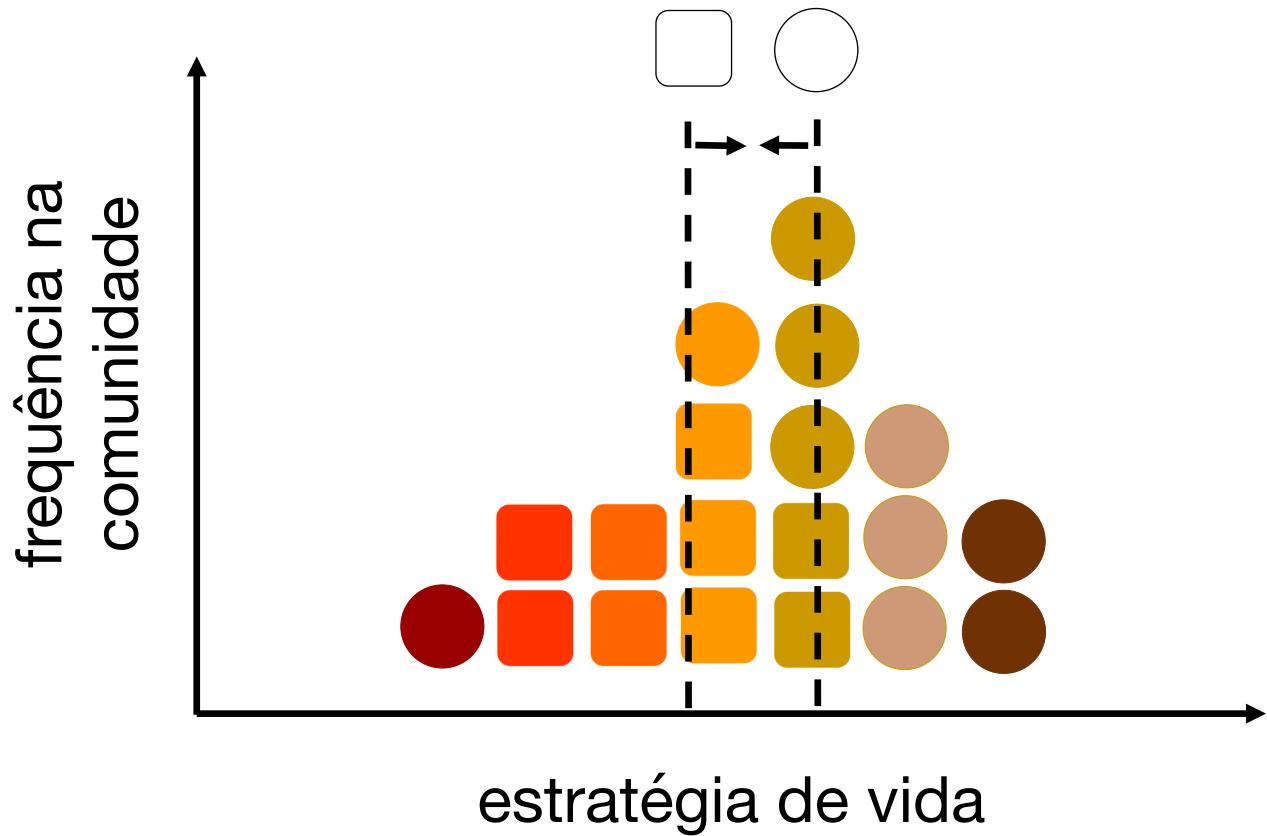
média da  
estratégia

variância total  
da estratégia

**estratégia  
média**

**diversidade  
de estratégias**

# variáveis de interesse



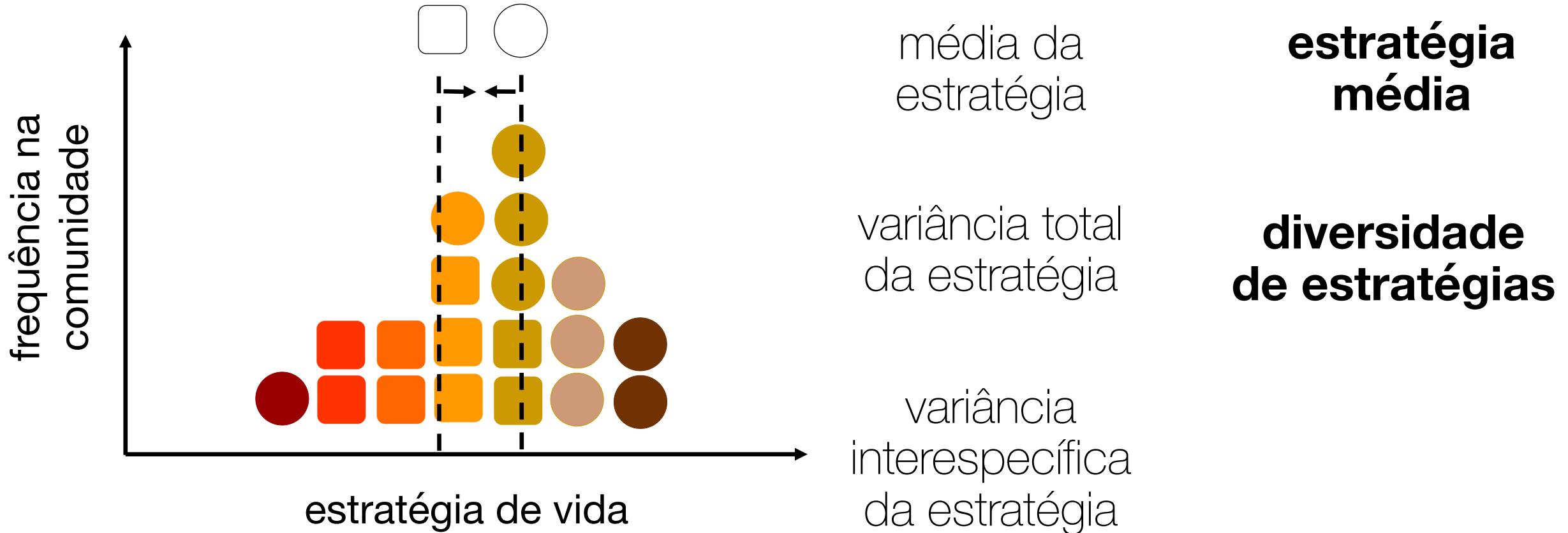
média da  
estratégia

variância total  
da estratégia

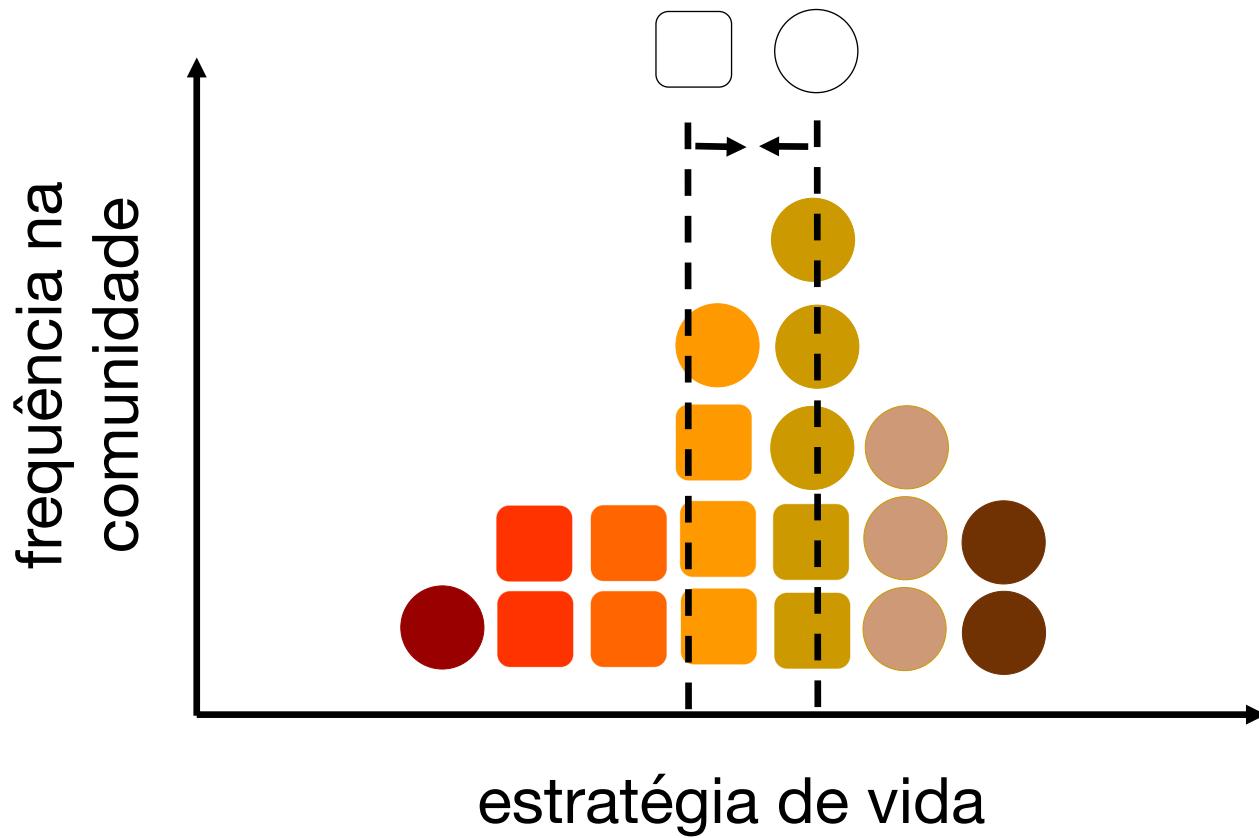
**estratégia  
média**

**diversidade  
de estratégias**

# variáveis de interesse



# variáveis de interesse



média da  
estratégia

variância total  
da estratégia

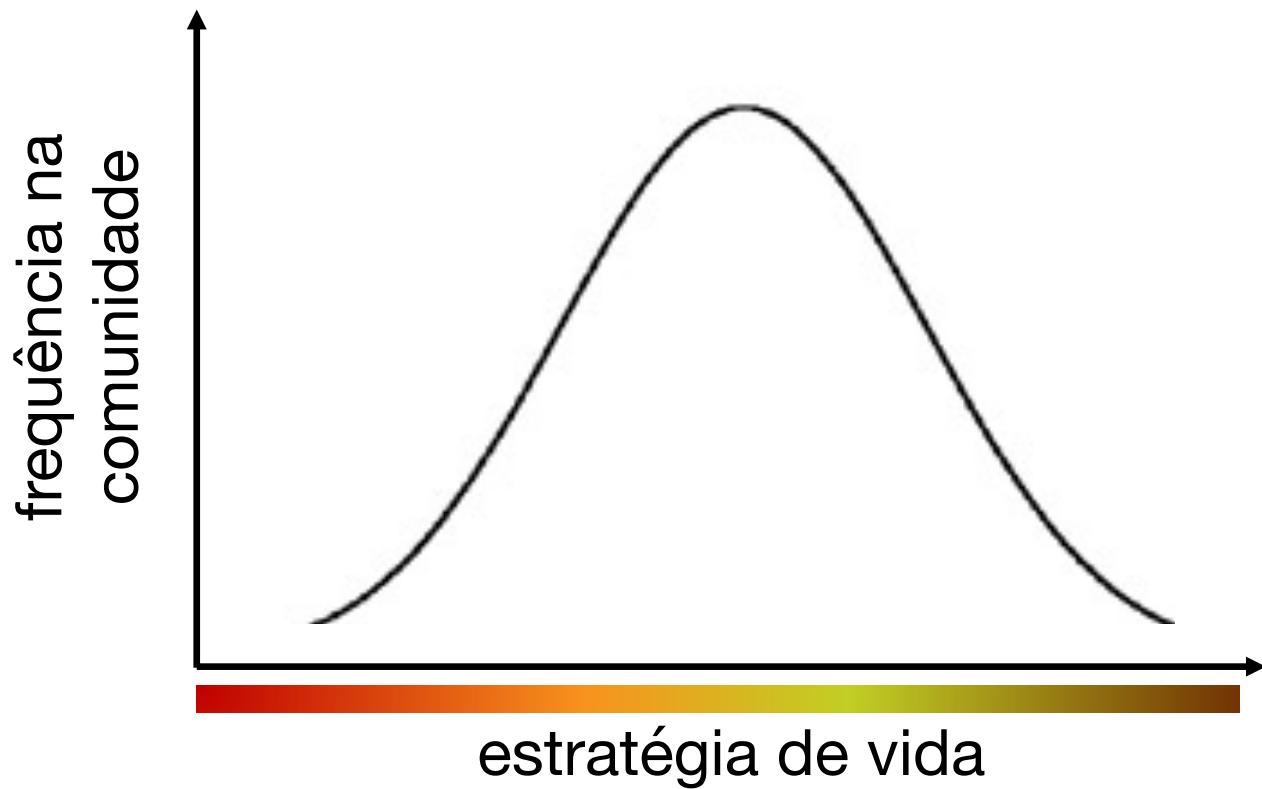
variância  
interespecífica  
da estratégia

**estratégia  
média**

**diversidade  
de estratégias**

**heterogeneidade  
interespecífica  
de estratégias**

# variáveis de interesse



média da estratégia

variância total da estratégia

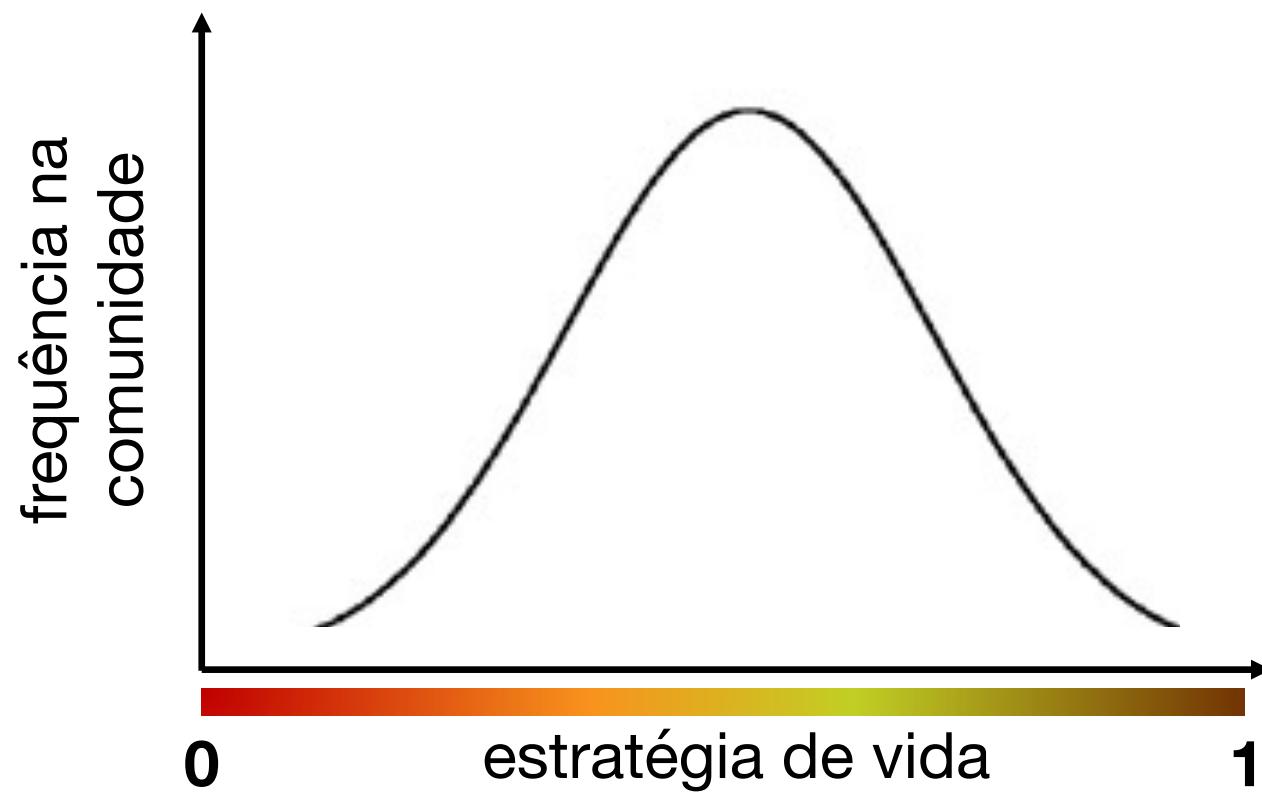
variância interespecífica da estratégia

**estratégia média**

**diversidade de estratégias**

**heterogeneidade interespecífica de estratégias**

# variáveis de interesse



# média da estratégia

# variância total da estratégia

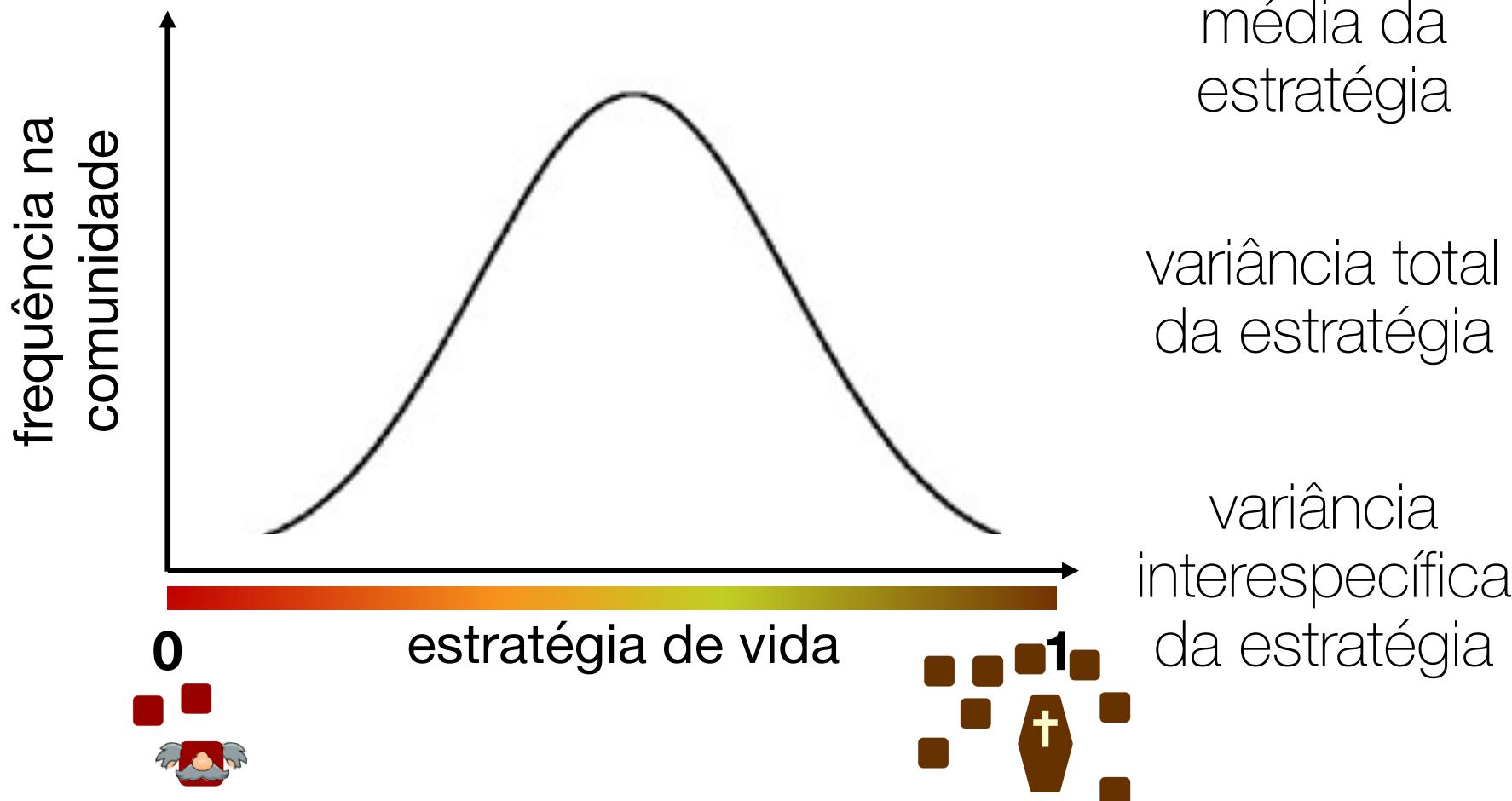
# variância interespecífica da estratégia

# **estratégia média**

# **diversidade de estratégias**

# **heterogeneidade interespecífica de estratégias**

# variáveis de interesse



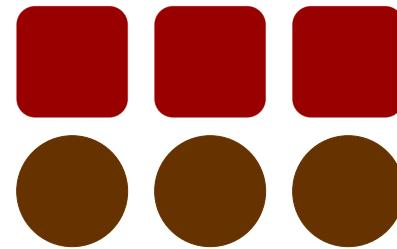
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**diversidade de estratégias**

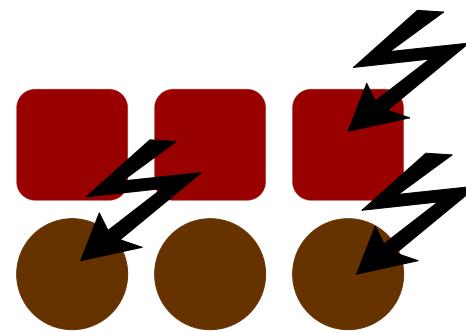
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# variável preditora

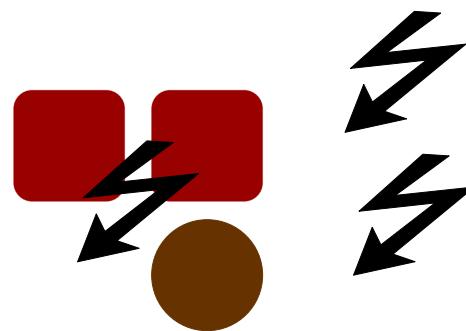
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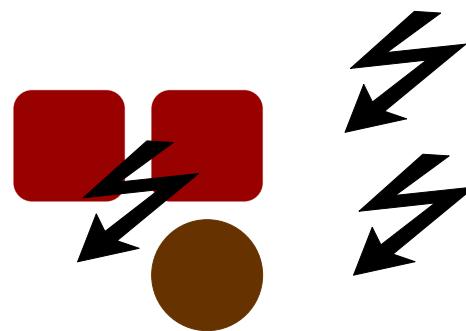
# variável preditora



# variável preditora

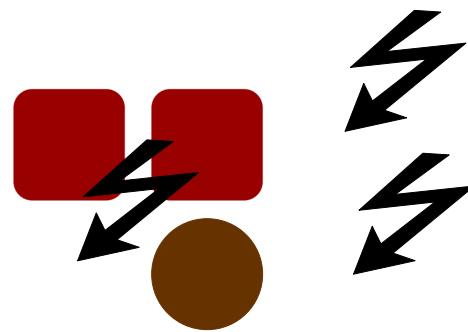


# variável preditora



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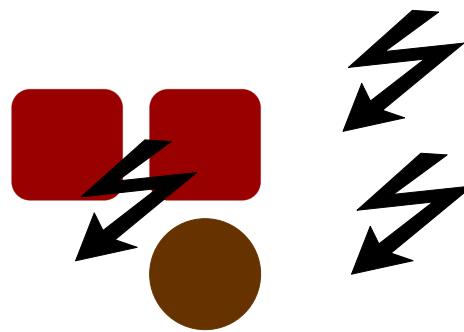
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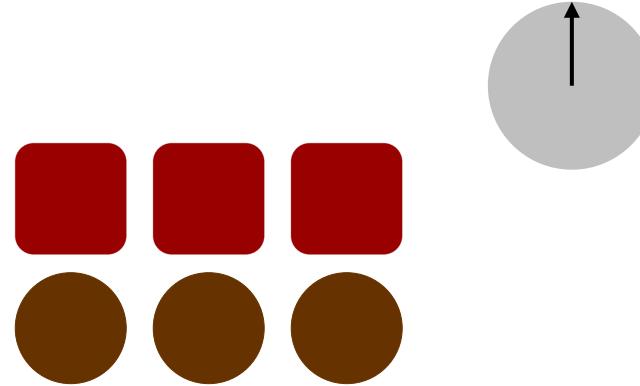
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**intensidade  
do distúrbio**

# variável preditora

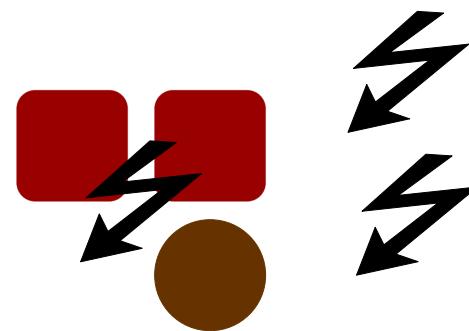


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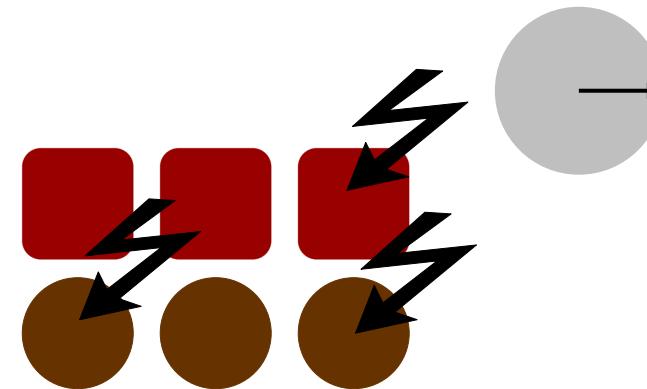


**intensidade  
do distúrbio**

# variável preditora

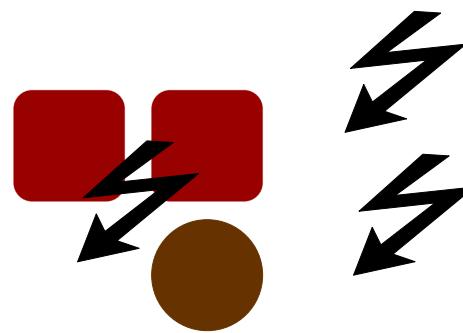


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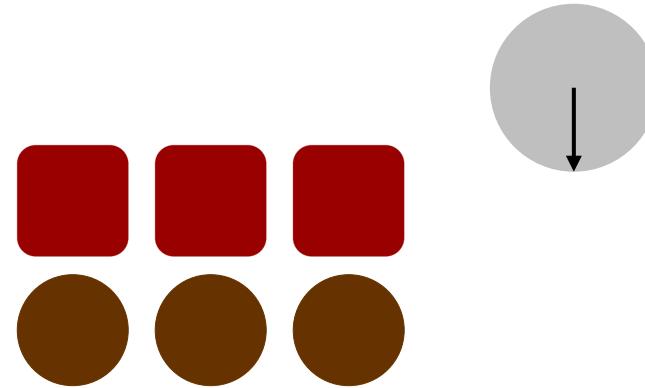


**intensidade  
do distúrbio**

# variável preditora

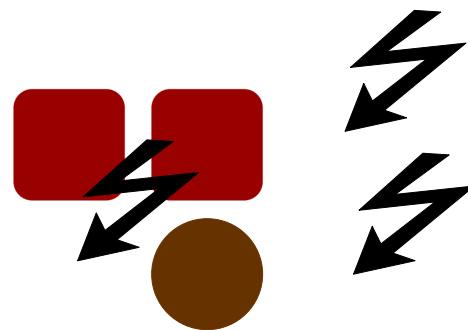


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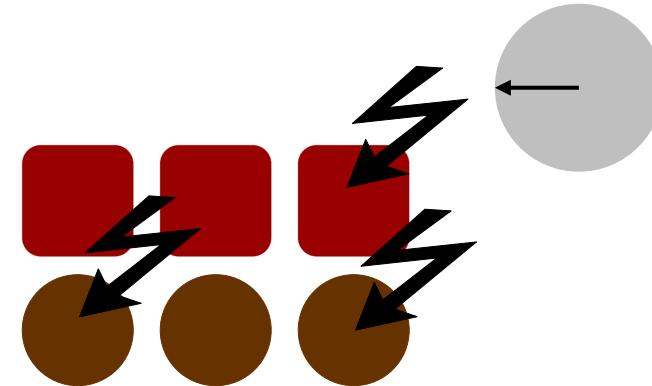


**intensidade  
do distúrbio**

# variável preditora

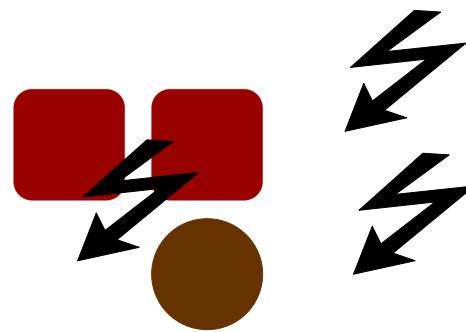


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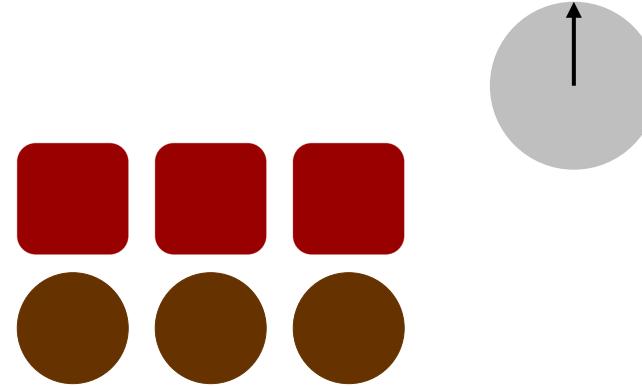


**intensidade  
do distúrbio**

# variável preditora

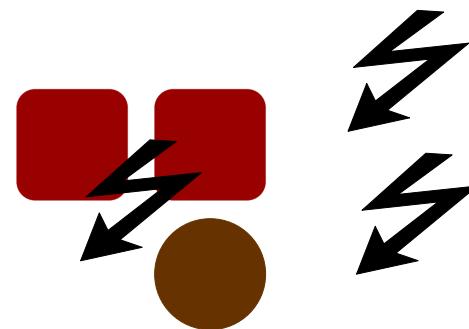


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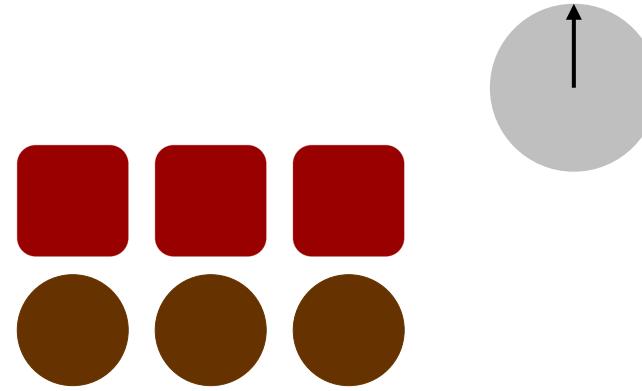
**intensidade  
do distúrbio**

# variável preditora



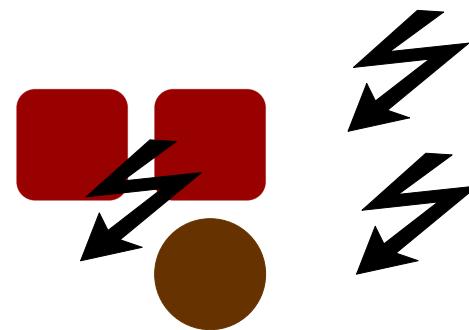
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**intensidade  
do distúrbio**



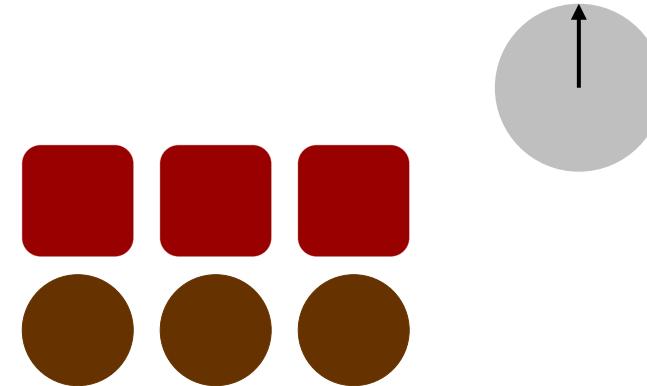
2 eventos

# variável preditora



50%

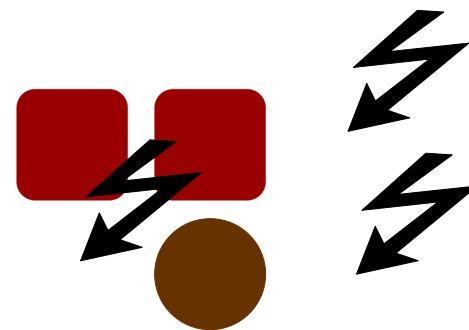
**intensidade  
do distúrbio**



2 eventos

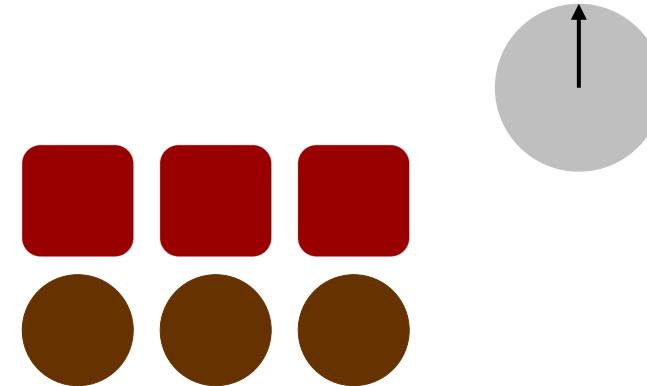
**número de  
eventos de  
distúrbio**

# variável preditora



50%

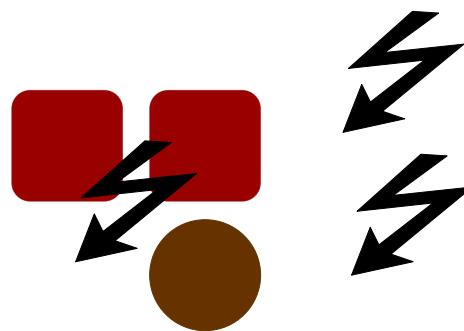
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do distúrbio**



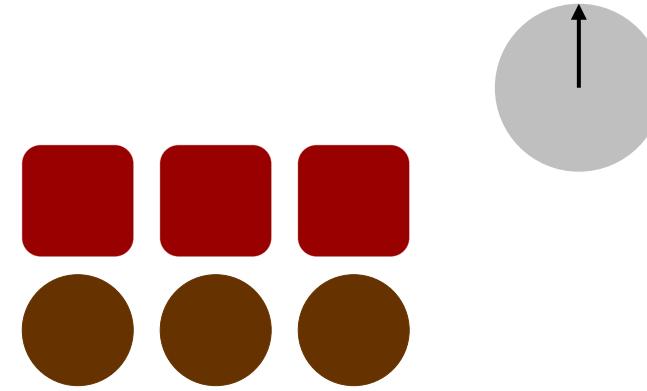
2 eventos

**número de  
eventos de  
distúrbio**

# variável preditora



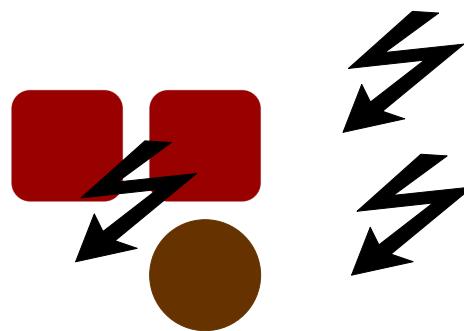
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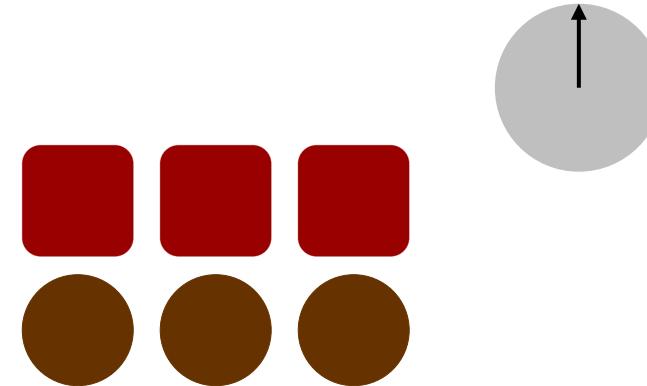
2 eventos

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# variável preditora



50%



2 eventos

**índice de  
distúrbio**



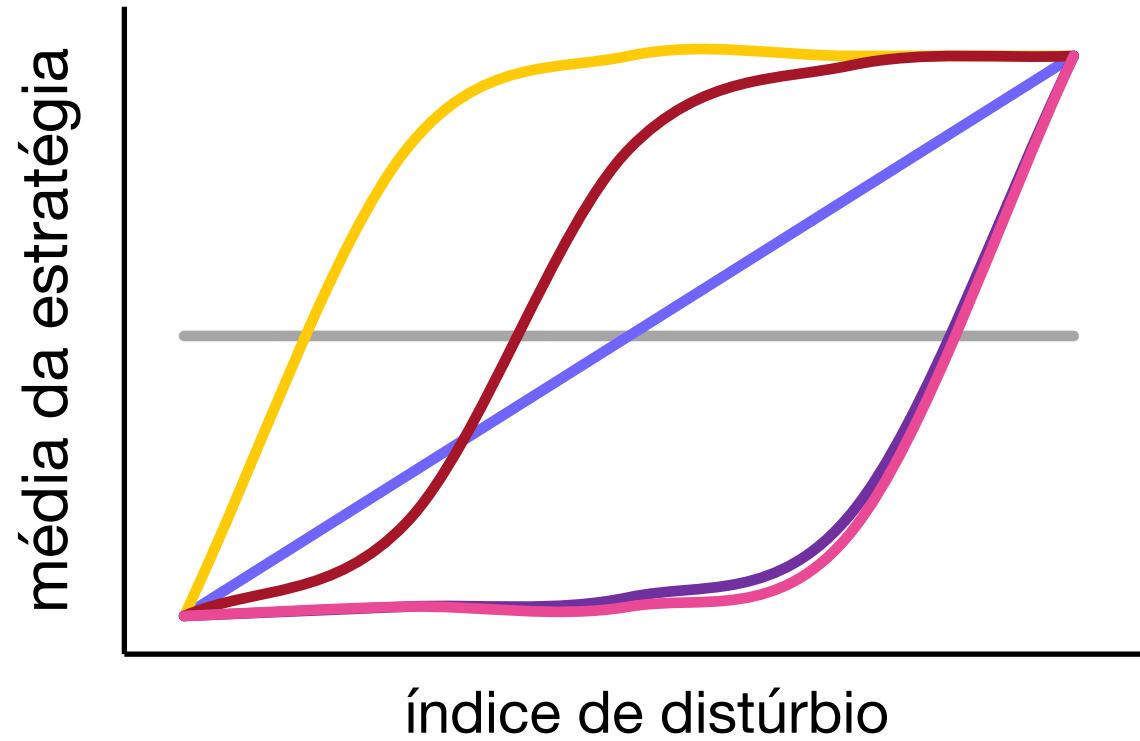
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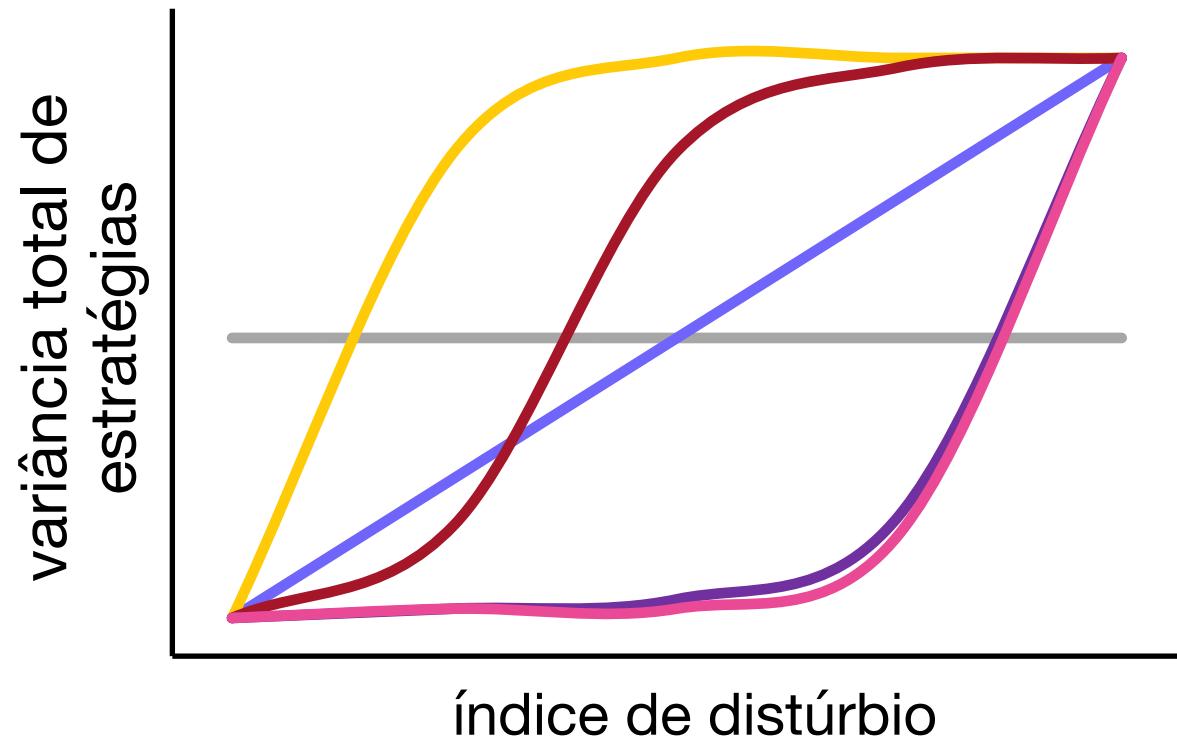
# modelos

estratégia média ~ distúrbio

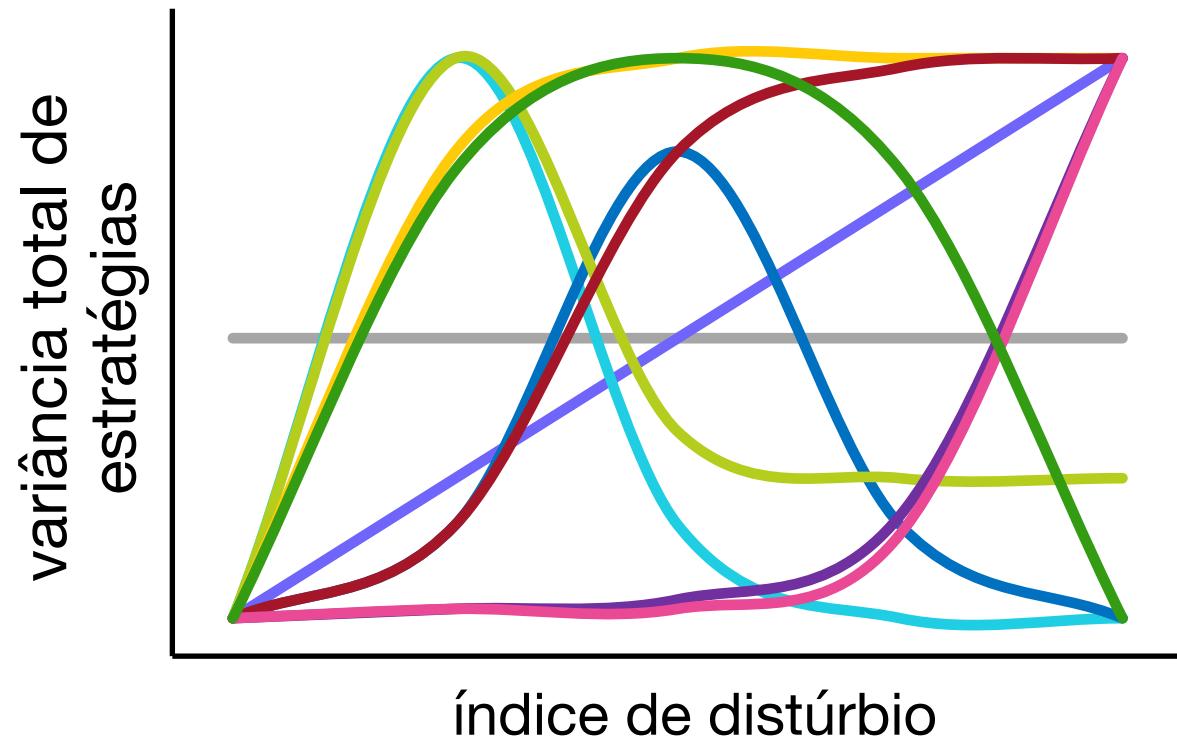
estratégia média ~ distúrbio



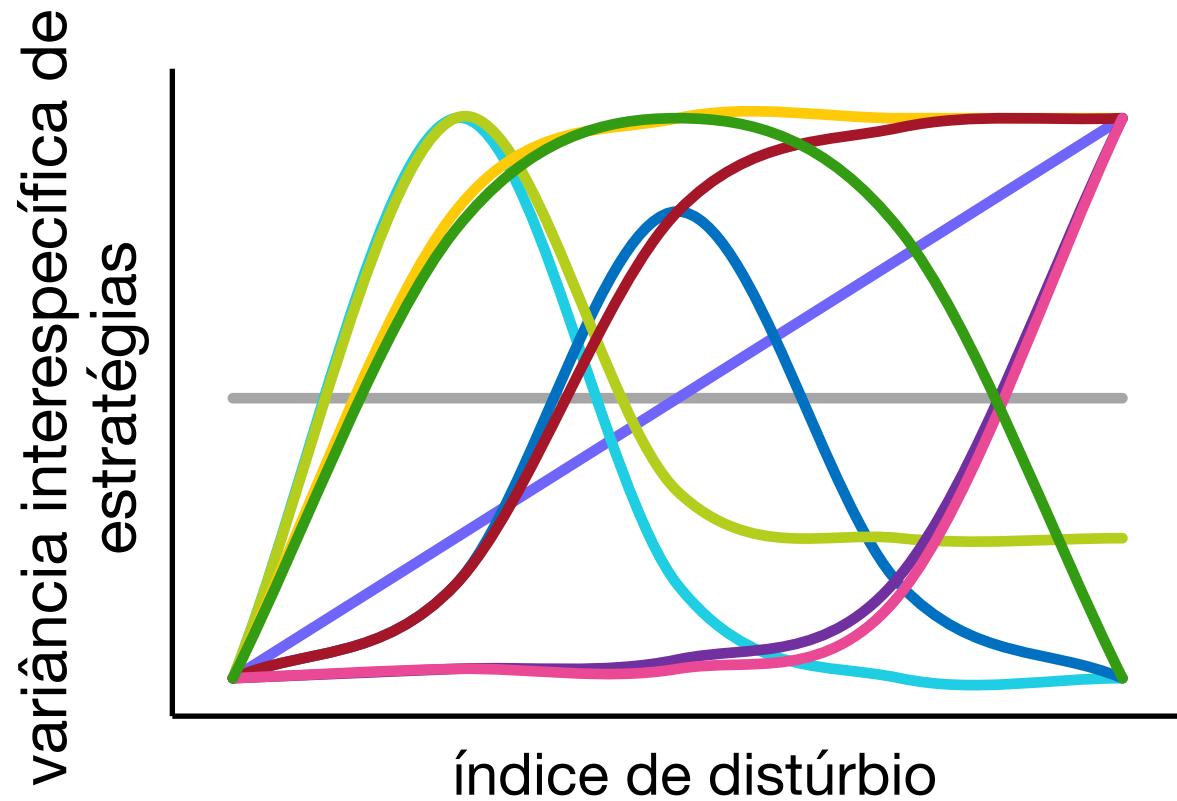
diversidade de estratégias ~ distúrbio



diversidade de estratégias ~ distúrbio



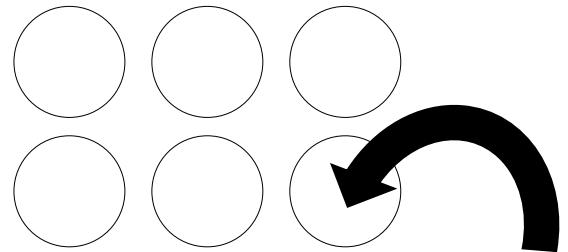
# heterogeneidade interespecífica de ~ estratéгias distúrbio





# seleção de modelos

## evolutivo

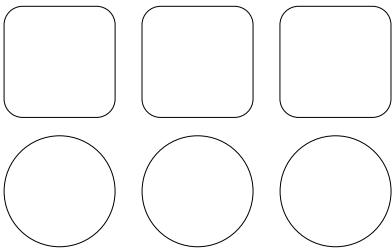


estratégia média

diversidade  
de estratégias

-

## ecológico

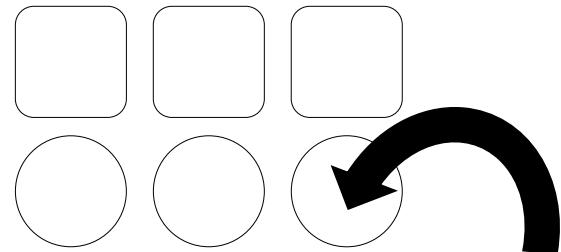


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

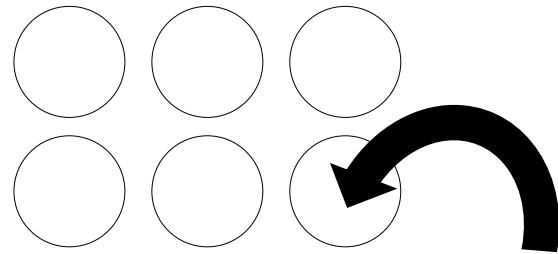


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## evolutivo

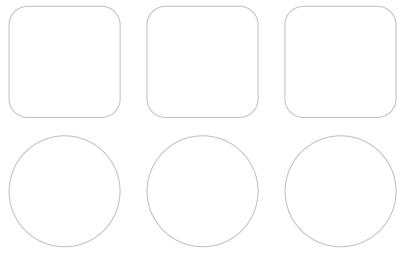


### estratégia média

diversidade  
de estratégias

-

## ecológico

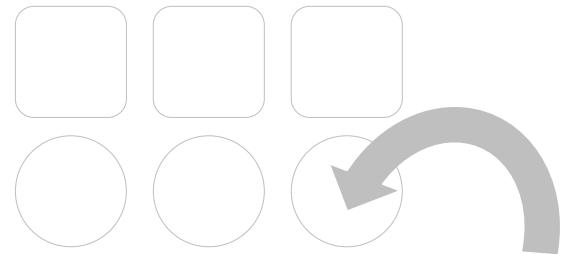


### estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

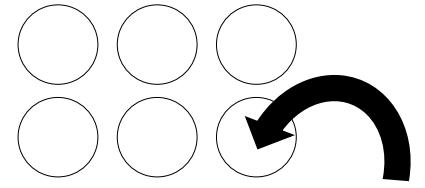
## eco-evolutivo



### estratégia média

diversidade  
de estratégias

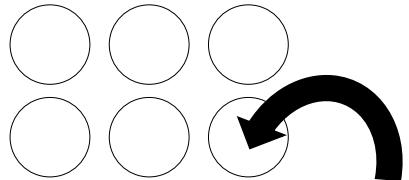
heterogeneidade  
interespecífica de  
estratégias



**evolutivo**

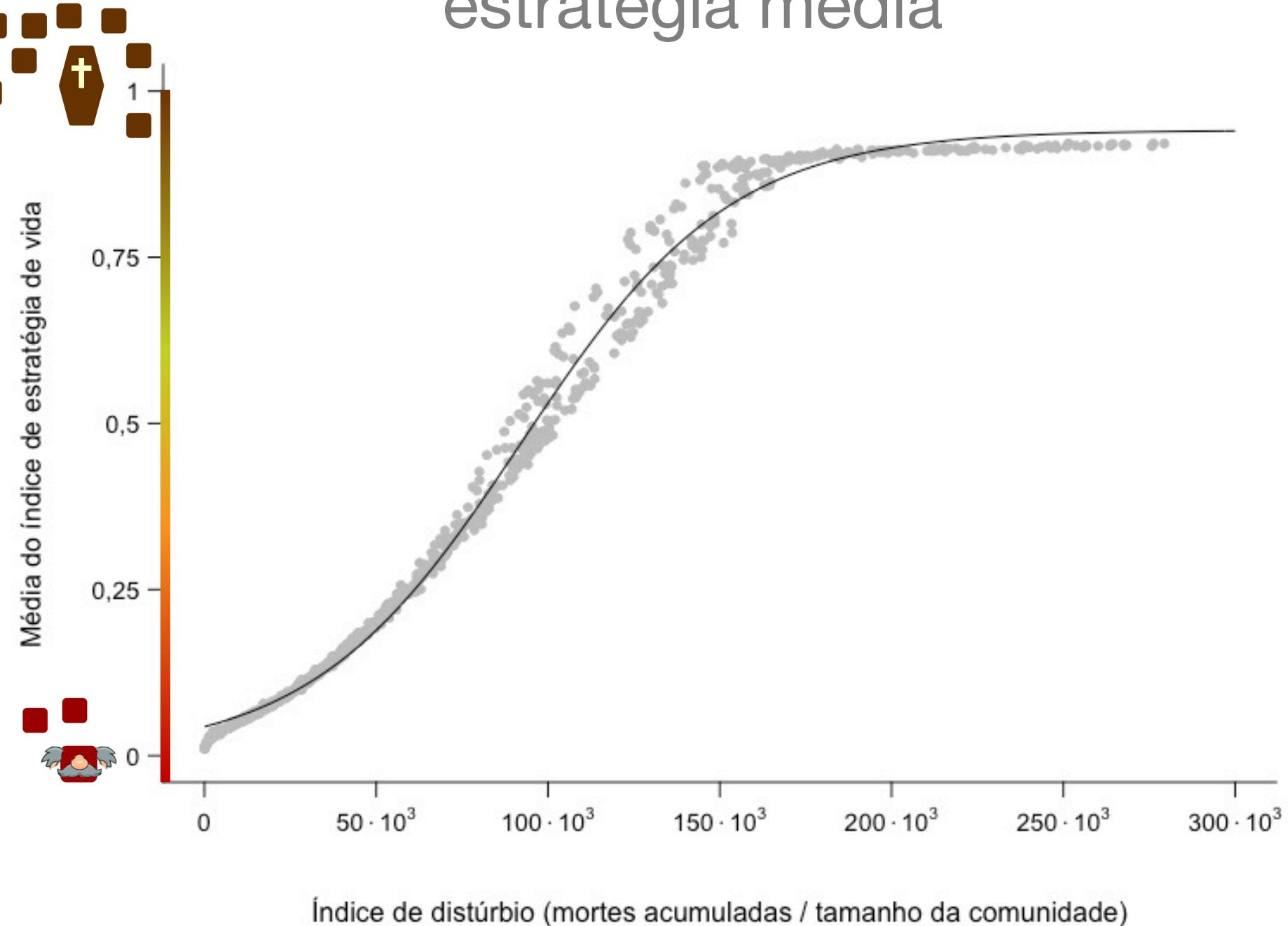


# estratégia média



**evolutivo**

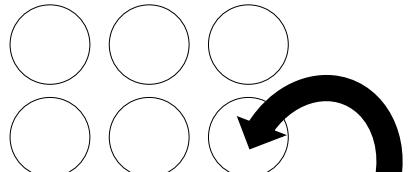
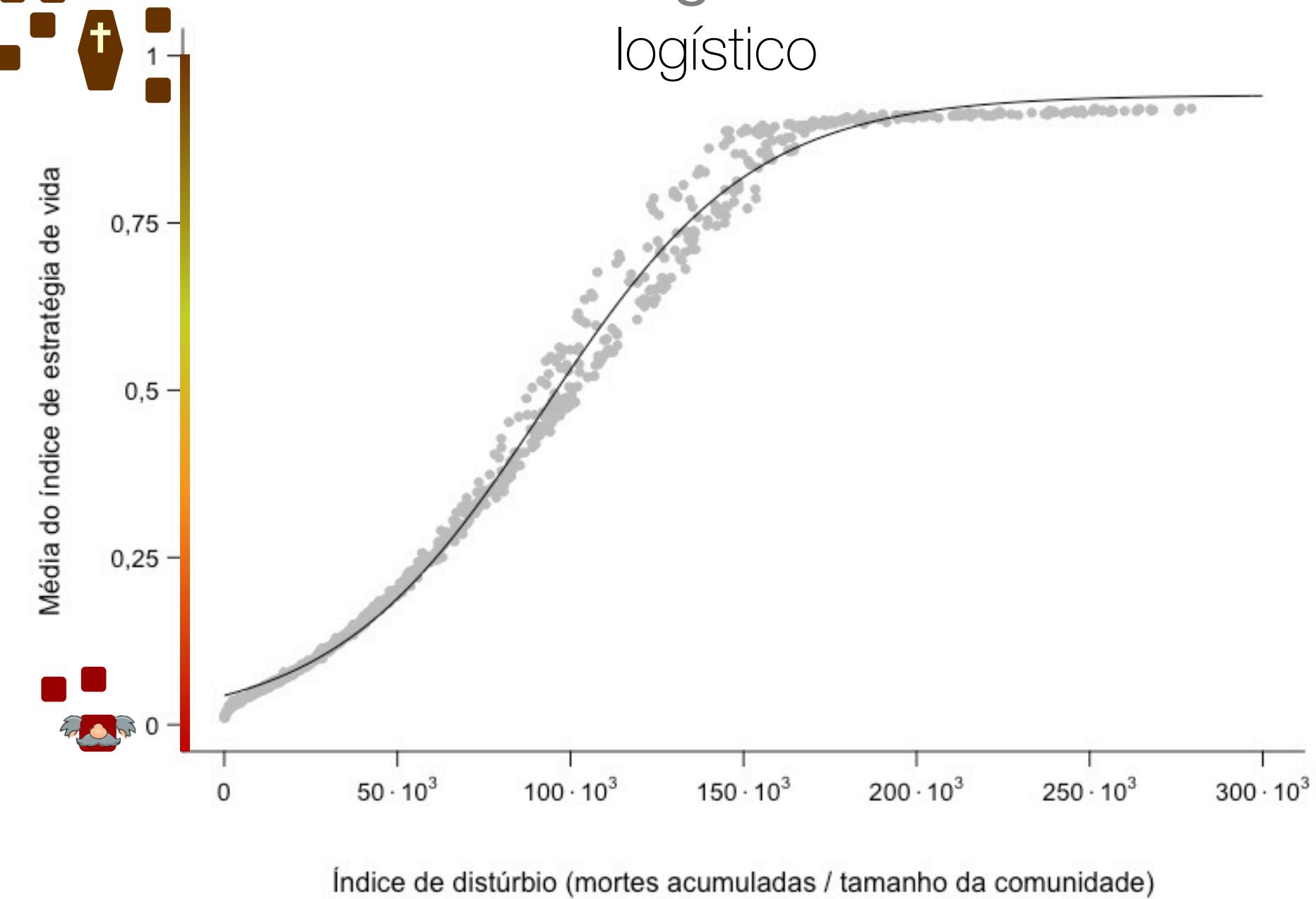
# estratégia média



evolutivo

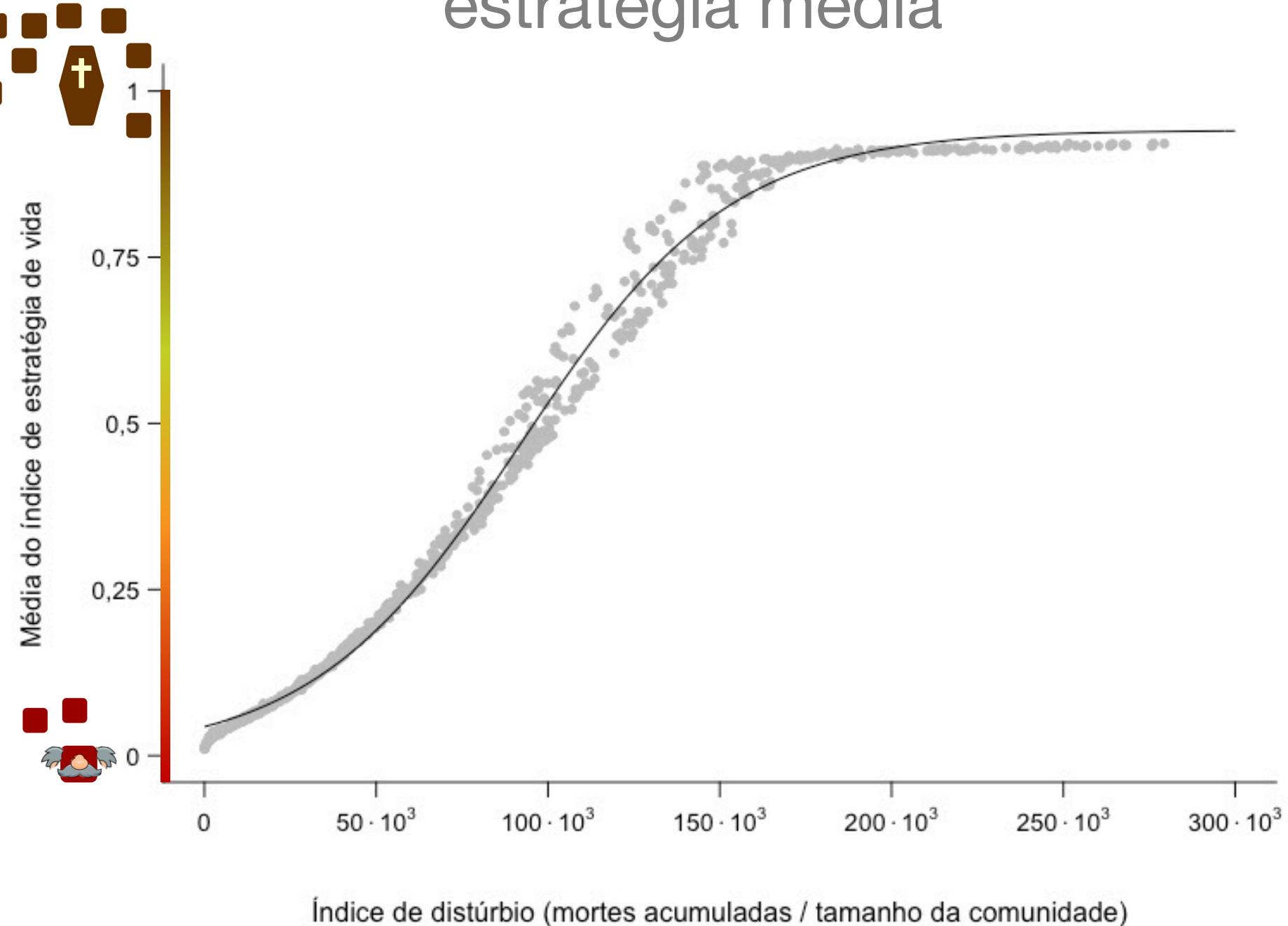
# estratégia média

logístico



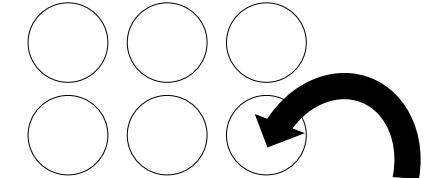
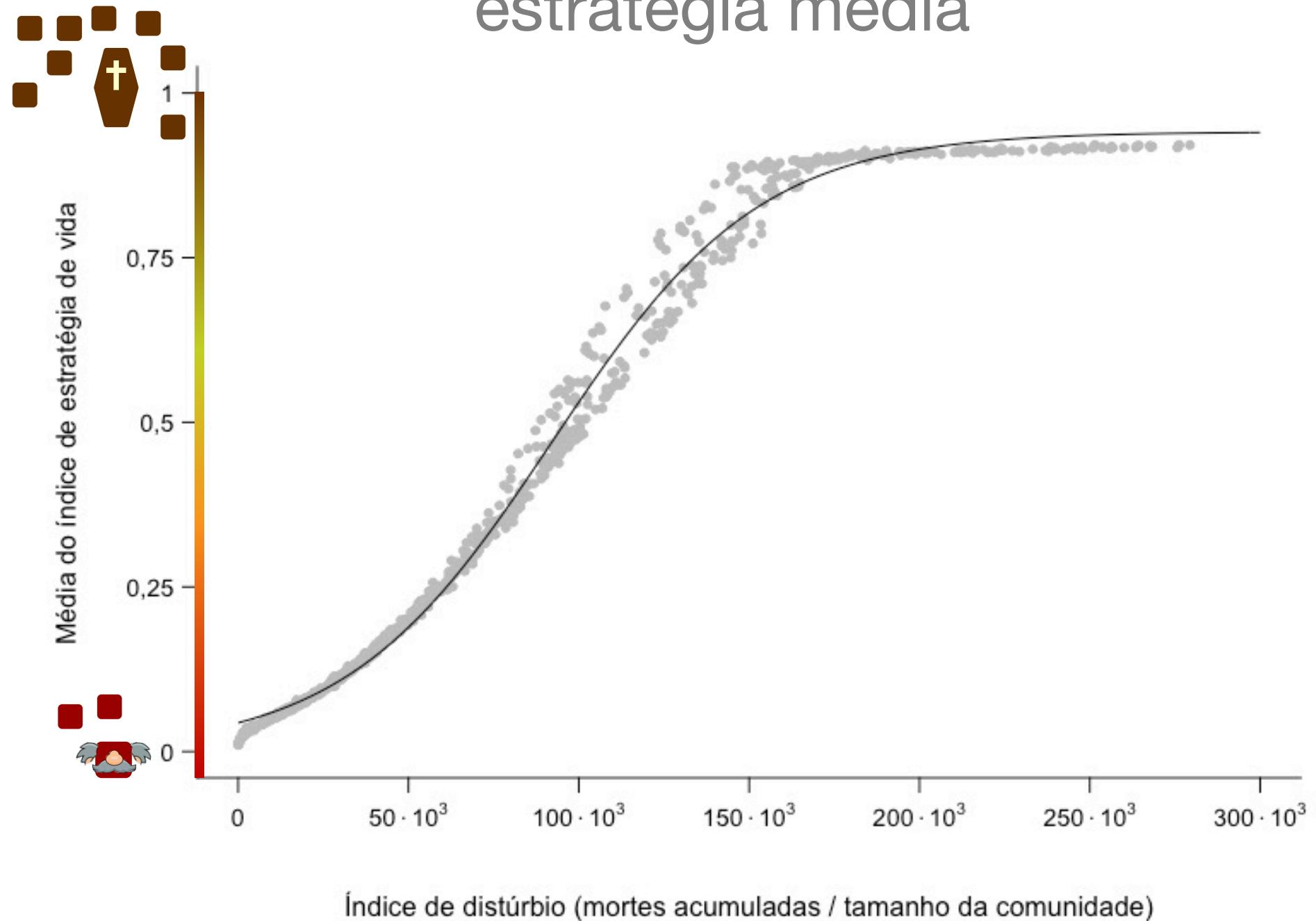
**evolutivo**

# estratégia média



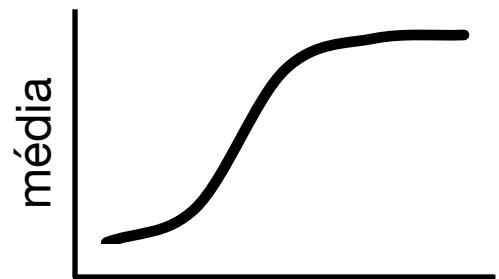
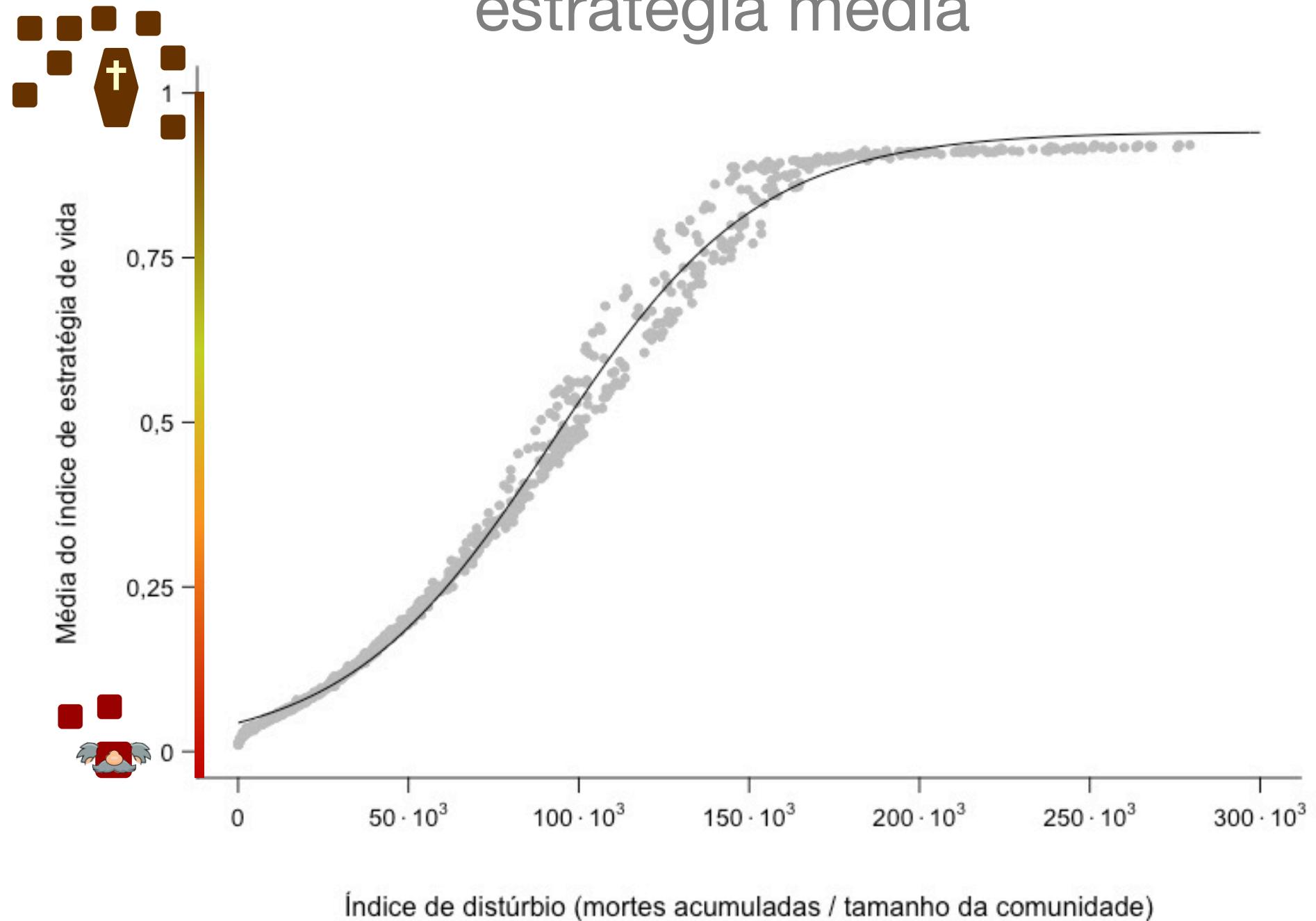
evolutivo

# estratégia média



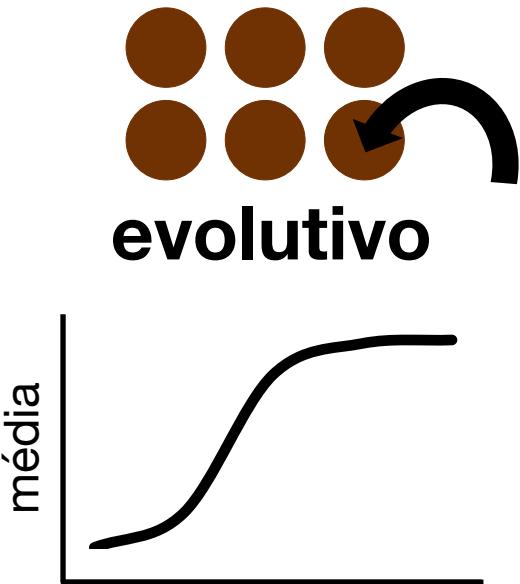
**evolutivo**

# estratégia média



# seleção natural

- variação herdável
- componente da aptidão



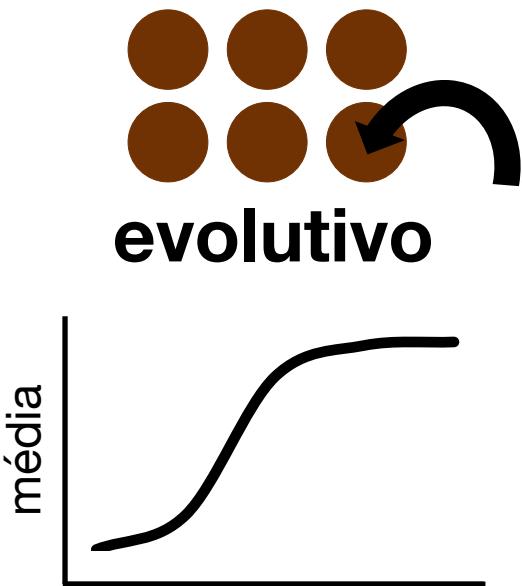
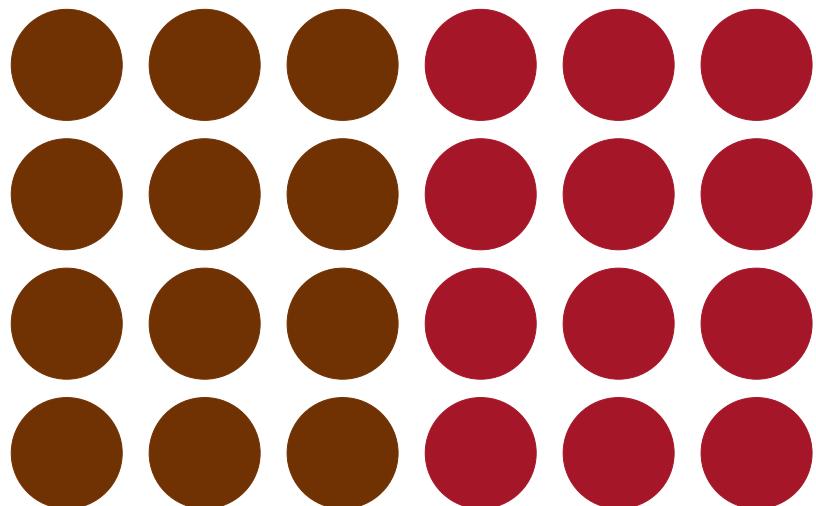
# seleção natural

- variação herdável
- componente da aptidão

banco

x 96

x 24



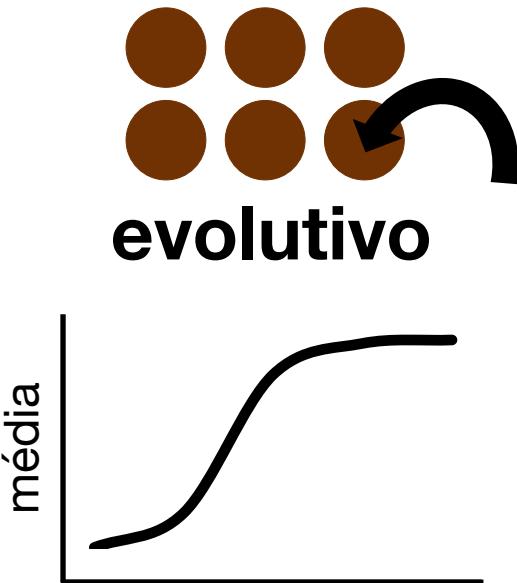
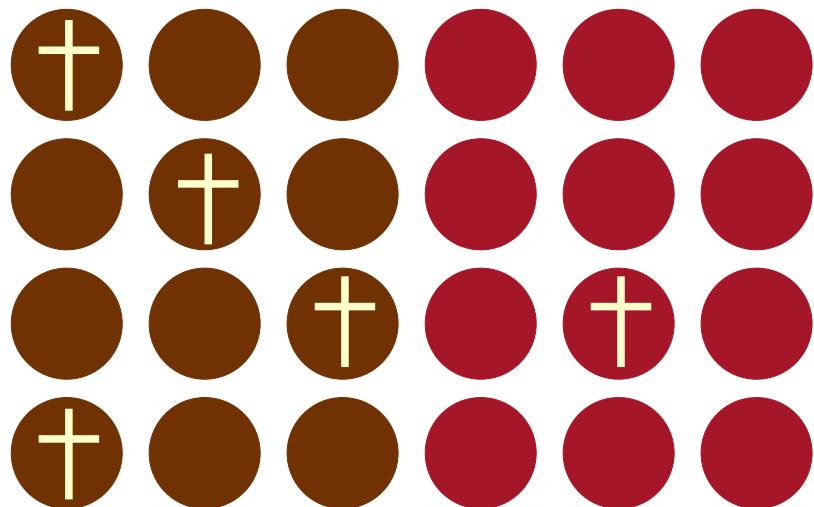
# seleção natural

- variação herdável
- componente da aptidão

banco

x 96

x 24



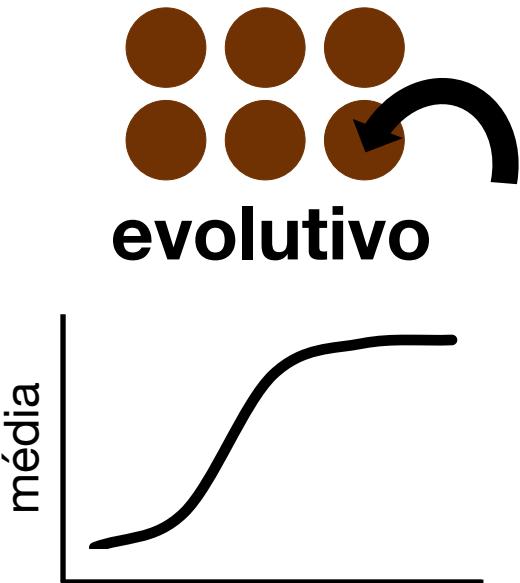
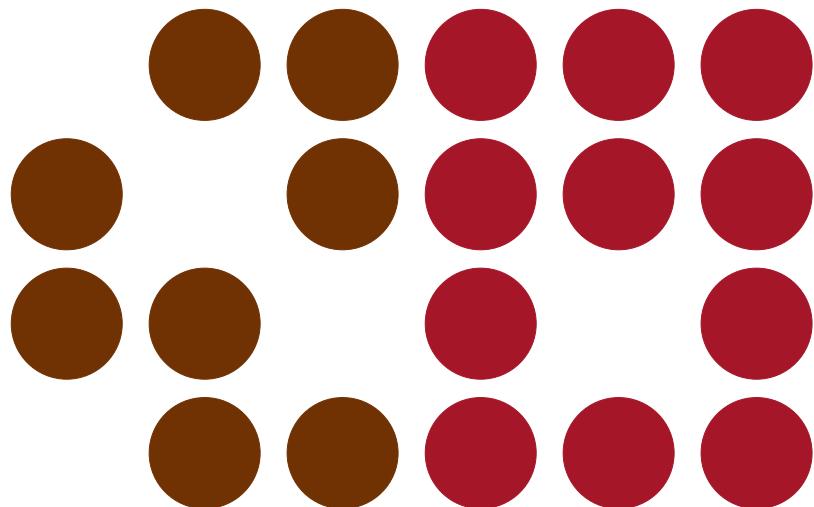
# seleção natural

- variação herdável
- componente da aptidão

banco

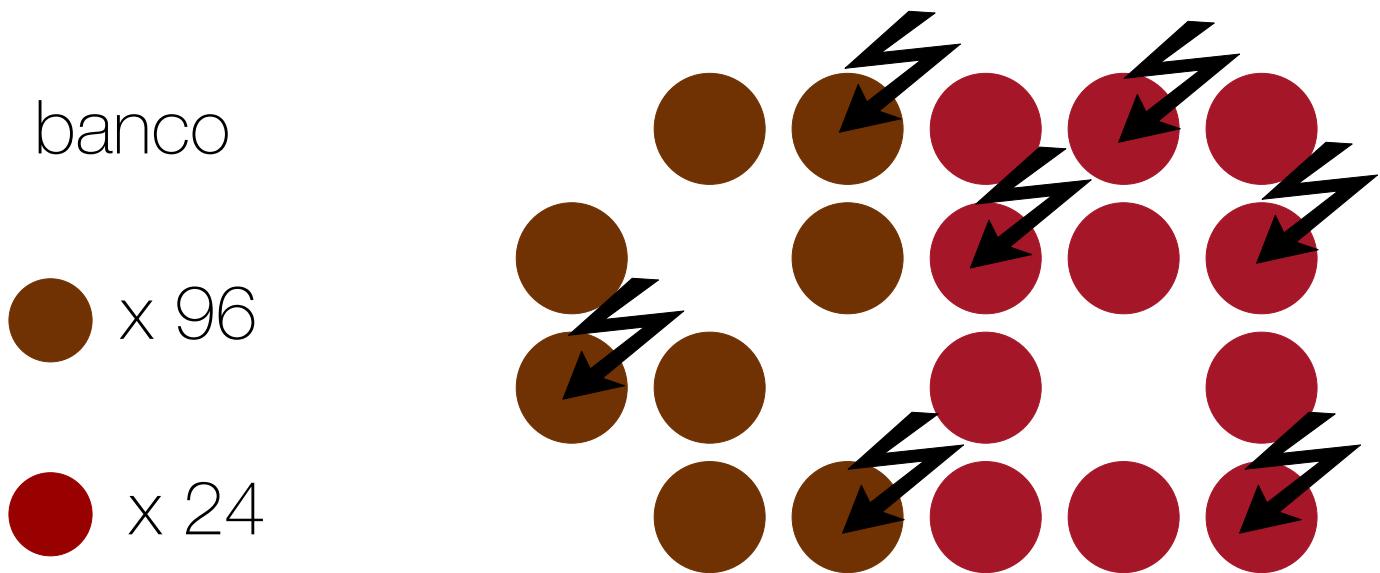
x 96

x 24



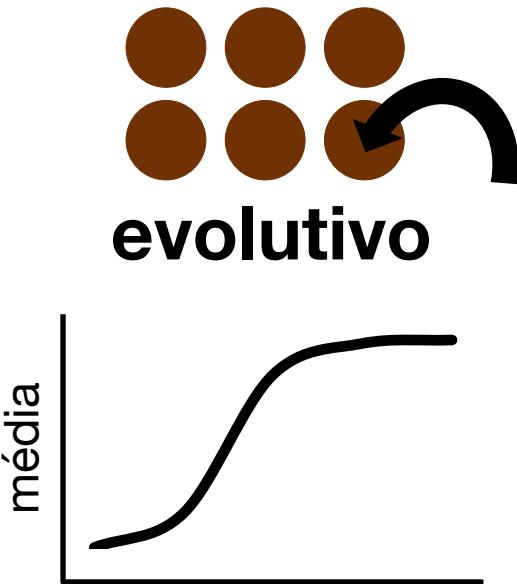
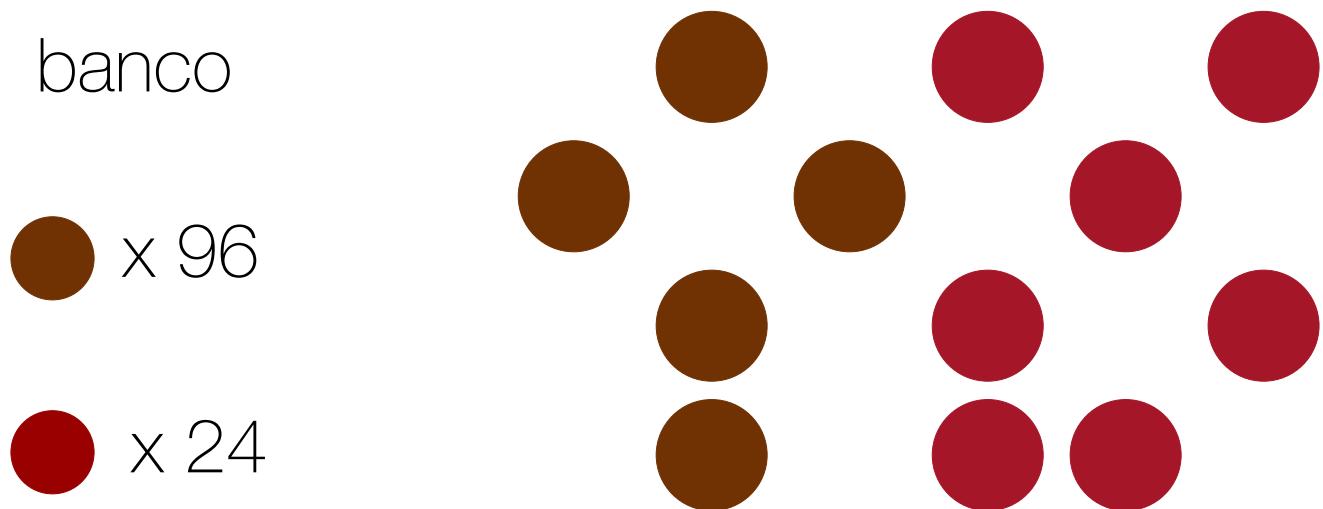
# seleção natural

- variação herdável
- componente da aptidão

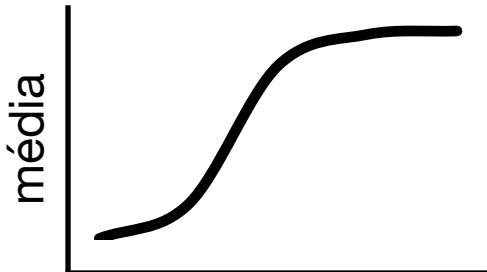


# seleção natural

- variação herdável
- componente da aptidão

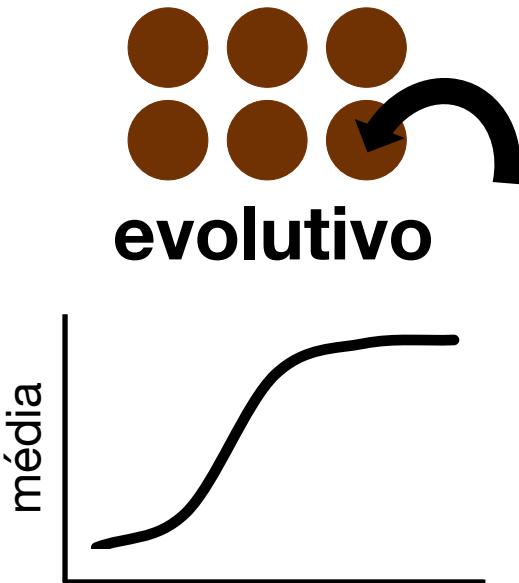
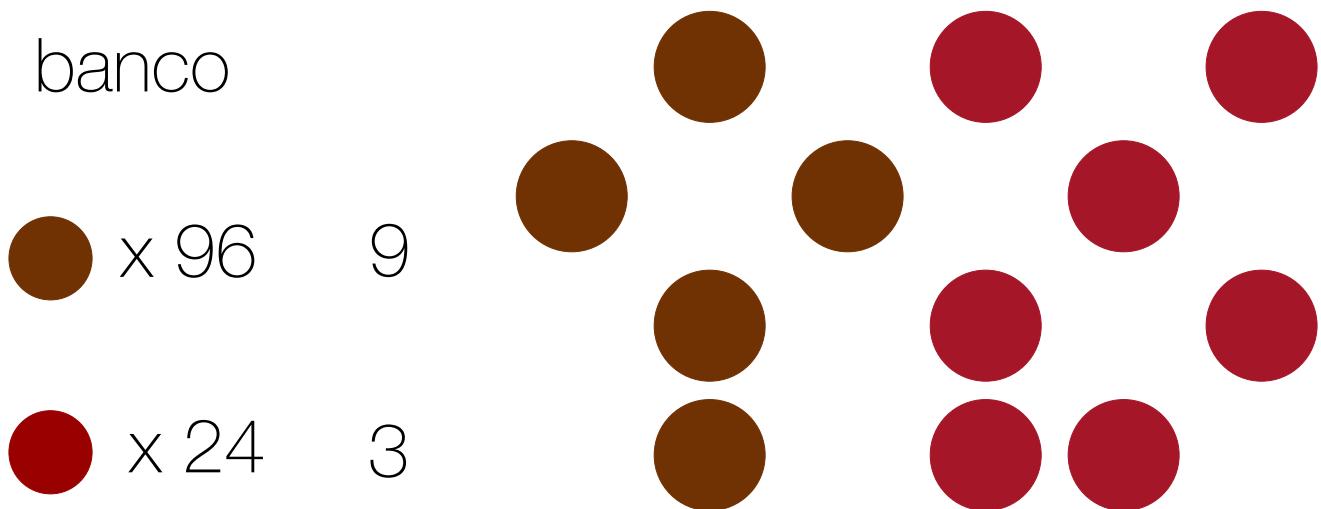


evolutivo



# seleção natural

- variação herdável
- componente da aptidão



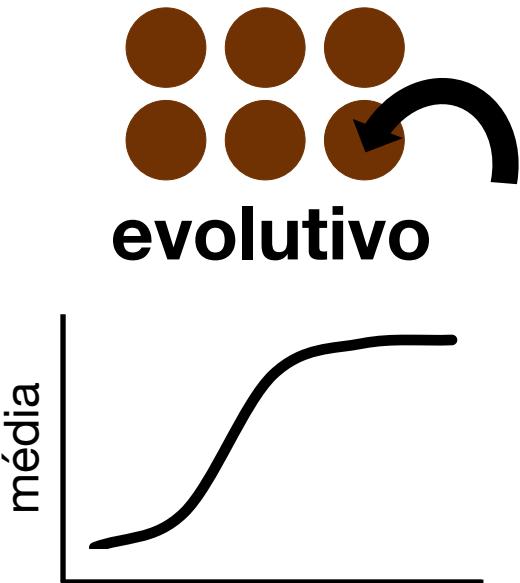
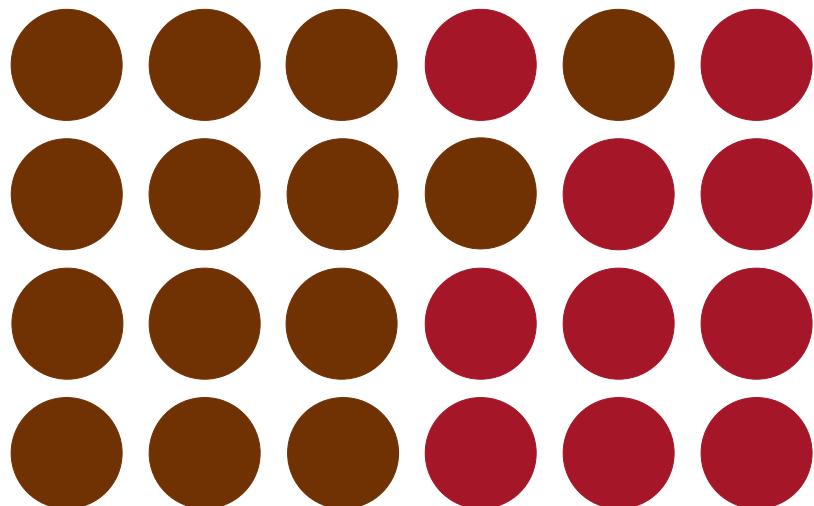
# seleção natural

- variação herdável
- componente da aptidão

banco

x 112

x 20



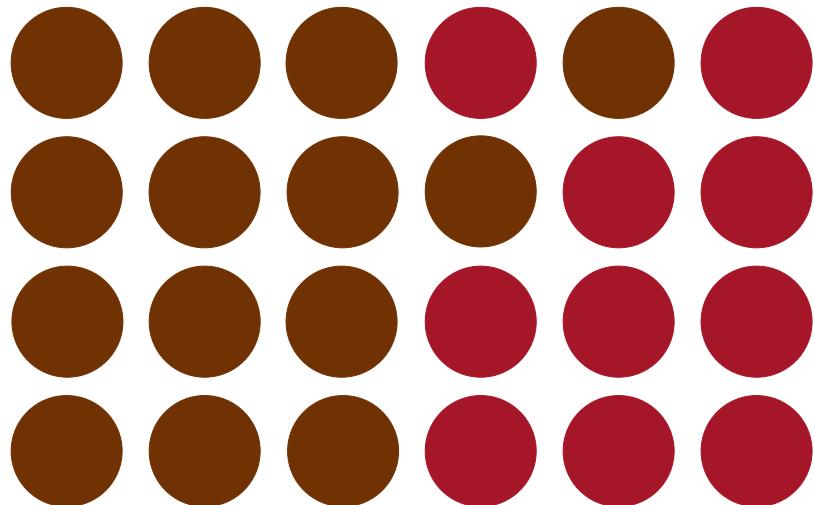
# seleção natural

- variação herdável
- componente da aptidão

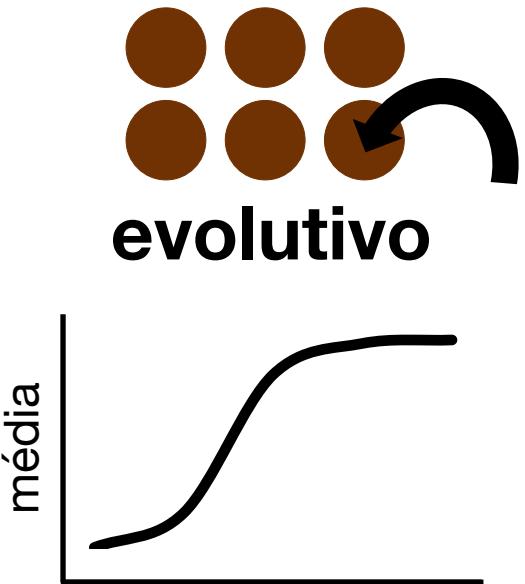
banco

x 112

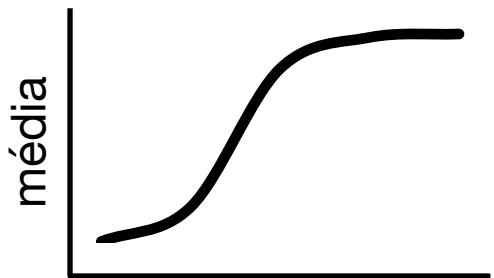
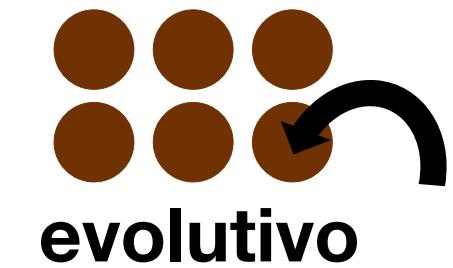
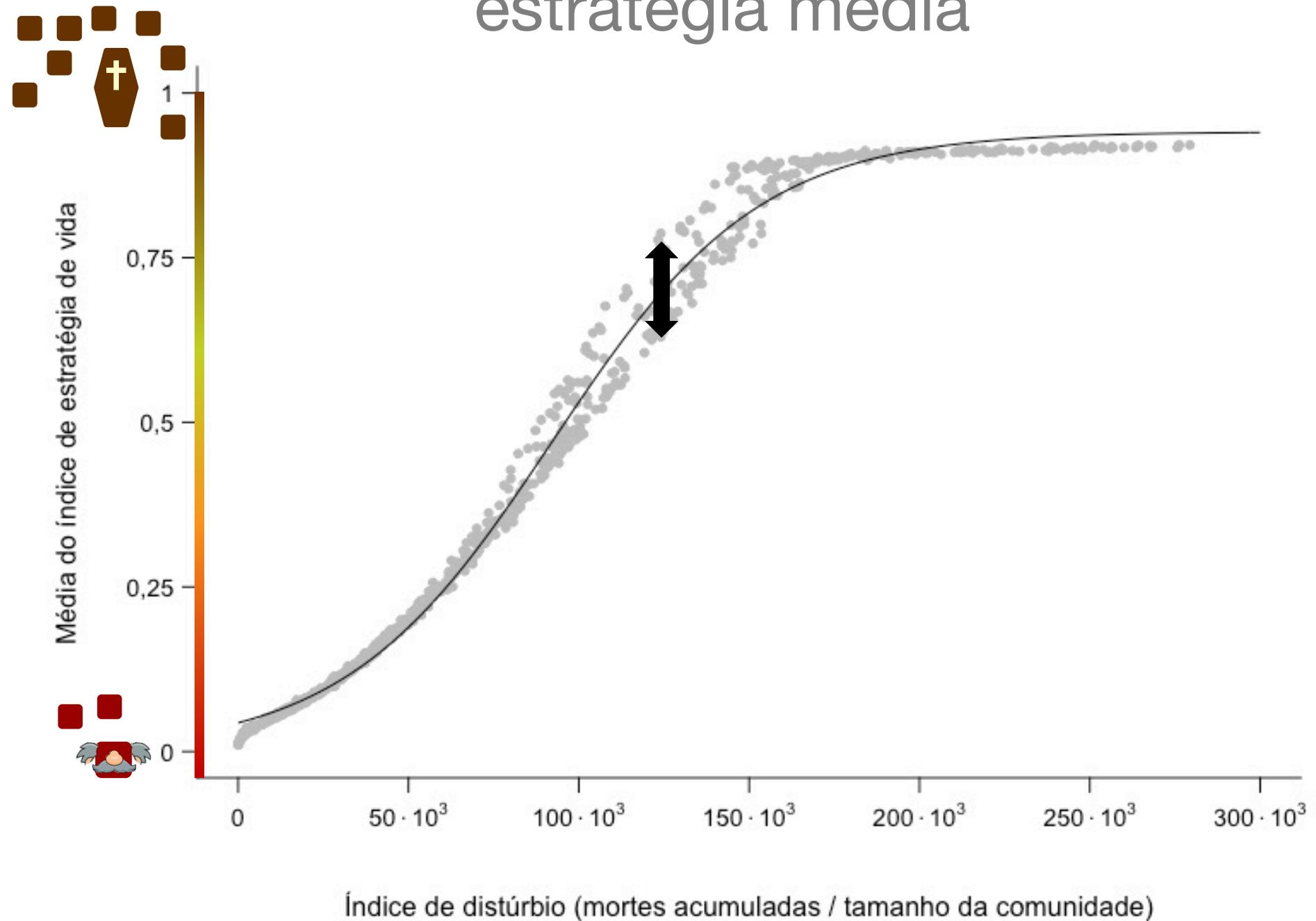
x 20



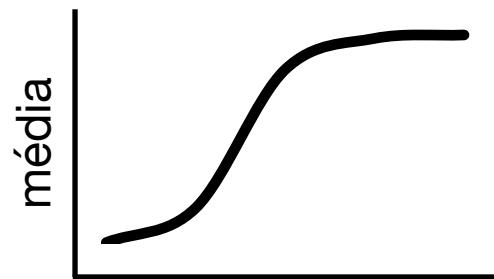
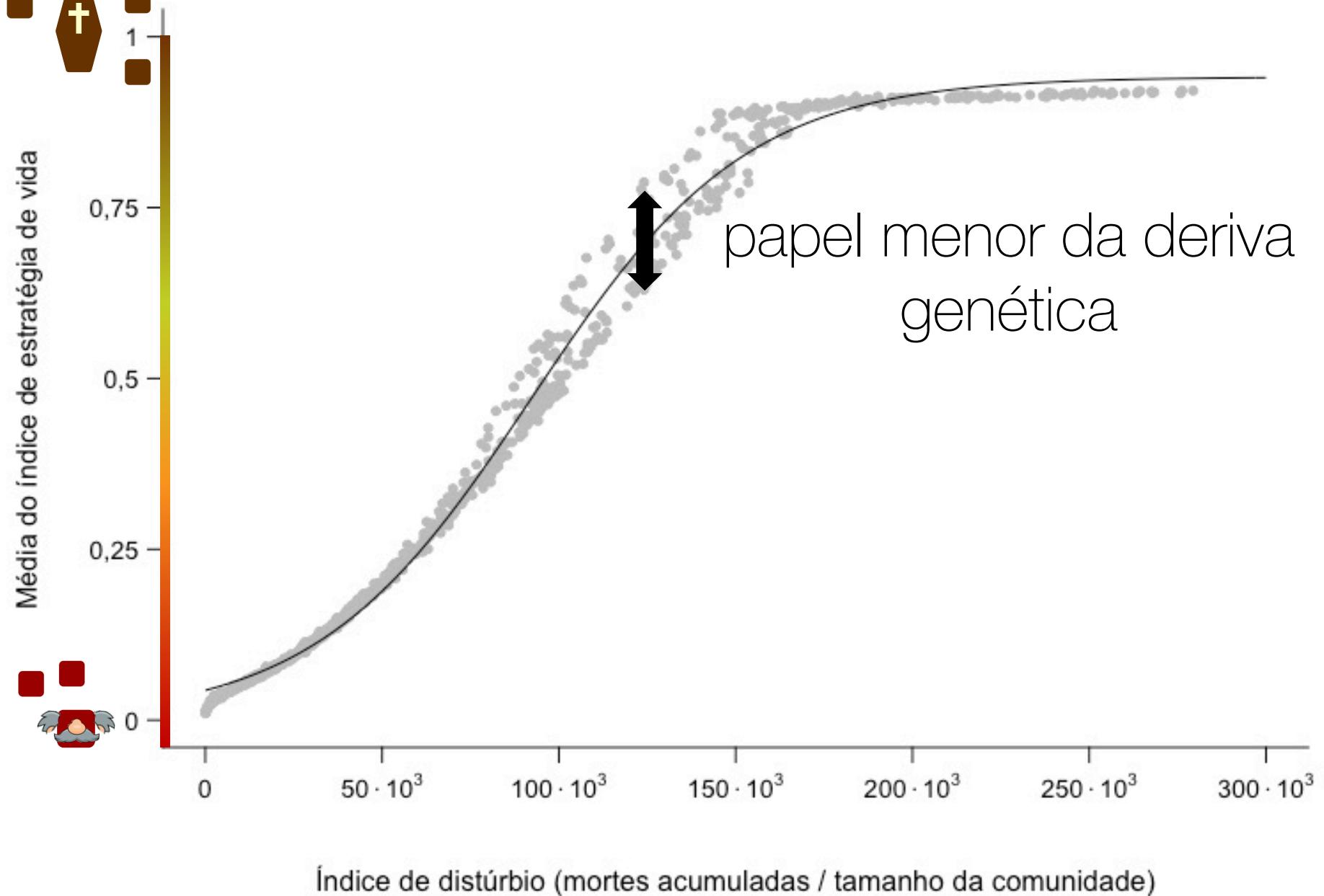
estratégia de maior fecundidade mais apta



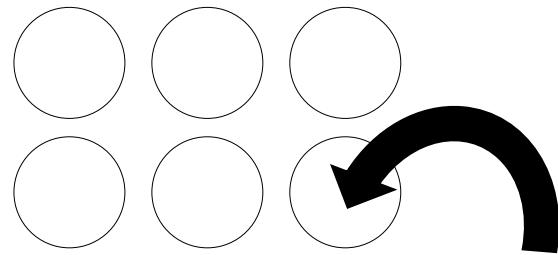
# estratégia média



# estratégia média



## evolutivo

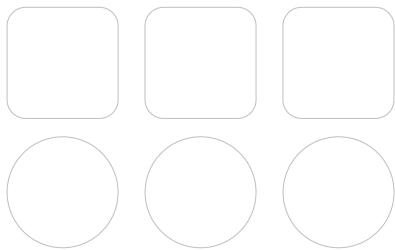


### estratégia média

diversidade  
de estratégias

-

## ecológico

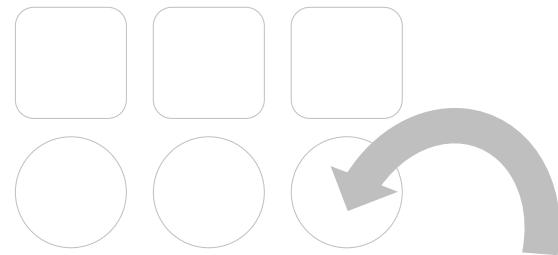


### estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

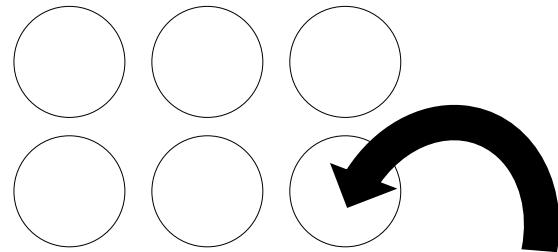


### estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## evolutivo

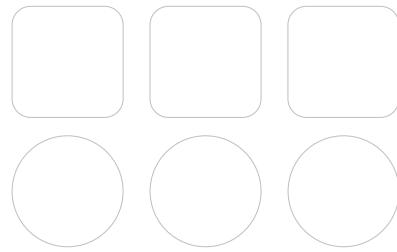


estratégia média

diversidade  
de estratégias

-

## ecológico

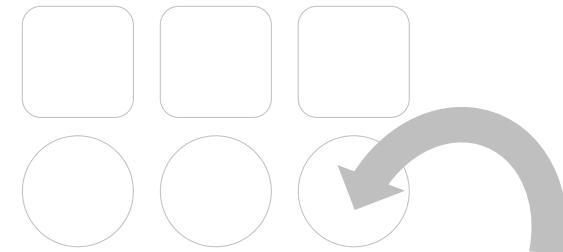


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

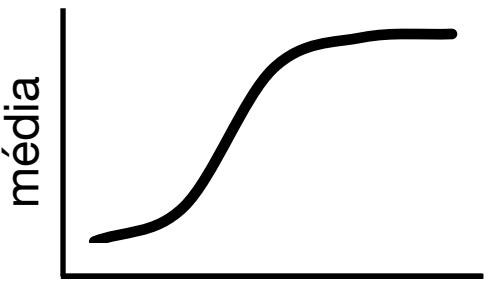
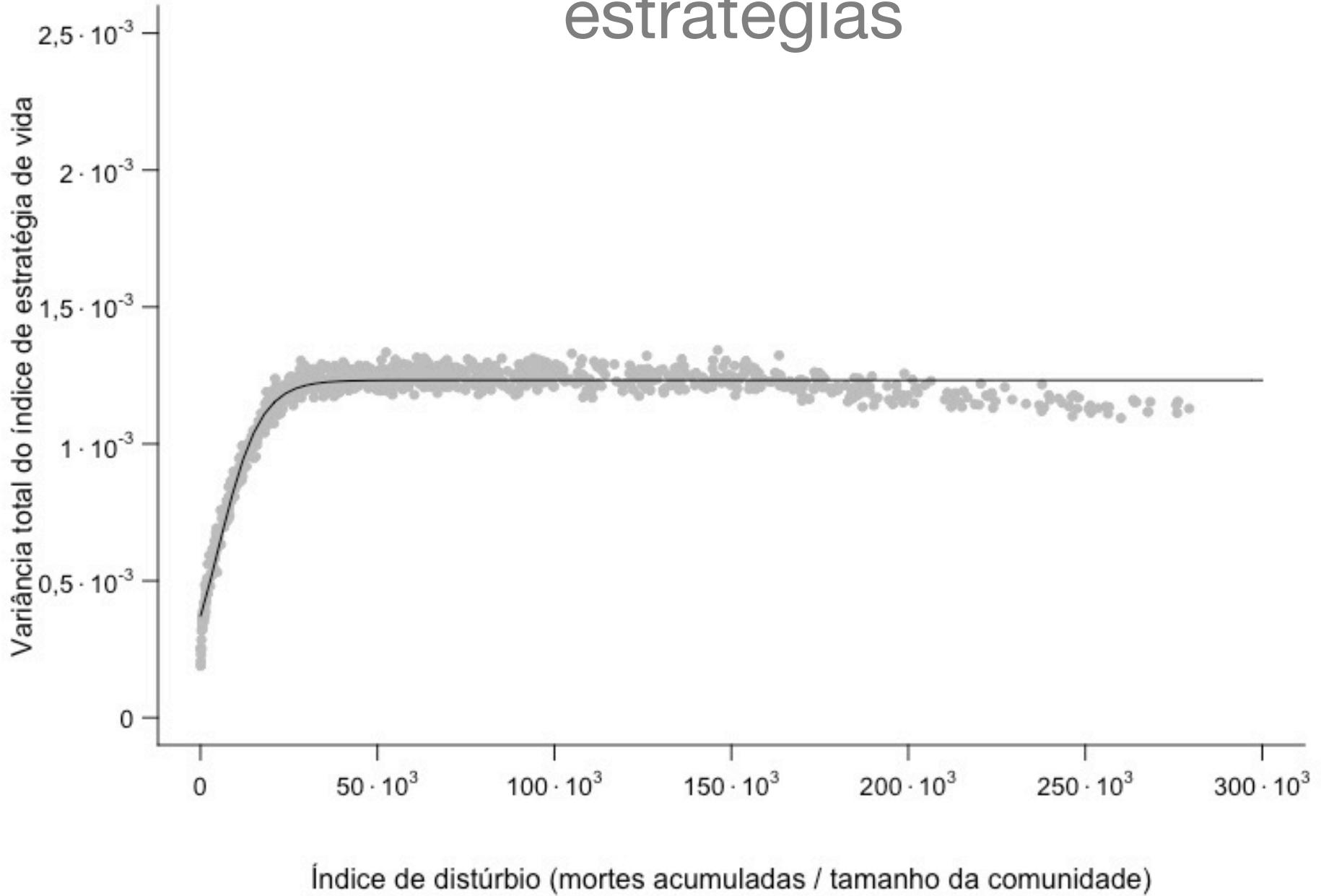


estratégia média

diversidade  
de estratégias

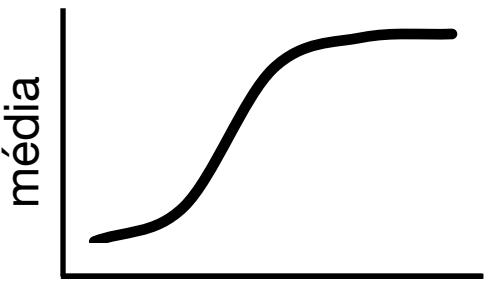
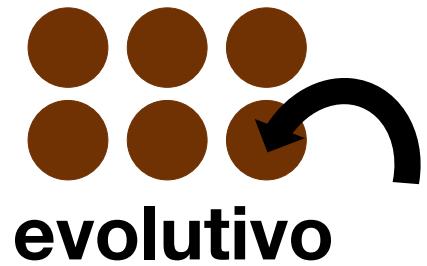
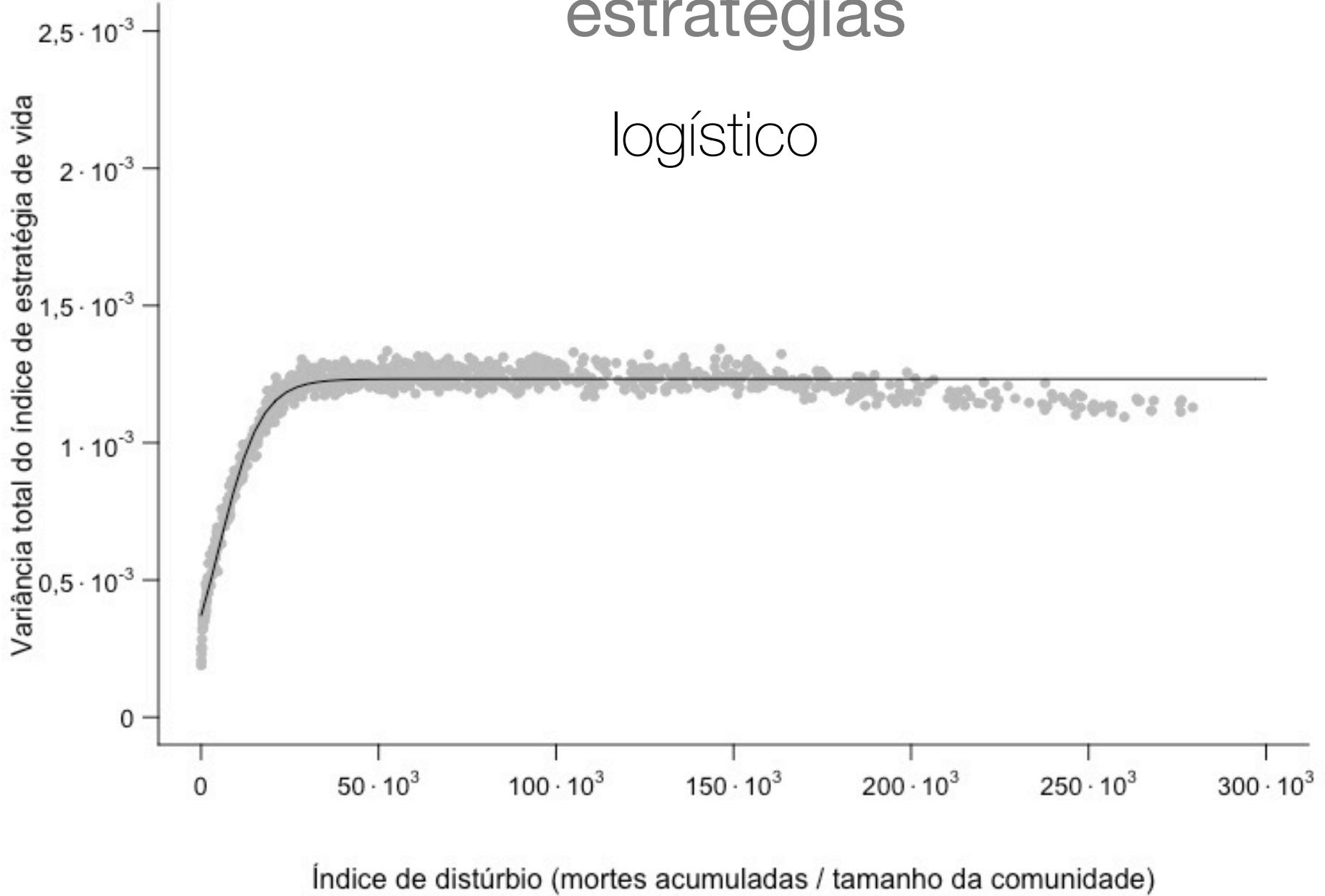
heterogeneidade  
interespecífica de  
estratégias

# diversidade de estratégias

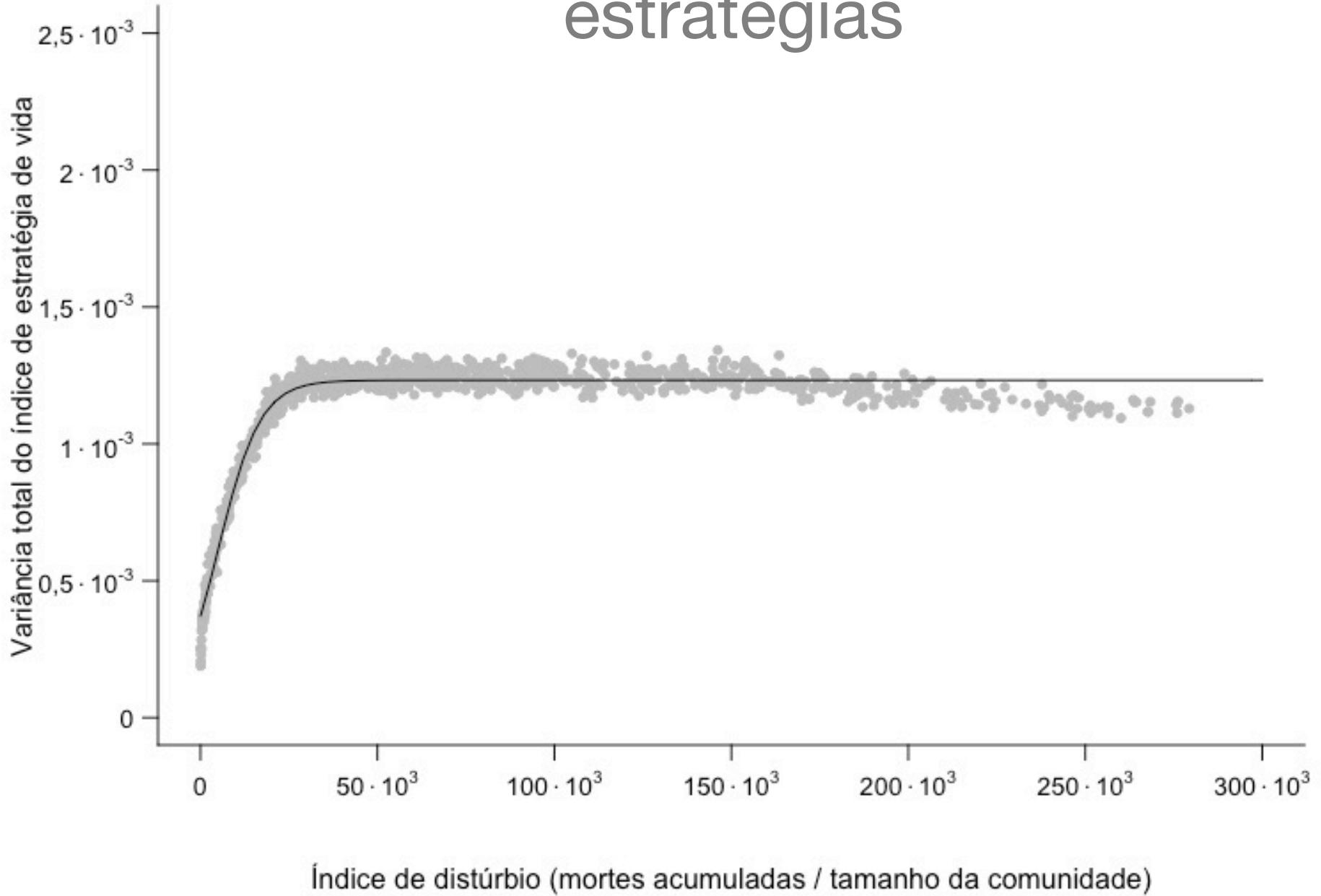


# diversidade de estratégias

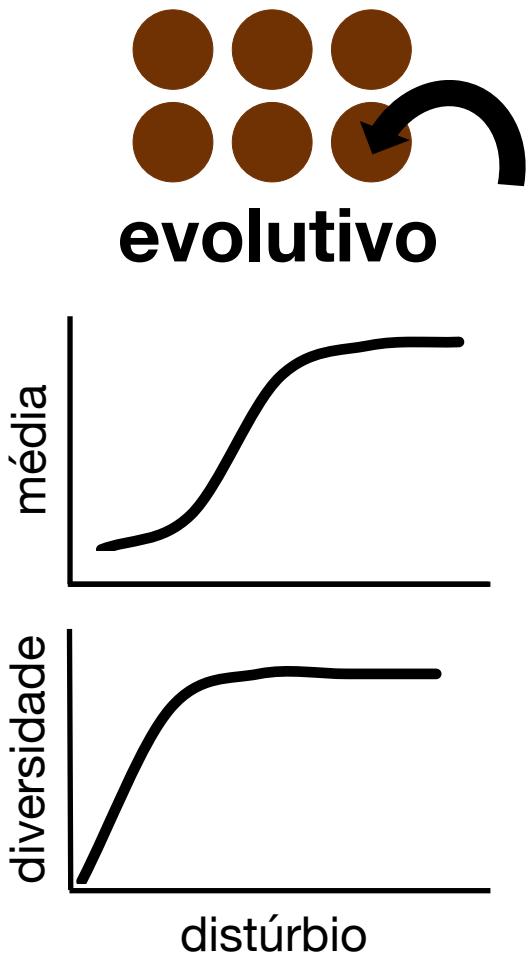
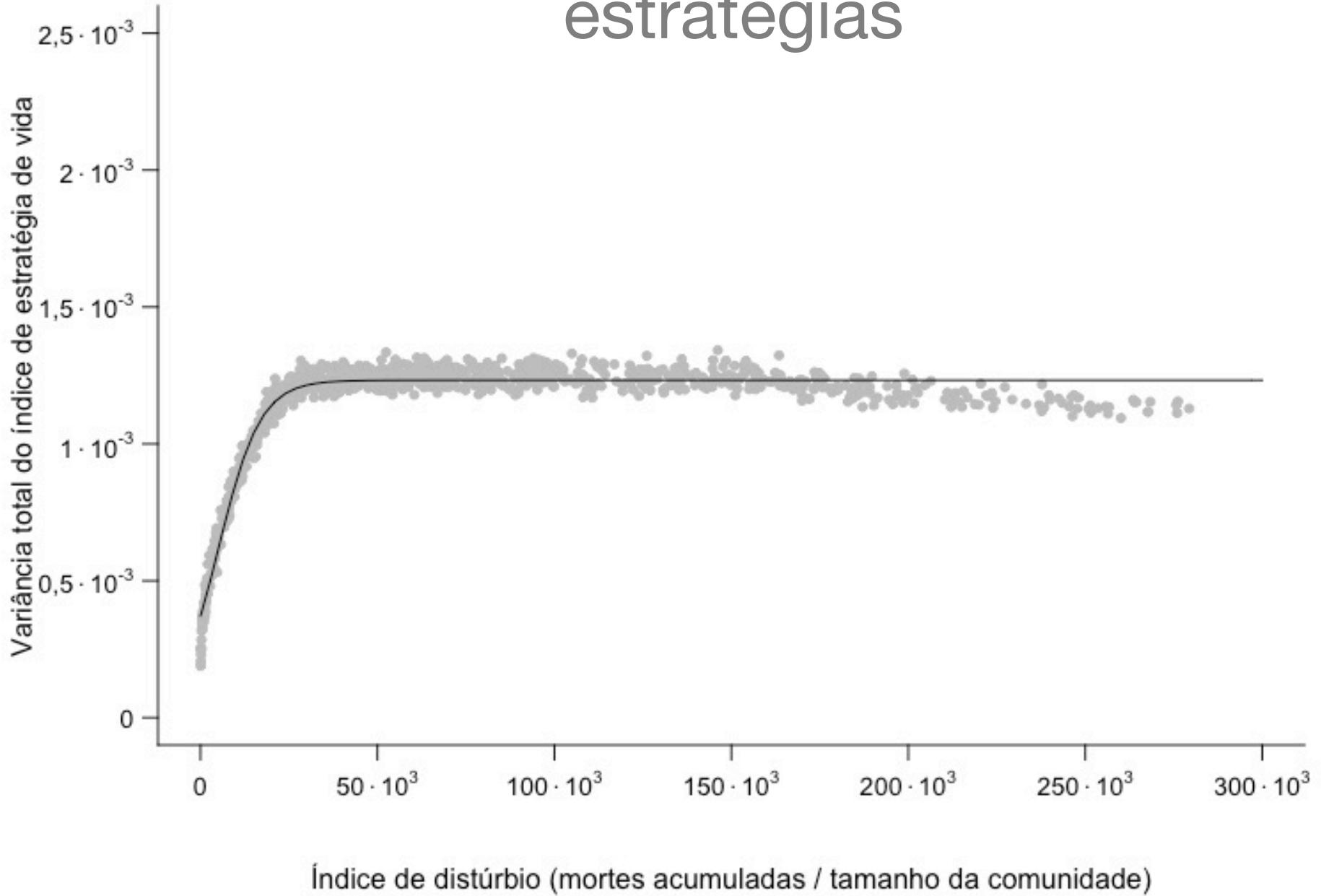
logístico



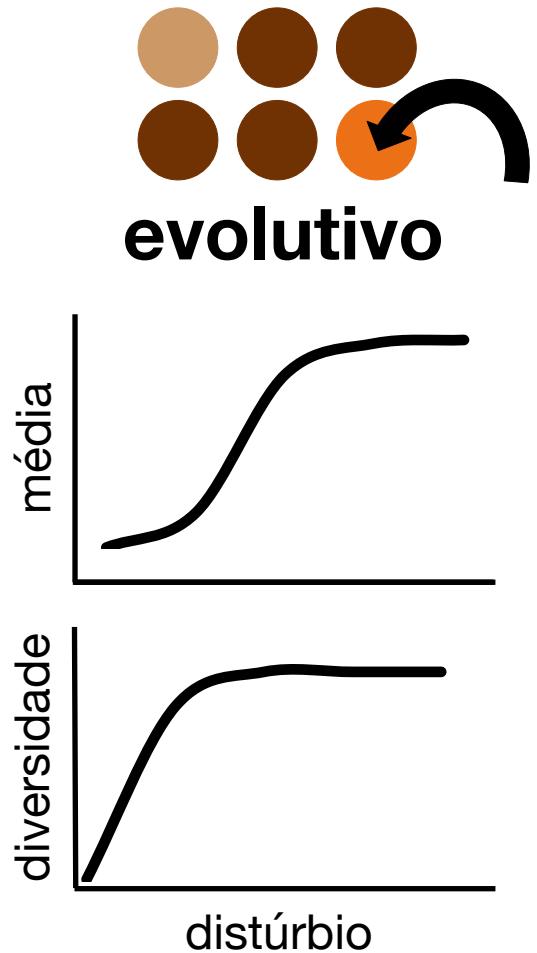
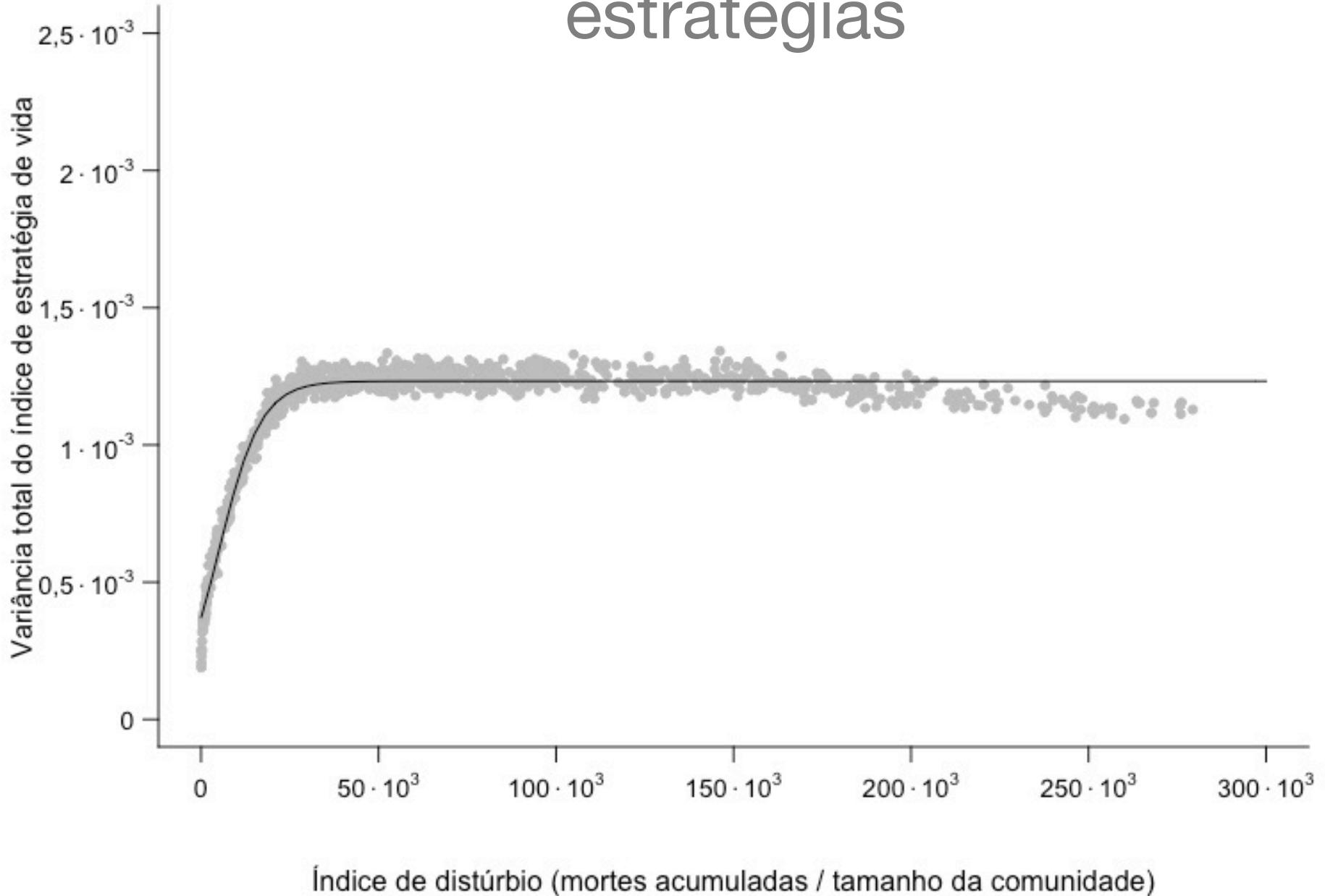
# diversidade de estratégias



# diversidade de estratégias



# diversidade de estratégias

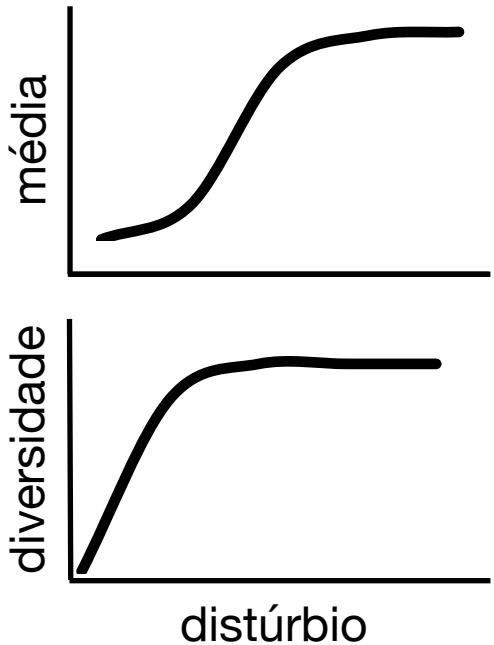
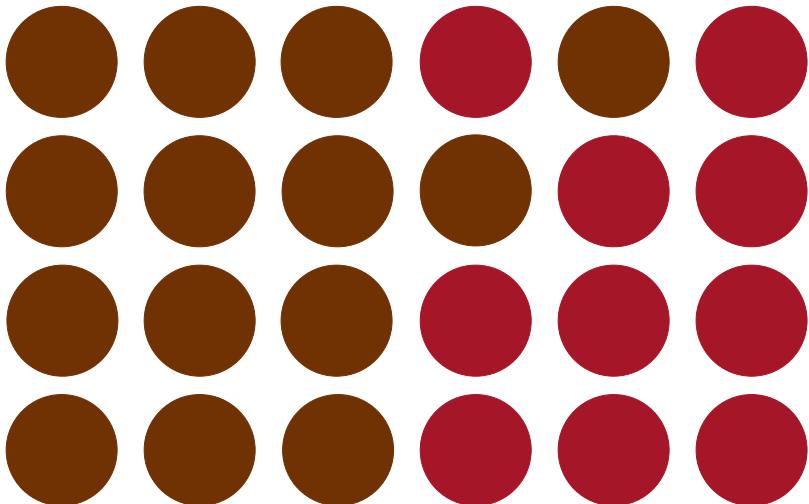


# mutação + amostragem

banco

● x 112

● x 20

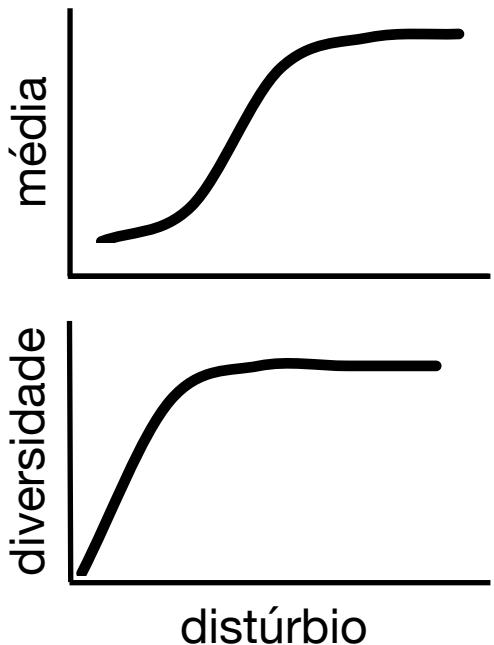
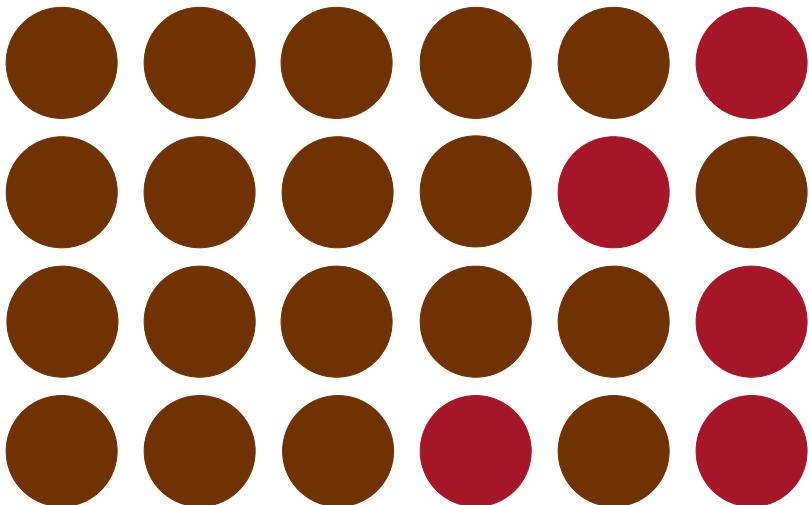


# mutação + amostragem

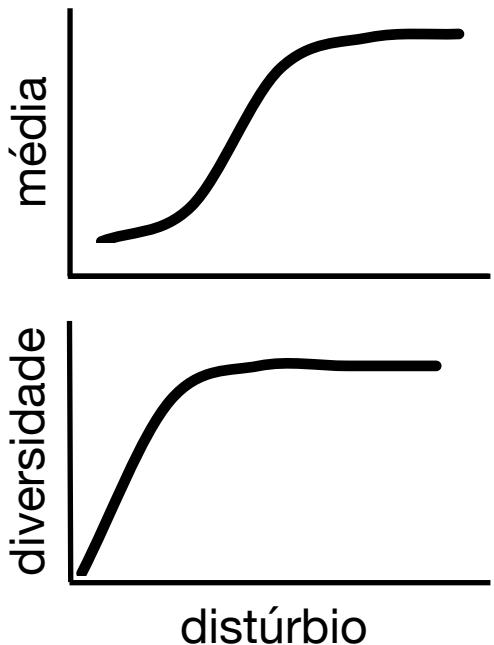
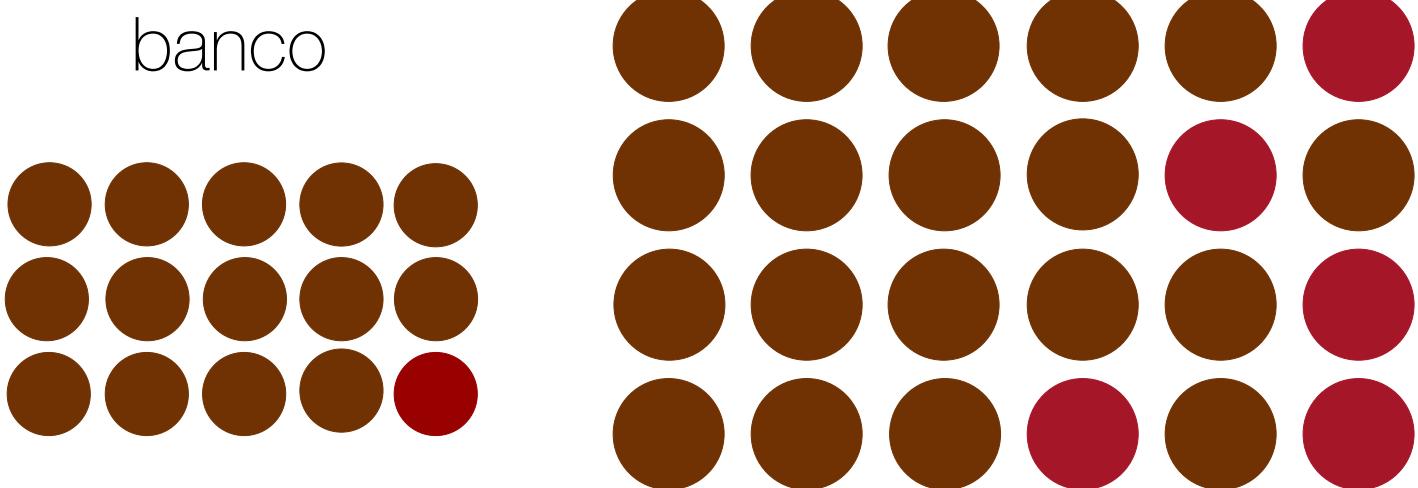
banco

● x 152

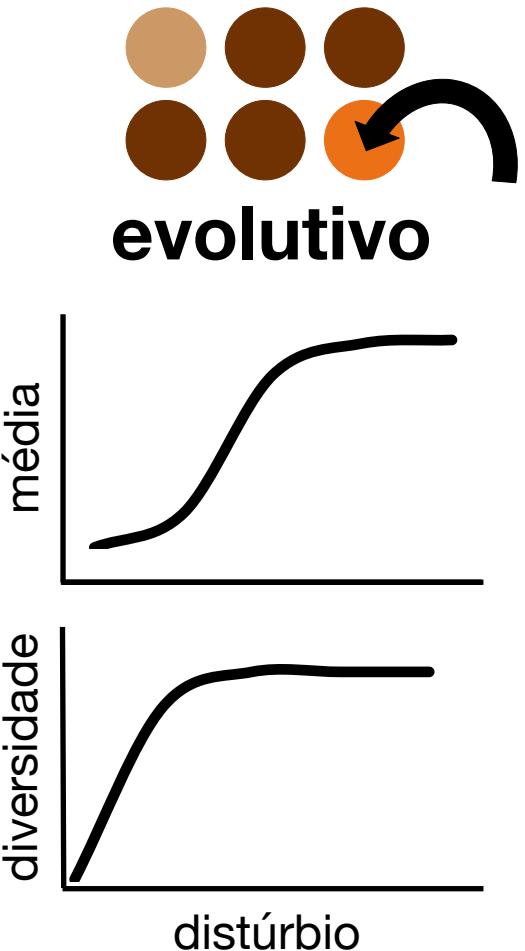
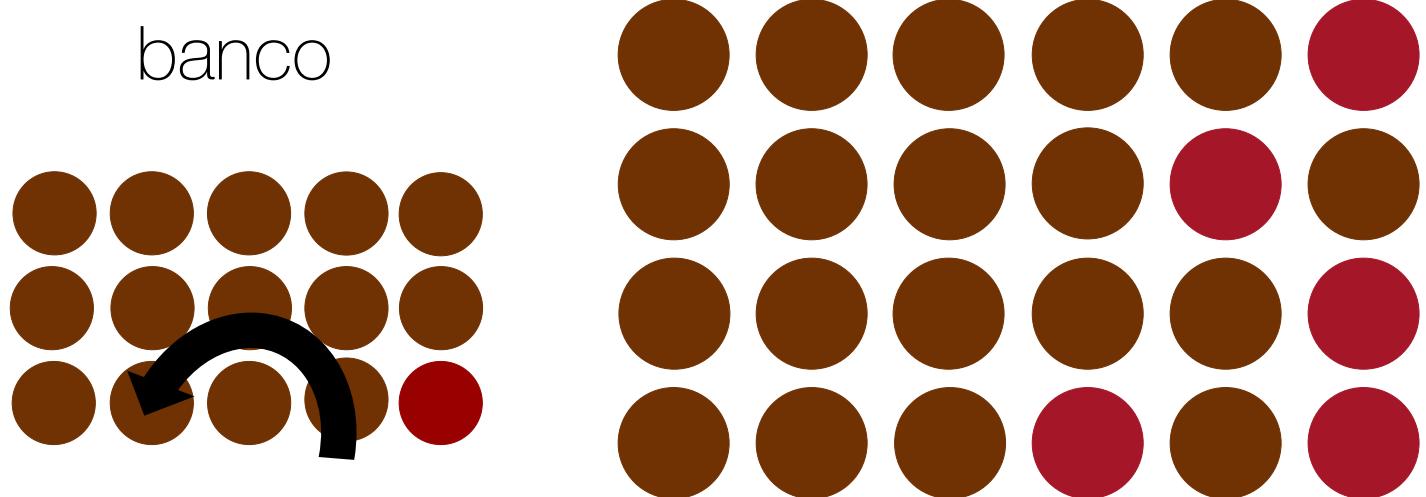
● x 10



# mutação + amostragem

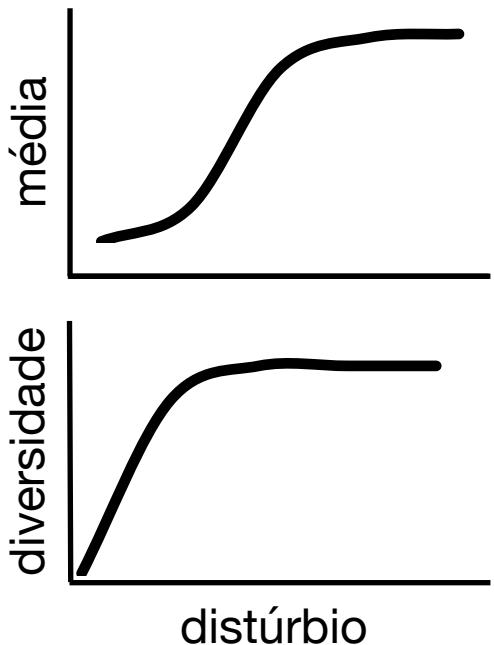
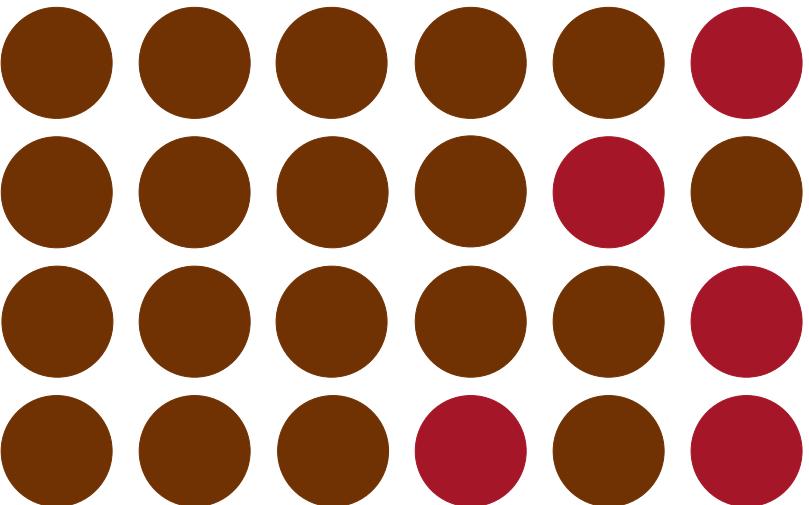
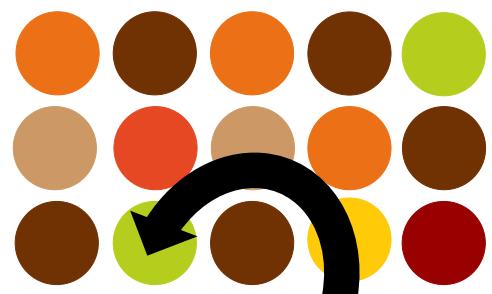


# mutação + amostragem

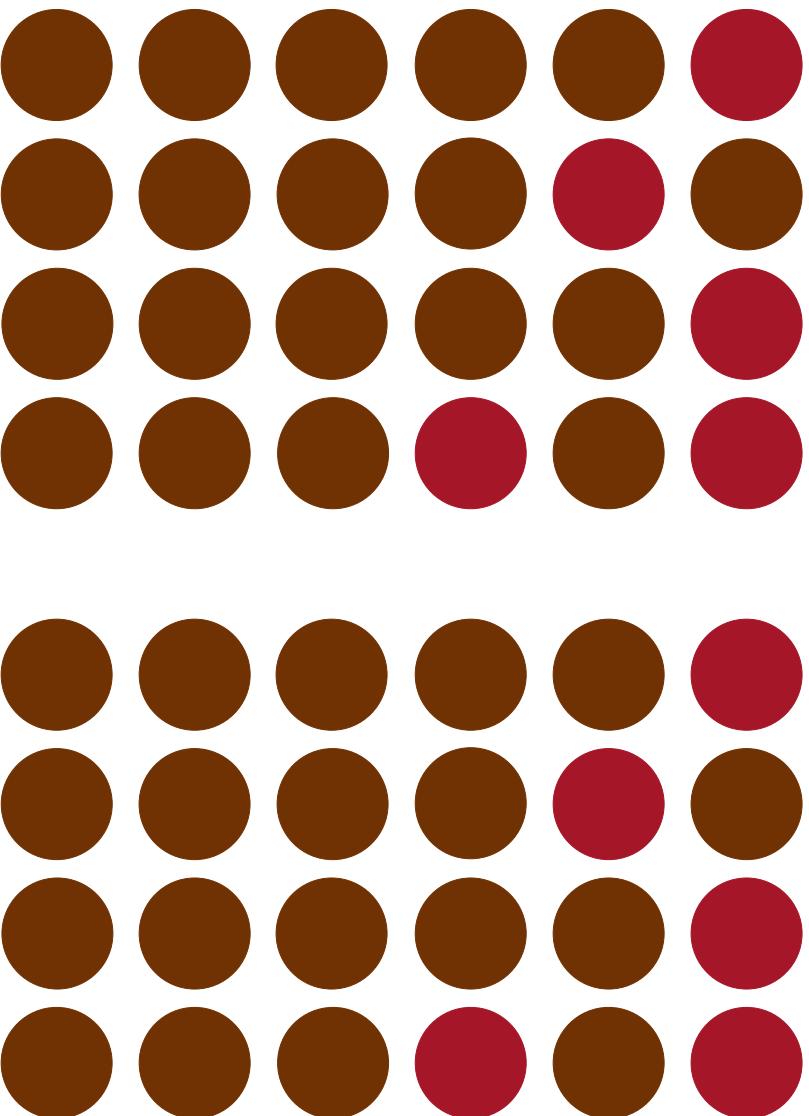


# mutação + amostragem

banco

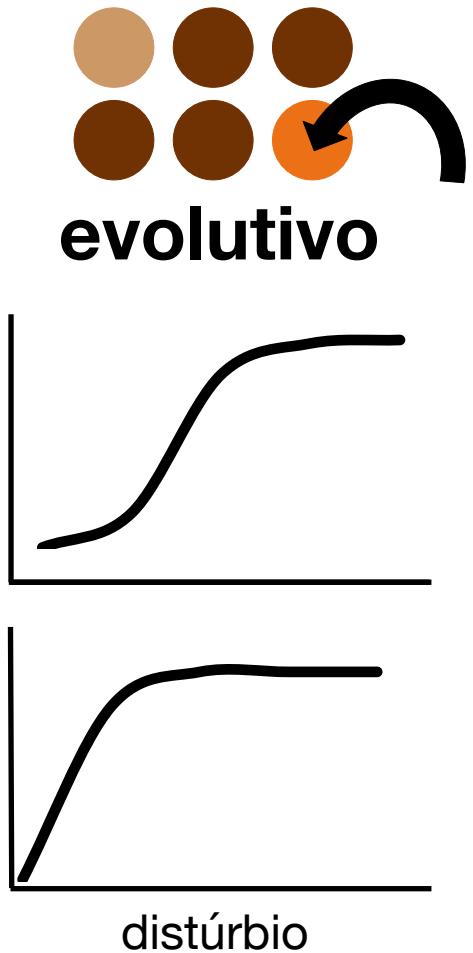


# mutação + amostragem

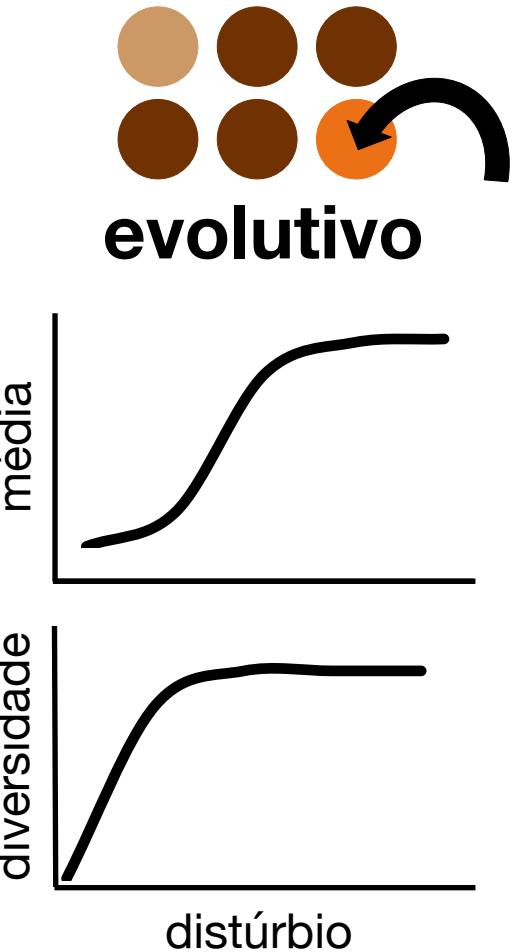
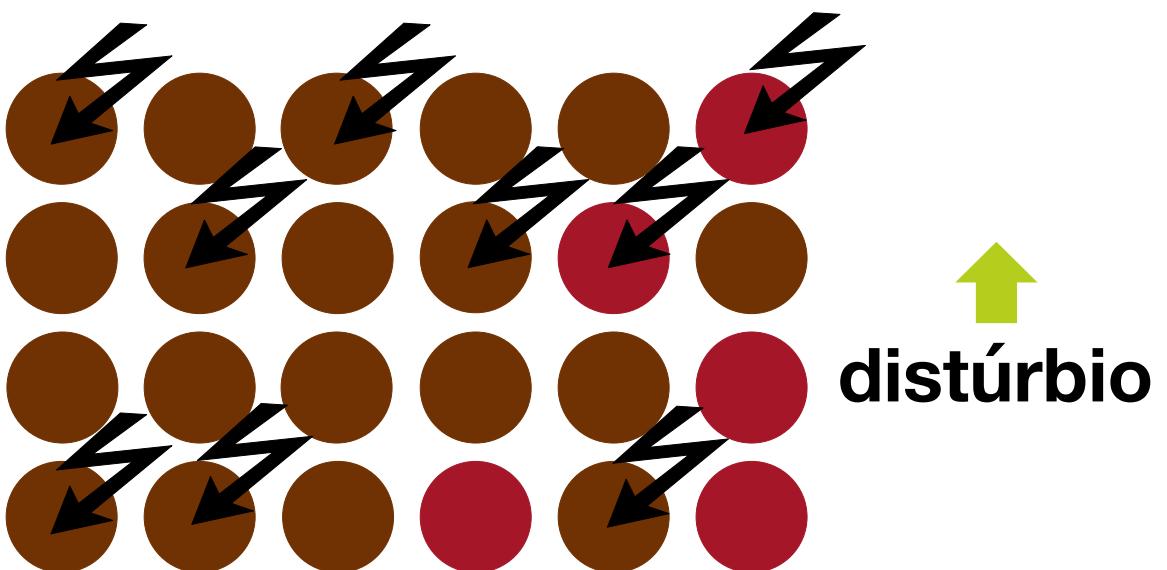
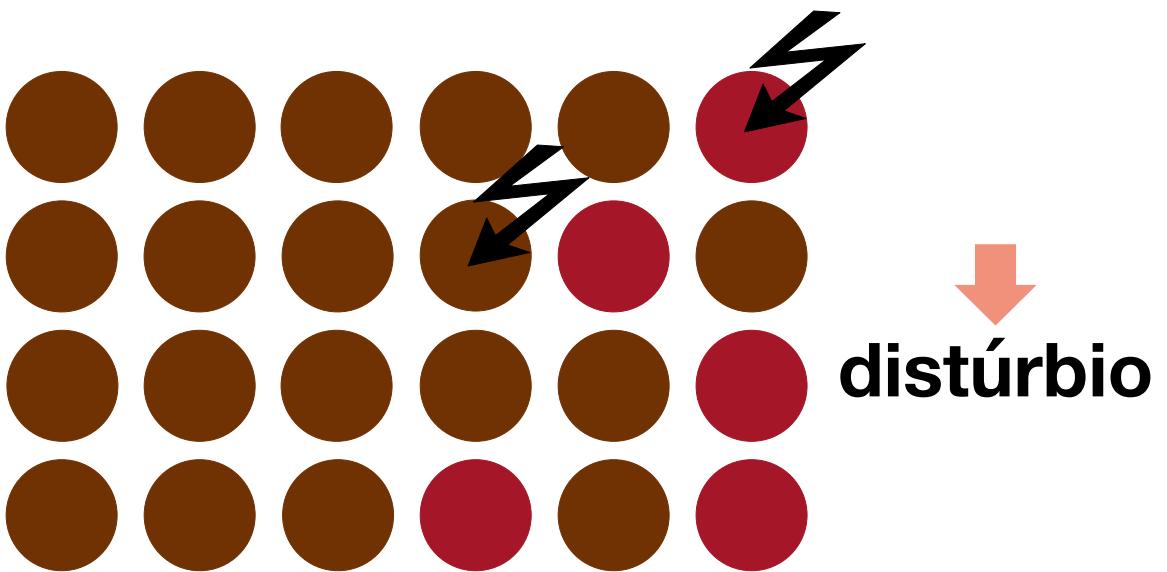


distúrbio

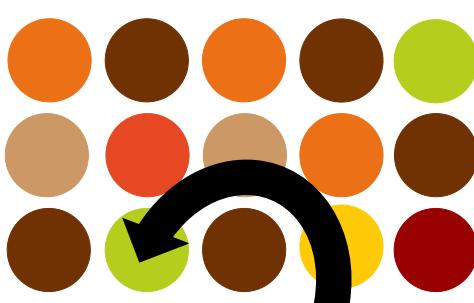
distúrbio



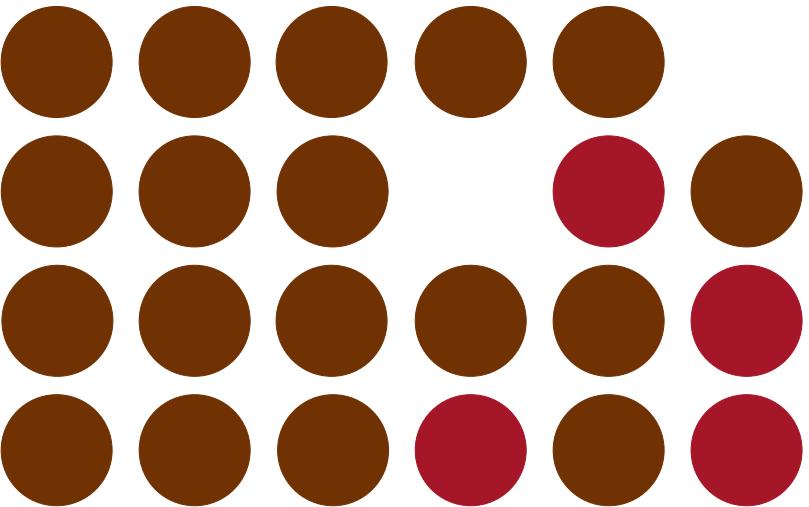
# mutação + amostragem



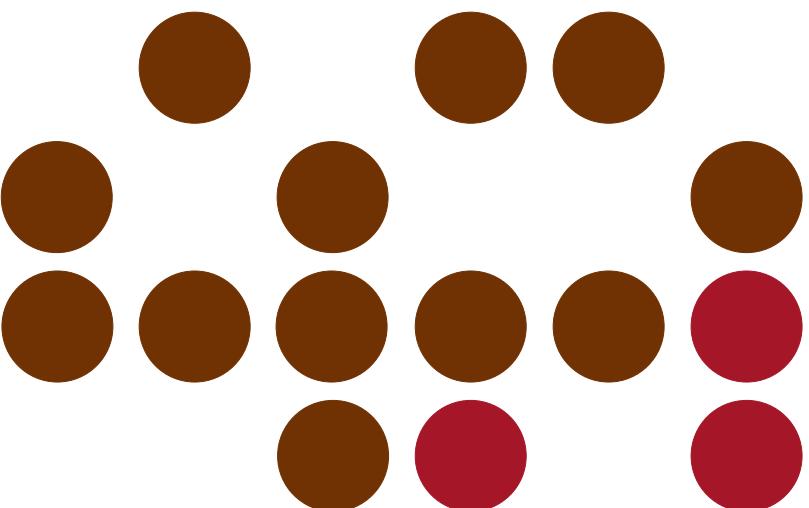
# mutação + amostragem



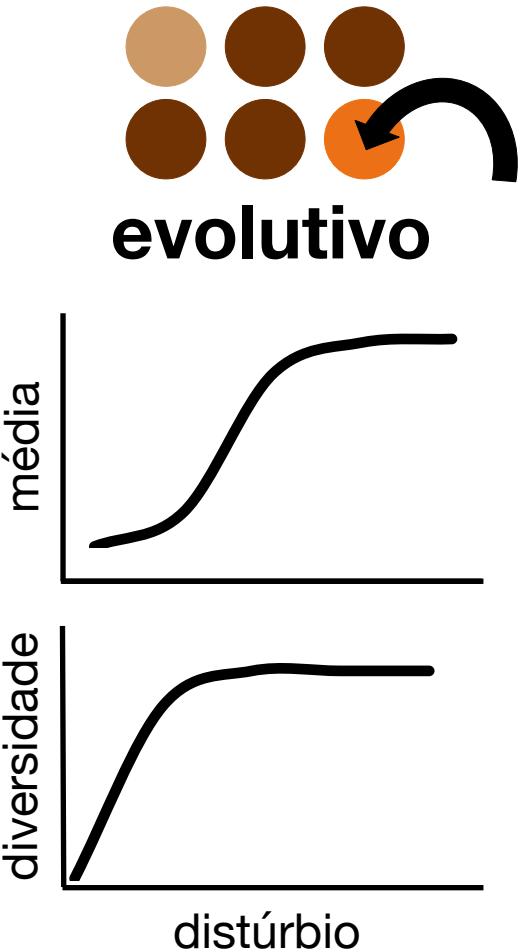
banco



distúrbio

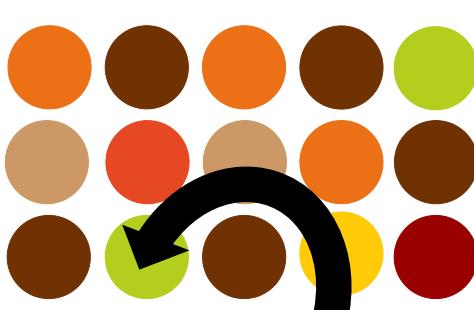


distúrbio

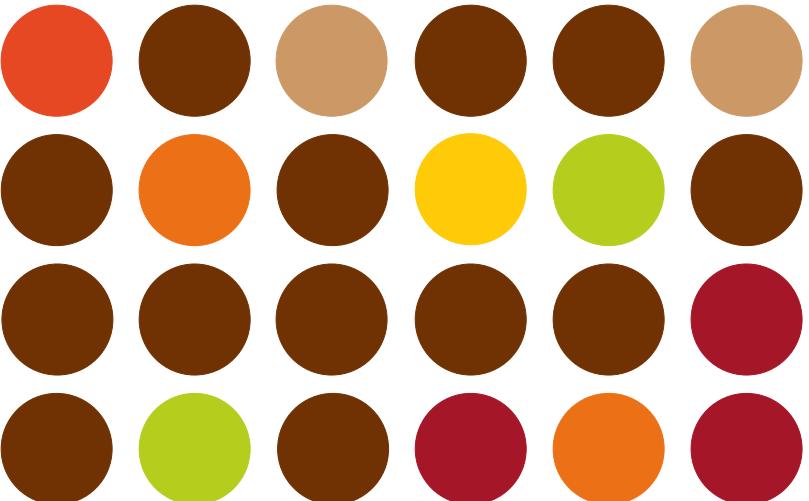
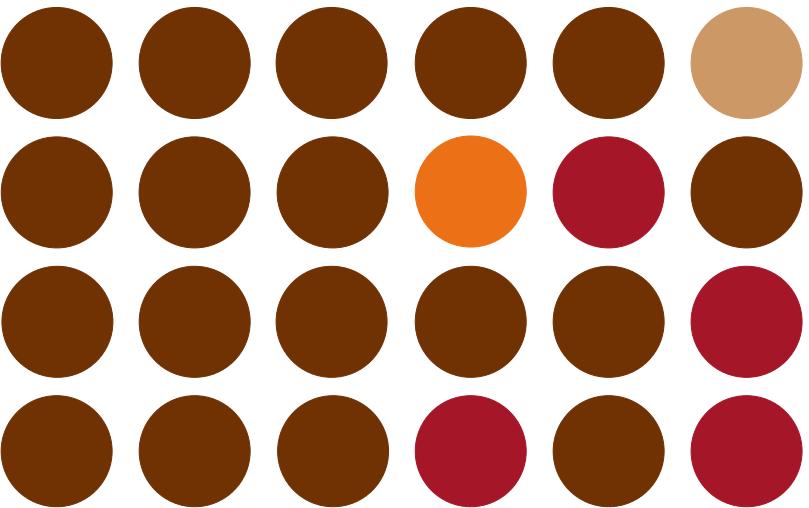


evolutivo

# mutação + amostragem

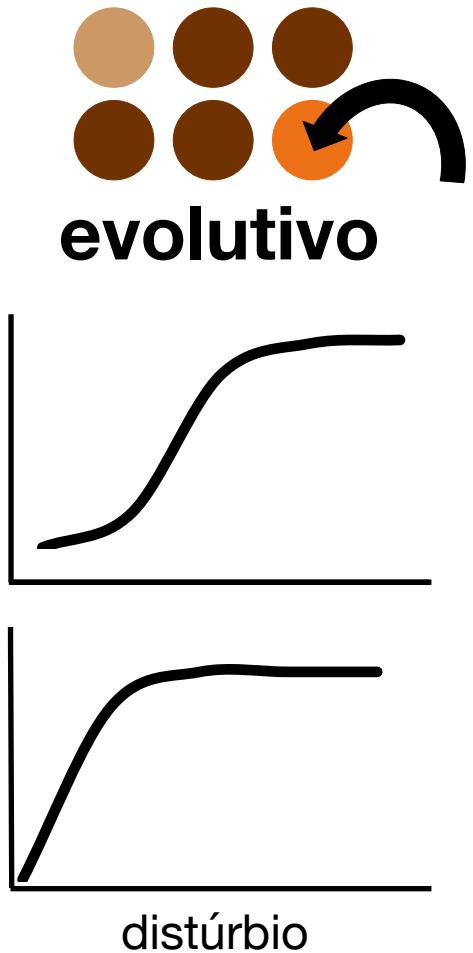


banco



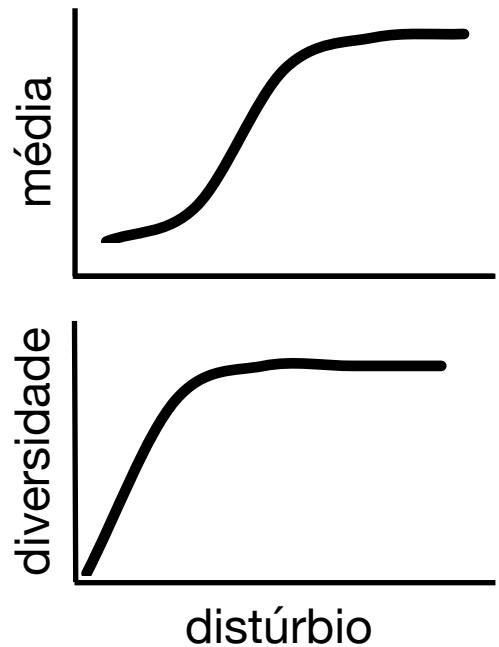
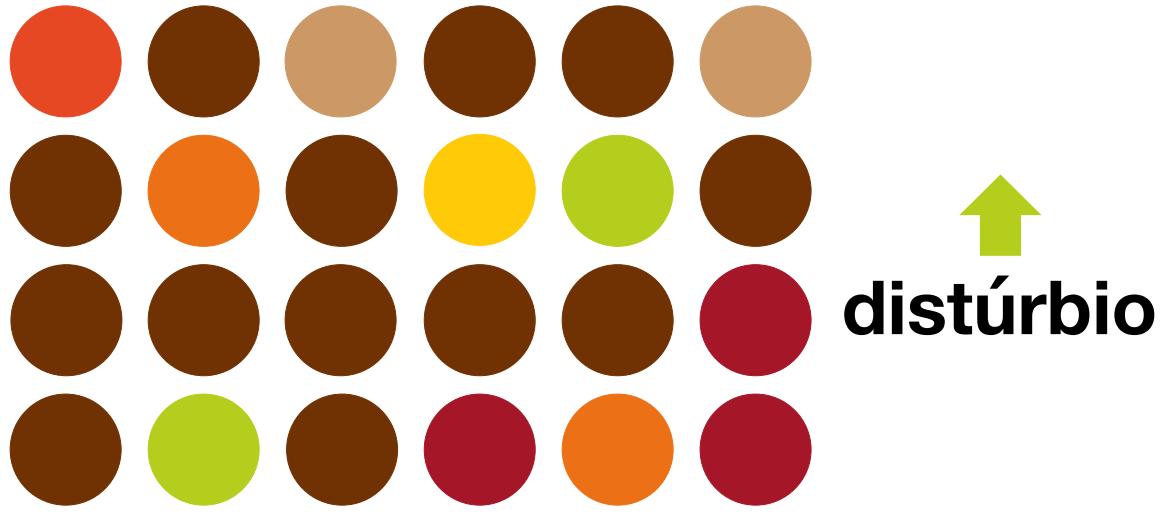
distúrbio

distúrbio

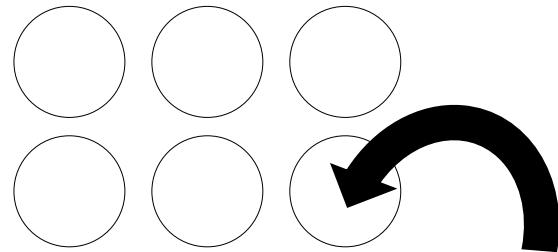


evolutivo

# mutação



## evolutivo

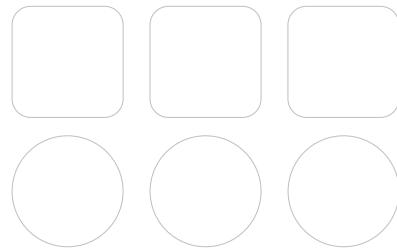


estratégia média

diversidade  
de estratégias

-

## ecológico

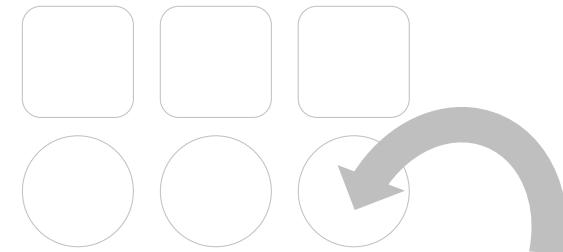


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

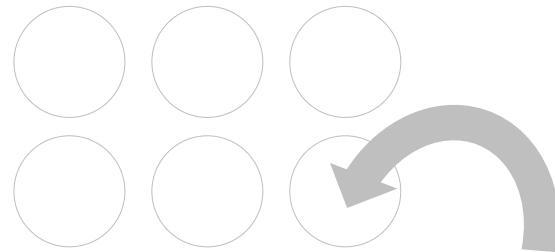


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## evolutivo

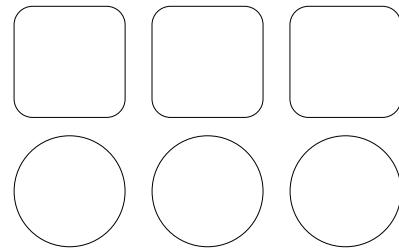


estratégia média

diversidade  
de estratégias

-

## ecológico

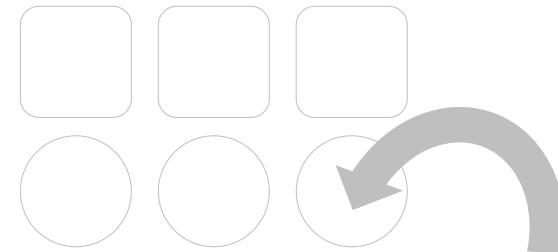


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

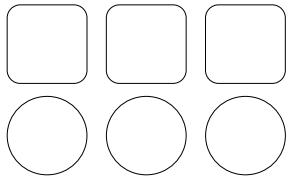
## eco-evolutivo



estratégia média

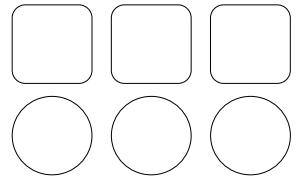
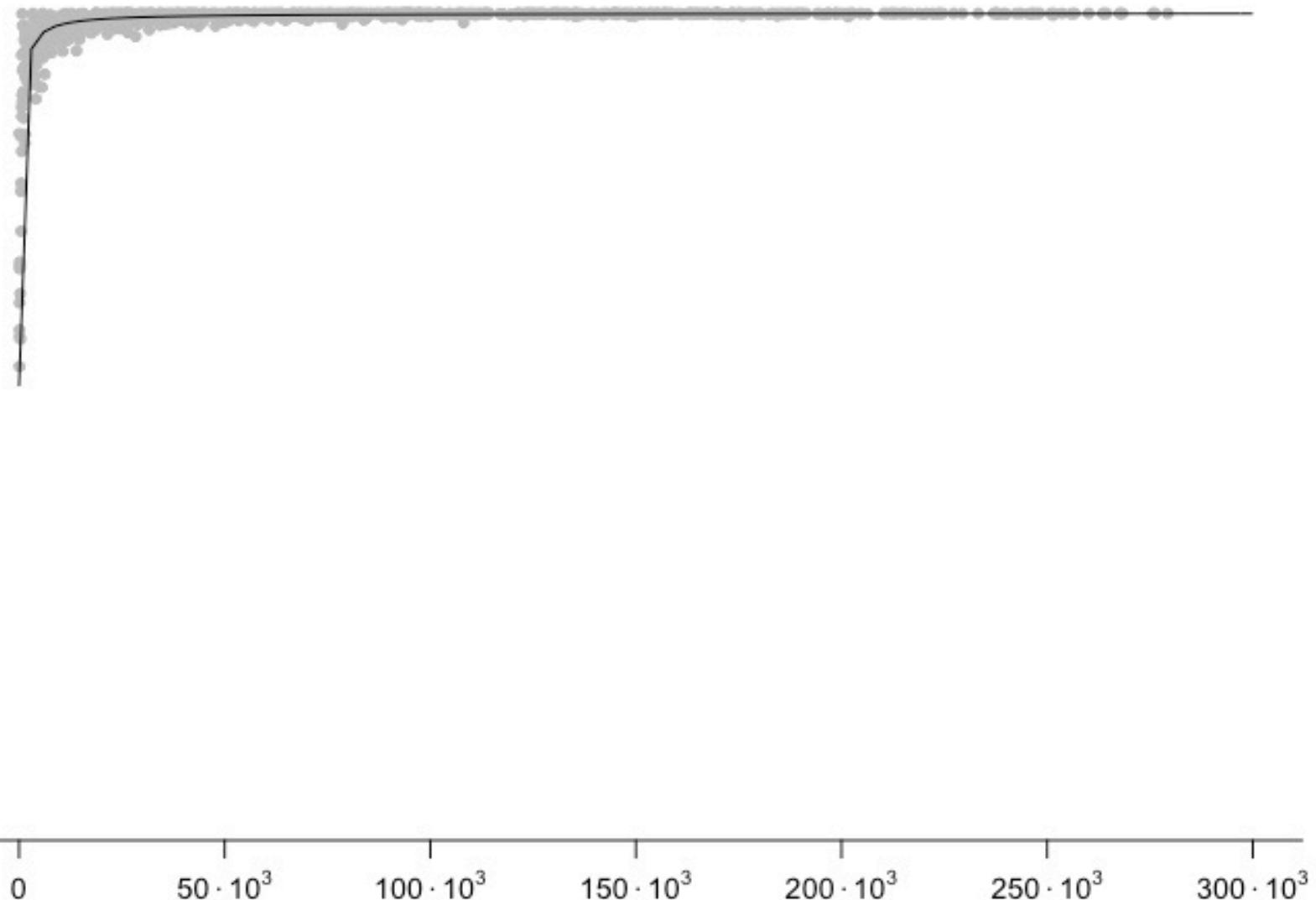
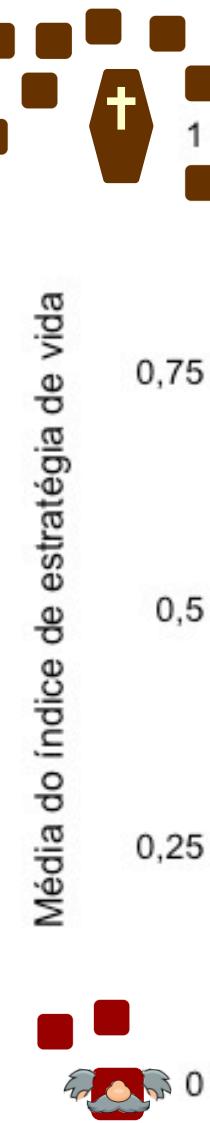
diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias



**ecológico**

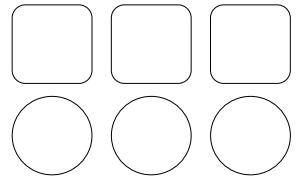
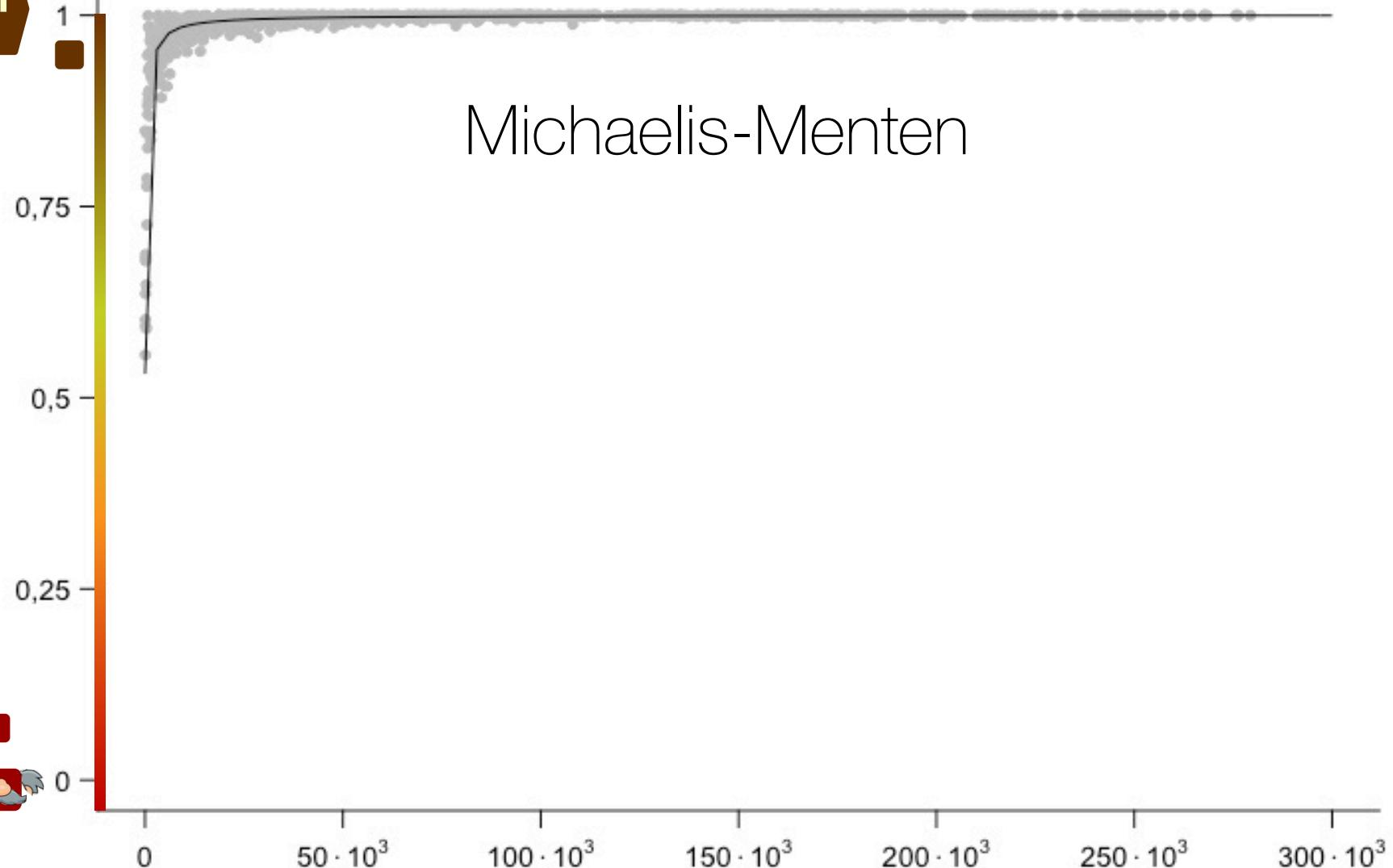
# estratégia média



Índice de distúrbio (mortes acumuladas / tamanho da comunidade)

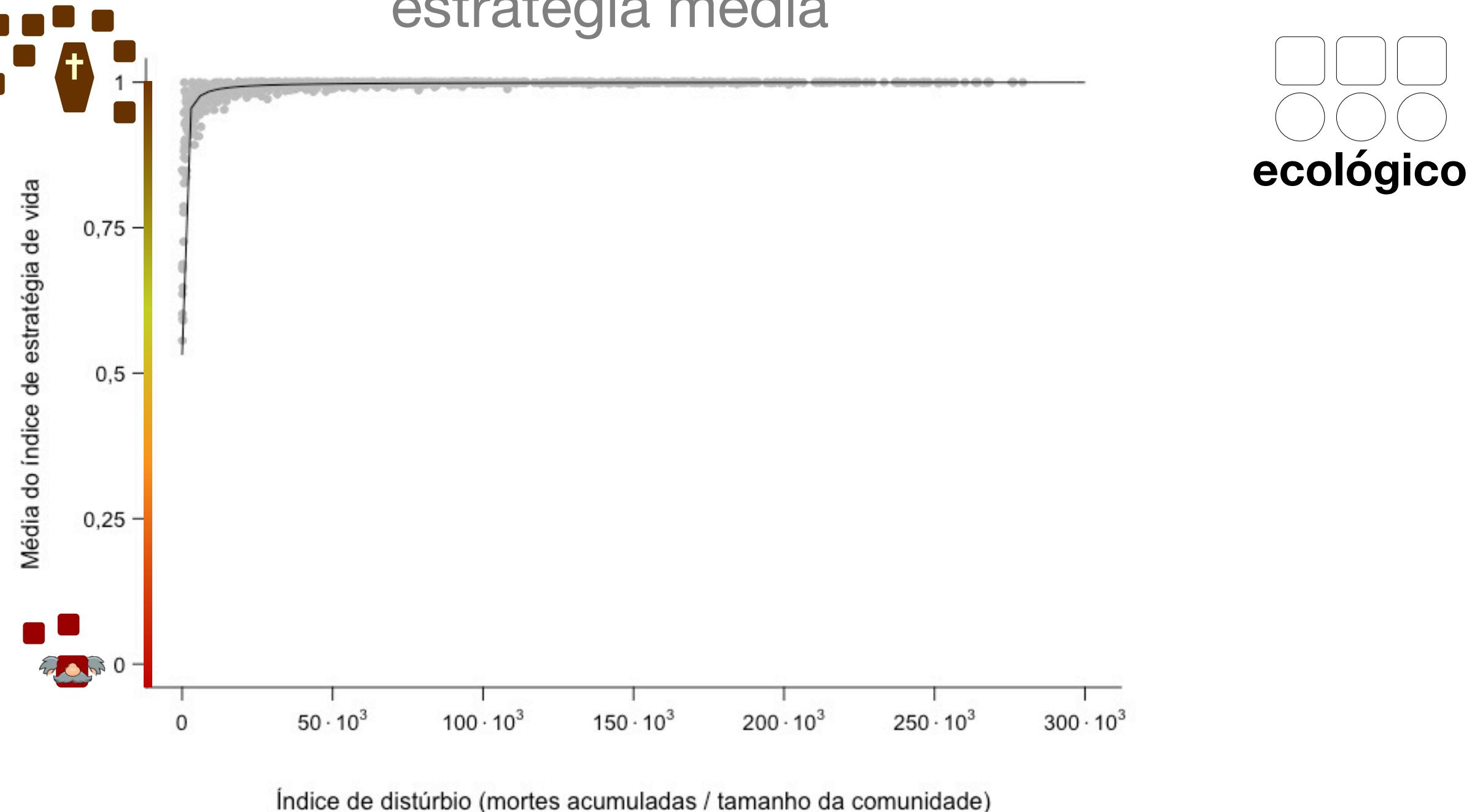
# estratégia média

Média do índice de estratégia de vida

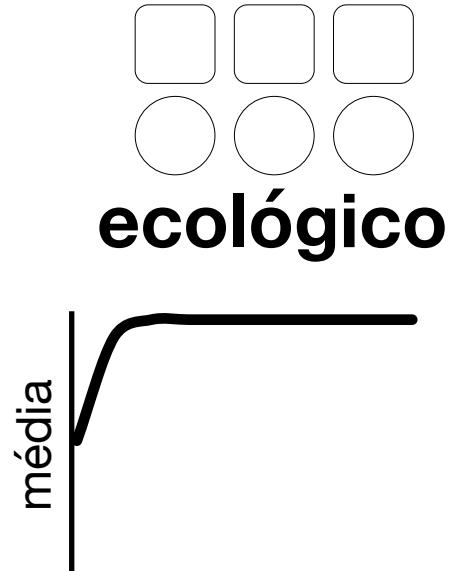
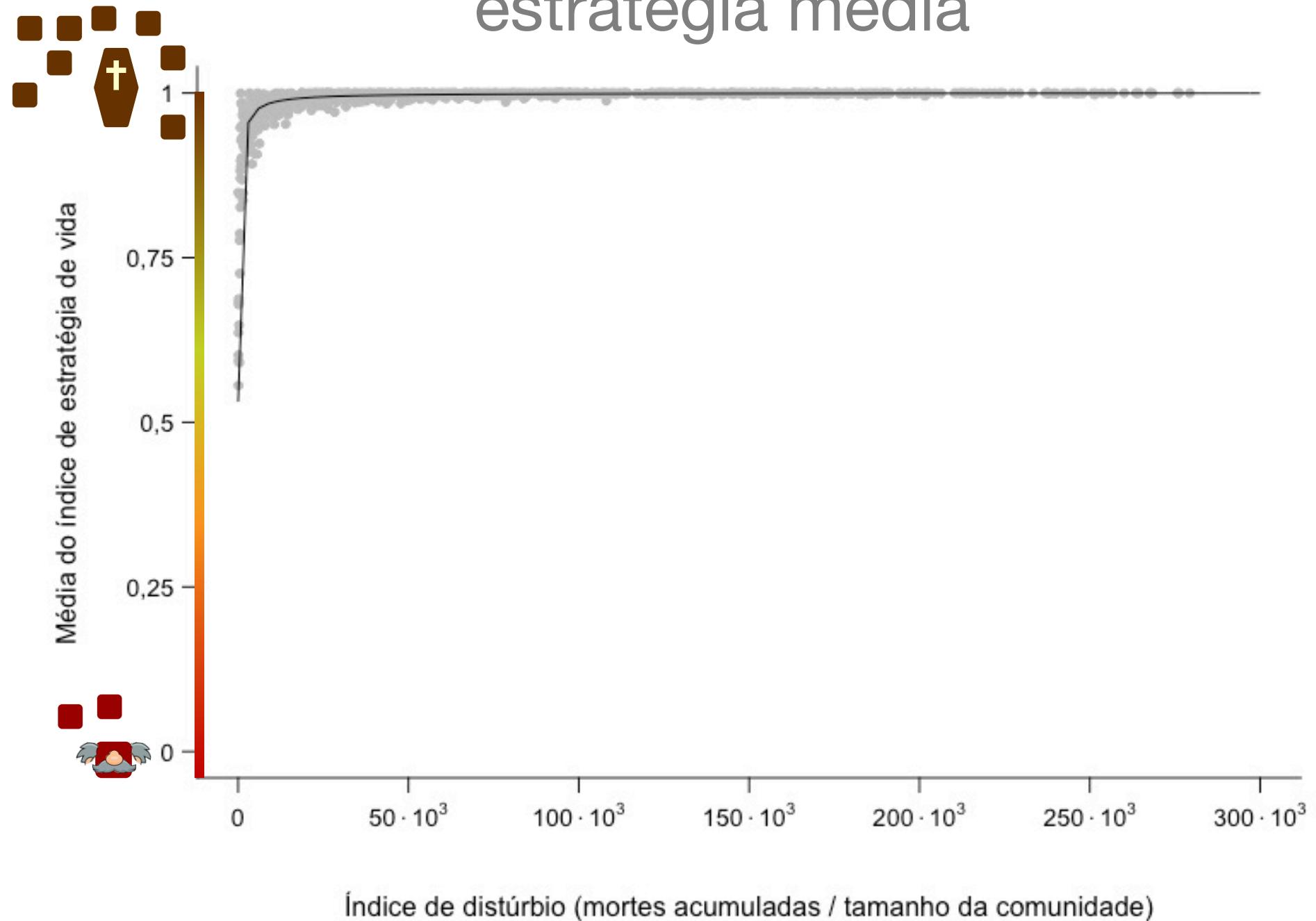


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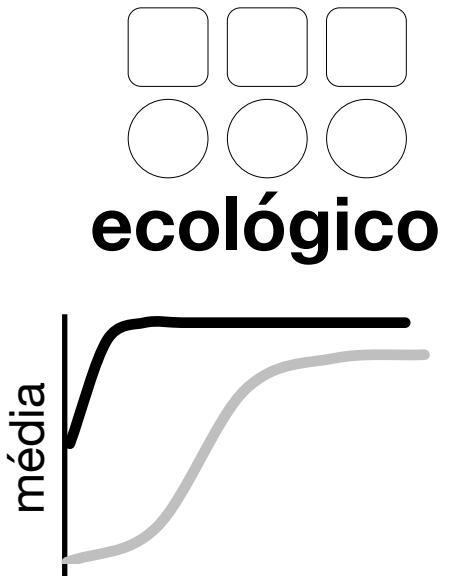
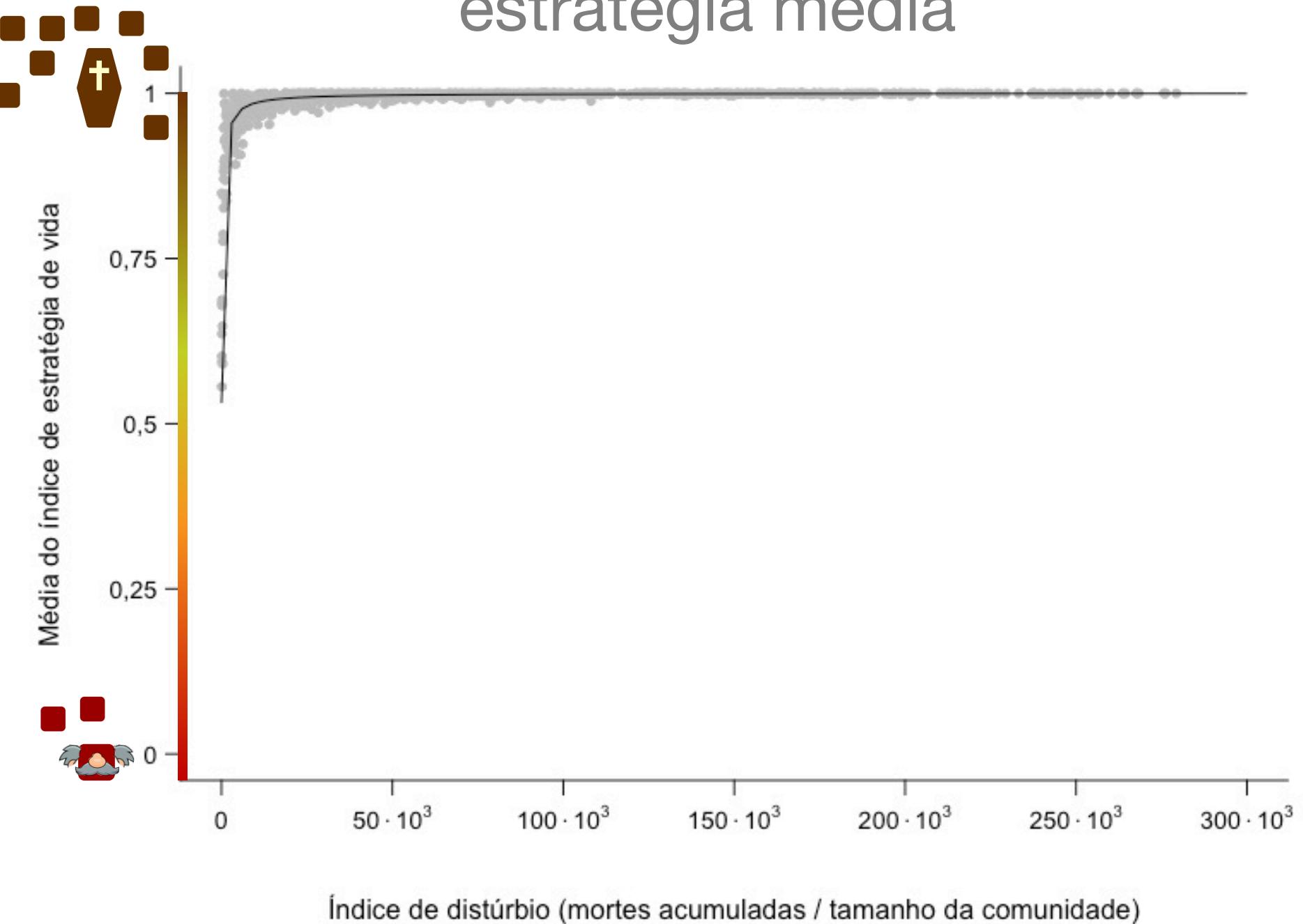
# estratégia média



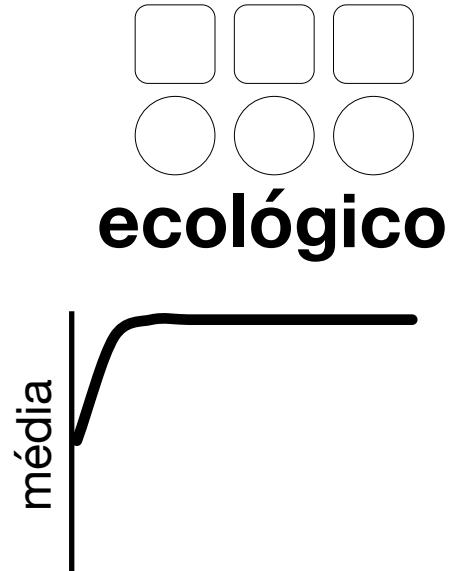
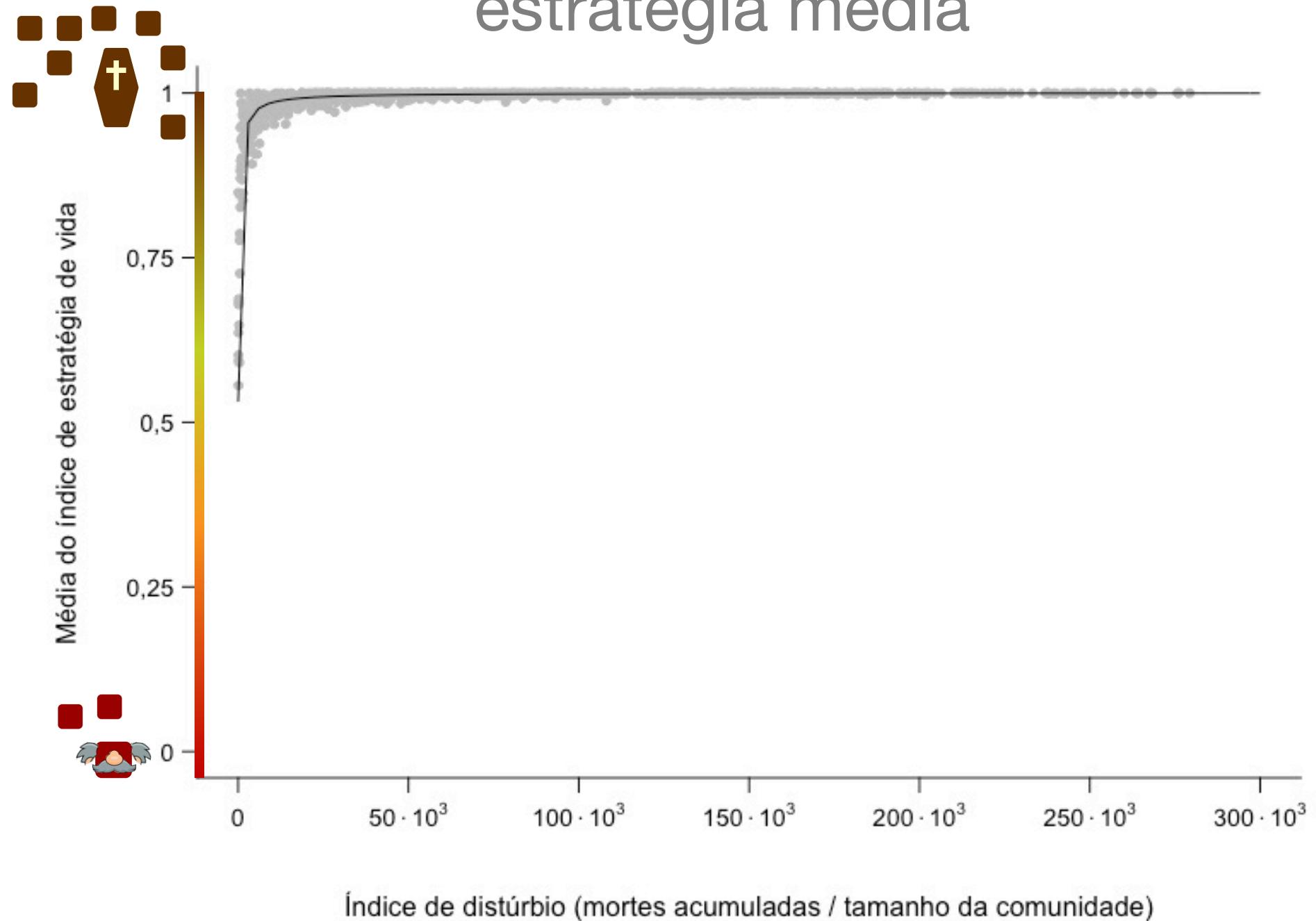
# estratégia média



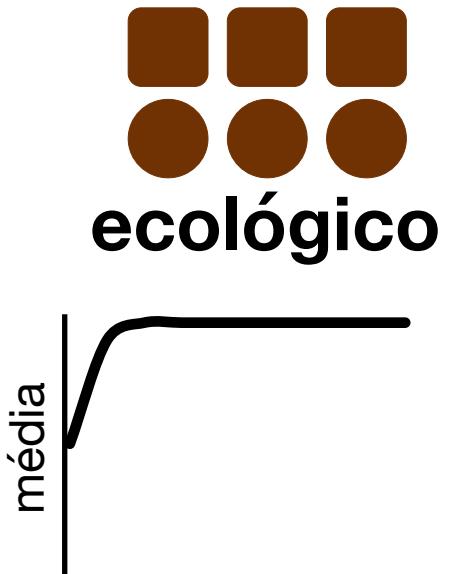
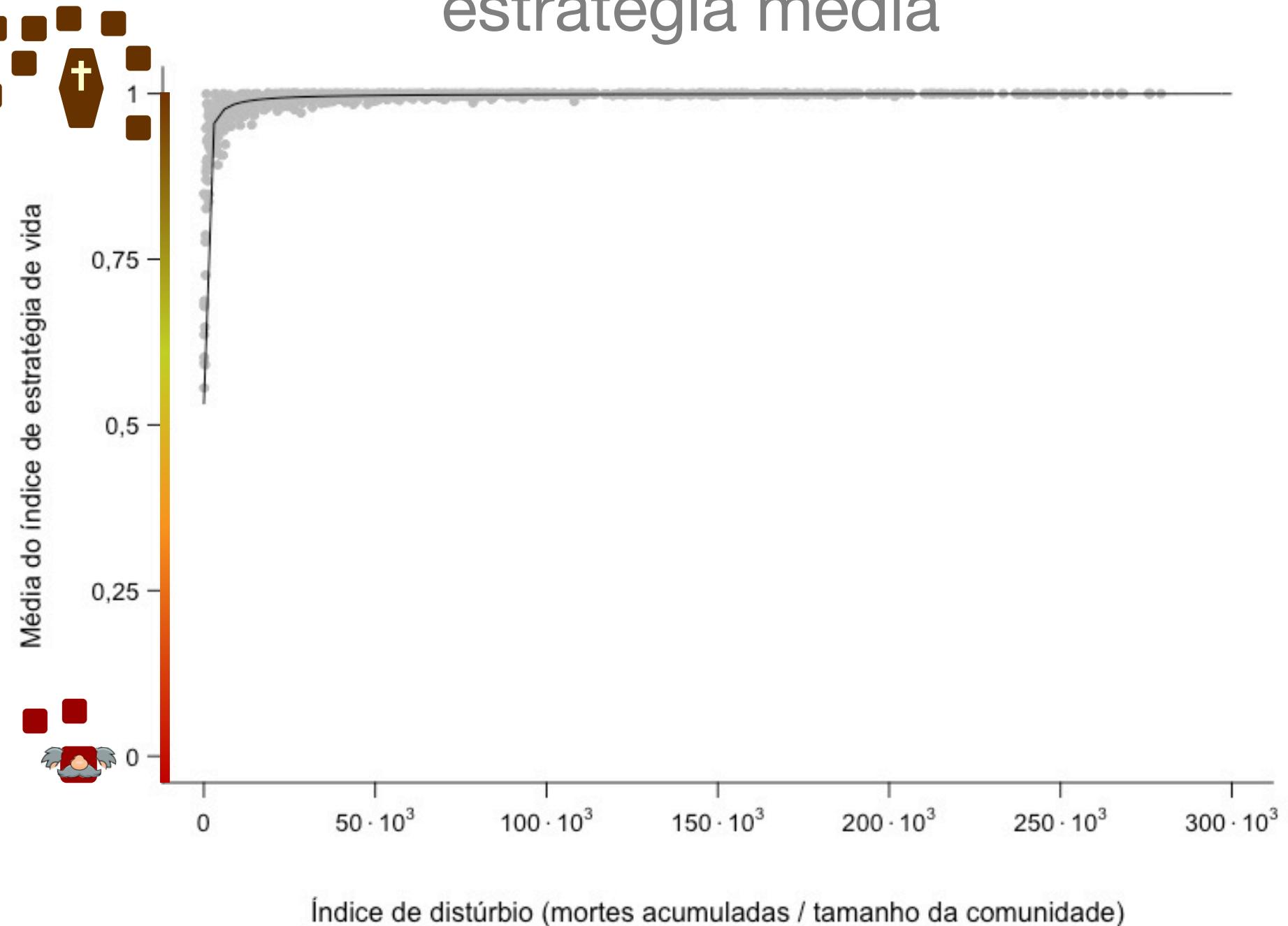
# estratégia média



# estratégia média



# estratégia média

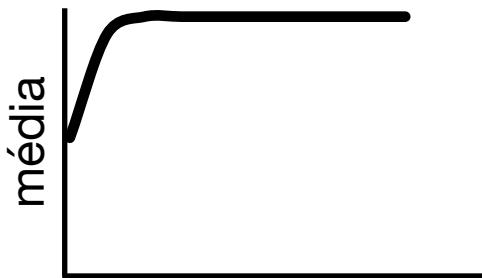
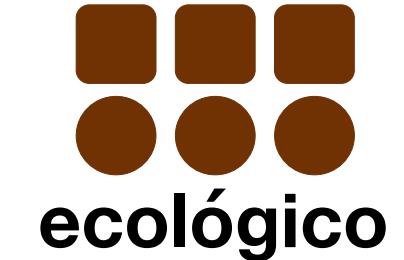
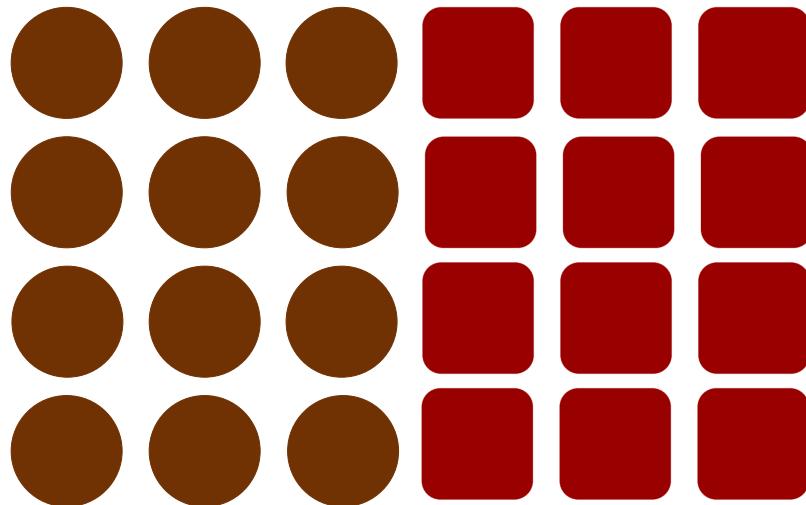


# exclusão competitiva de espécies

banco

x 96

x 24

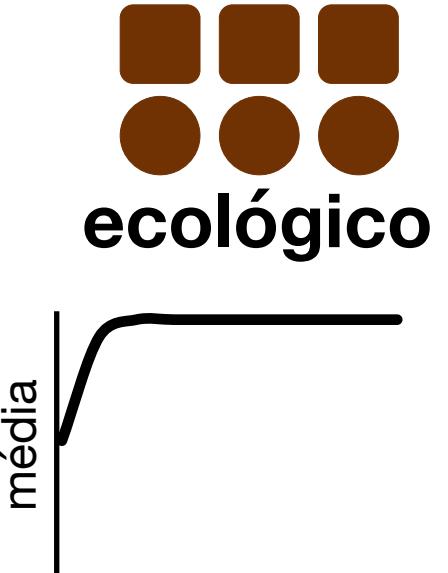
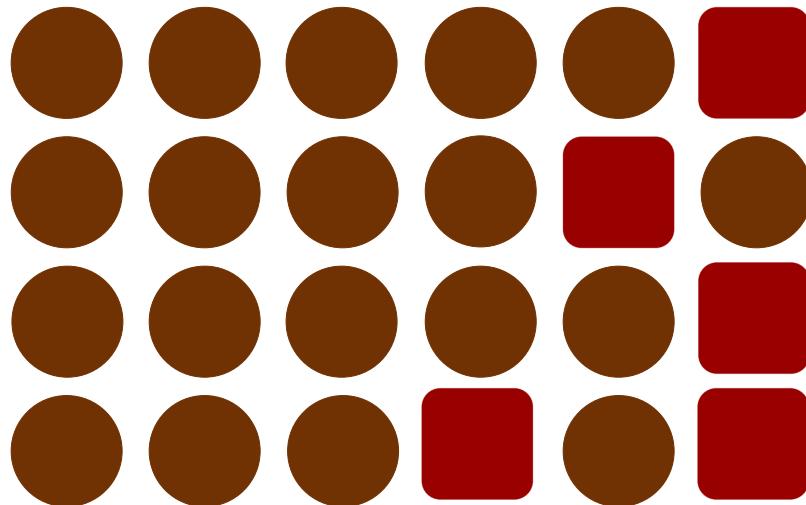


# exclusão competitiva de espécies

banco

● x 152

■ x 10

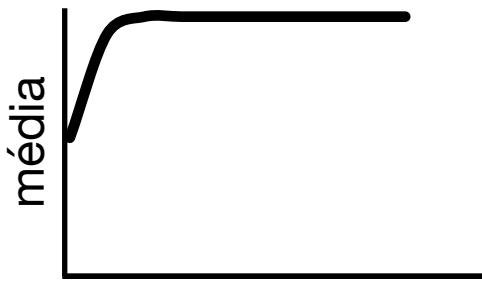
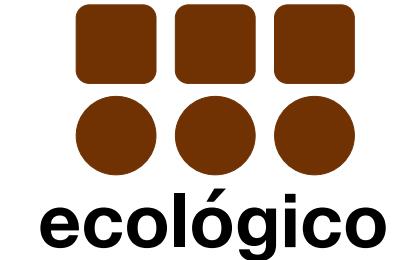
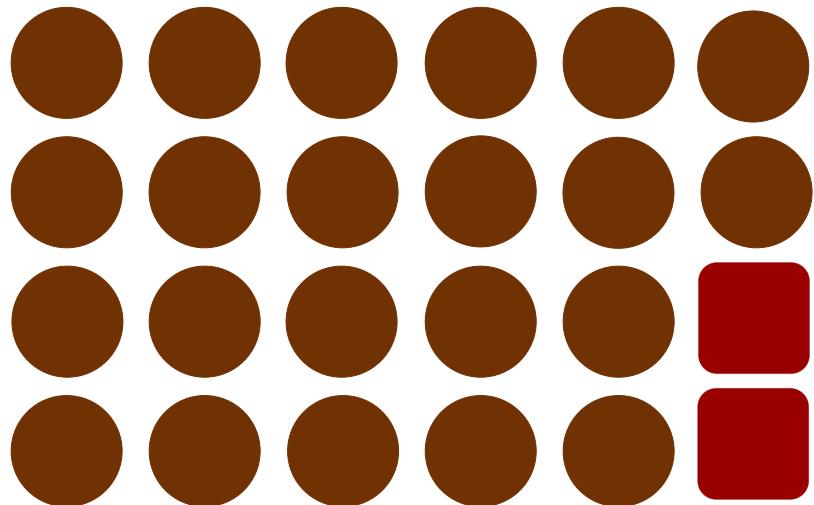


# exclusão competitiva de espécies

banco

● x 176

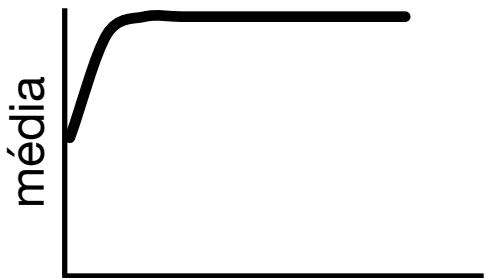
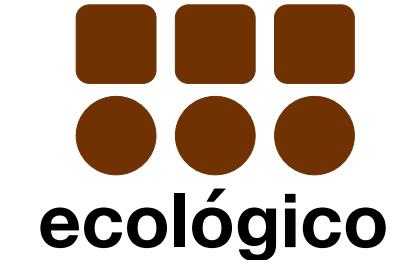
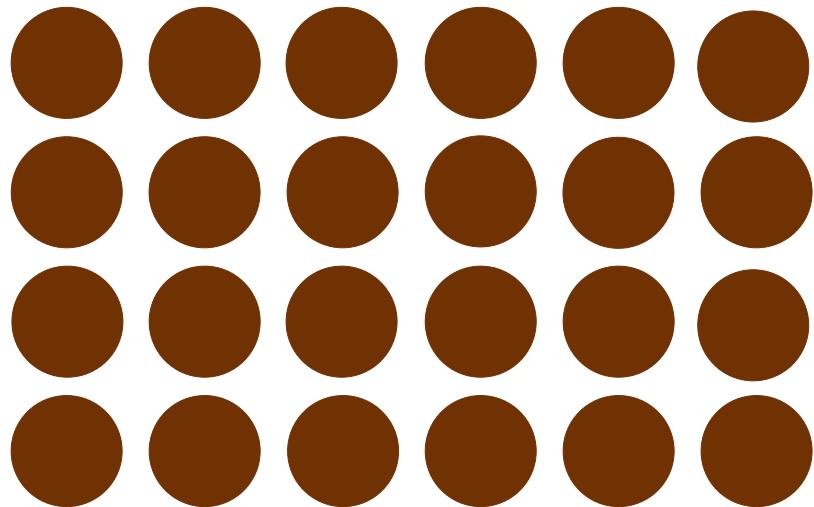
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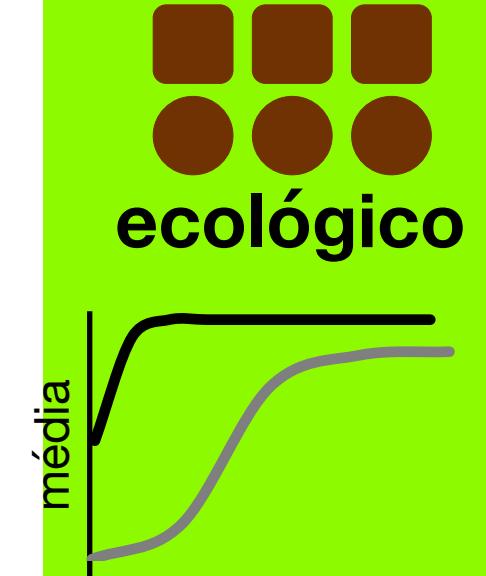
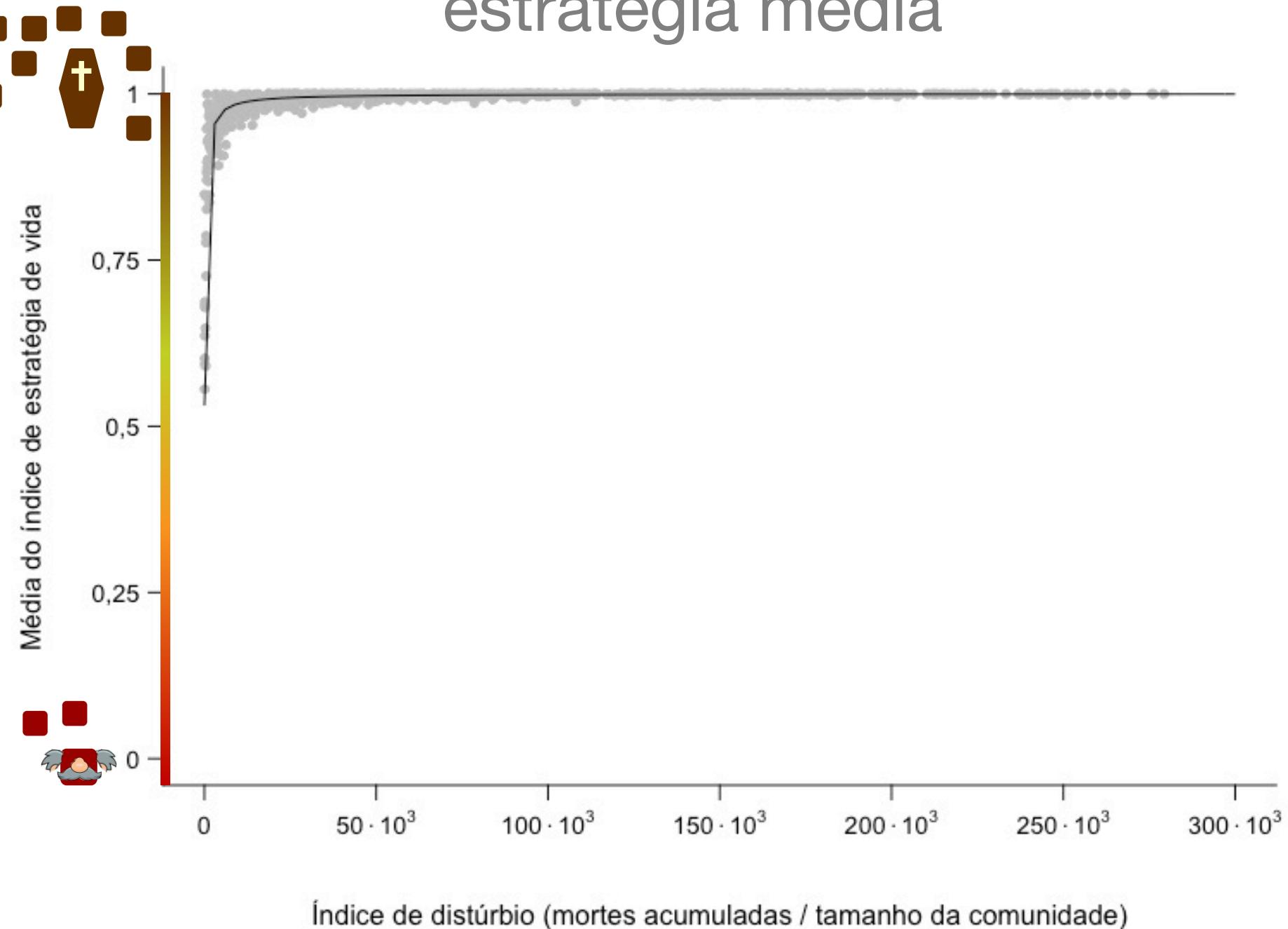
# exclusão competitiva de espécies

banco

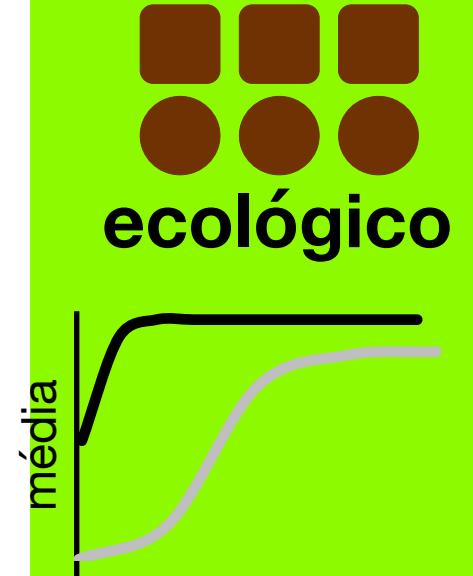
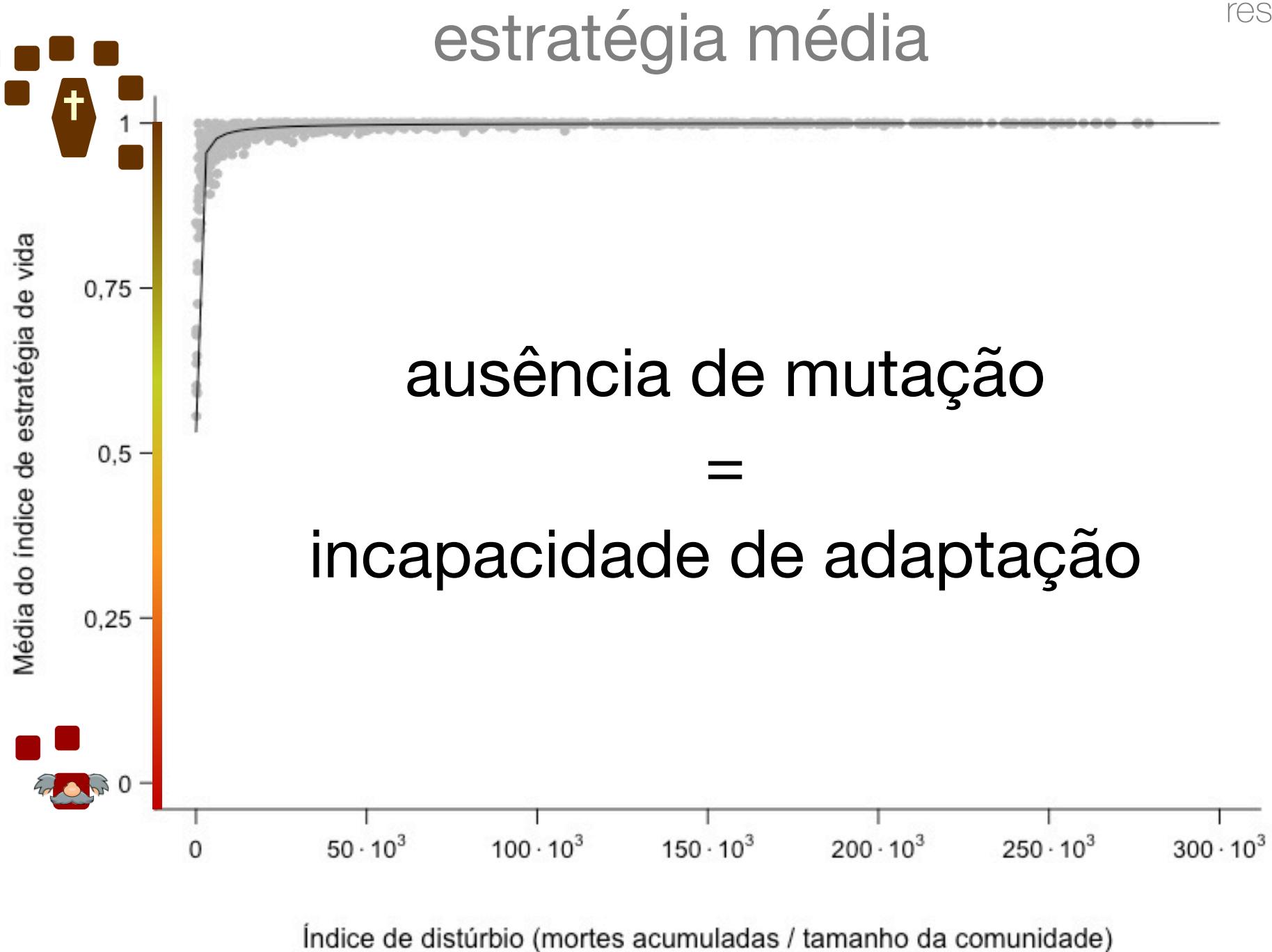
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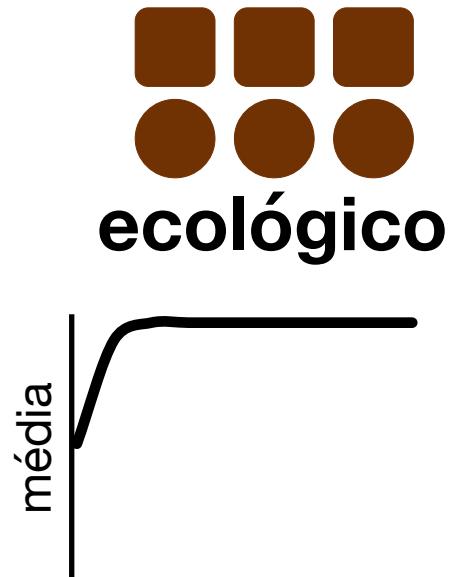
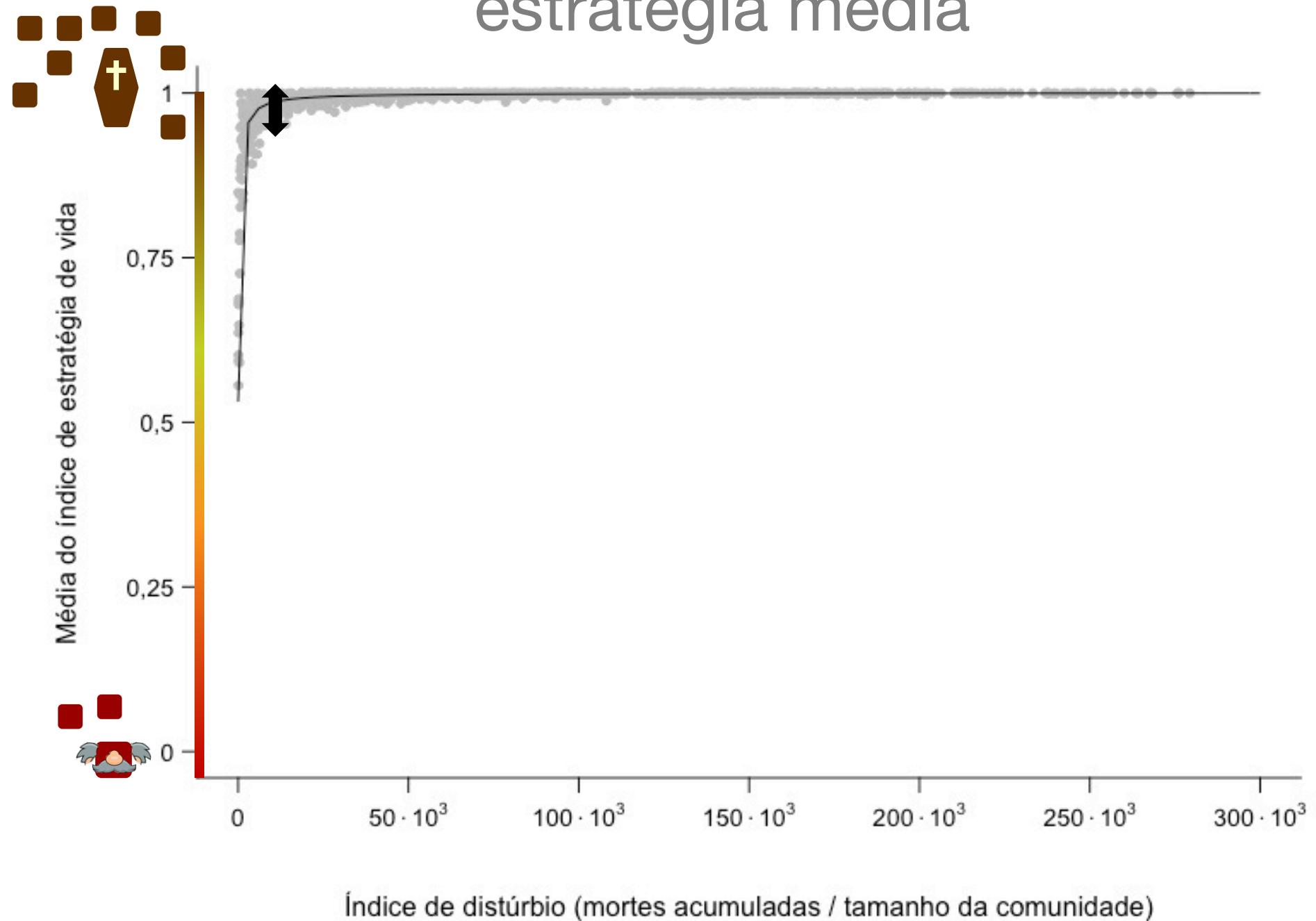
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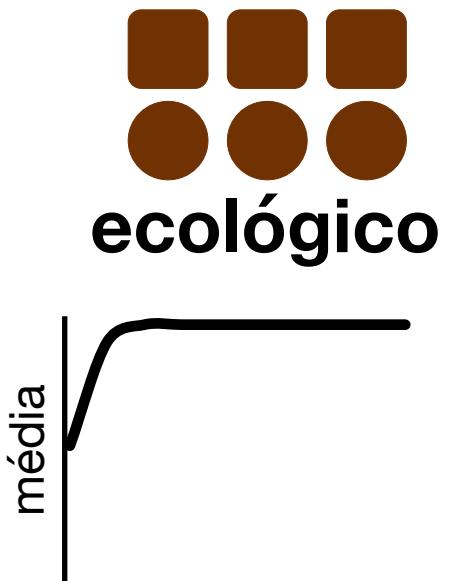
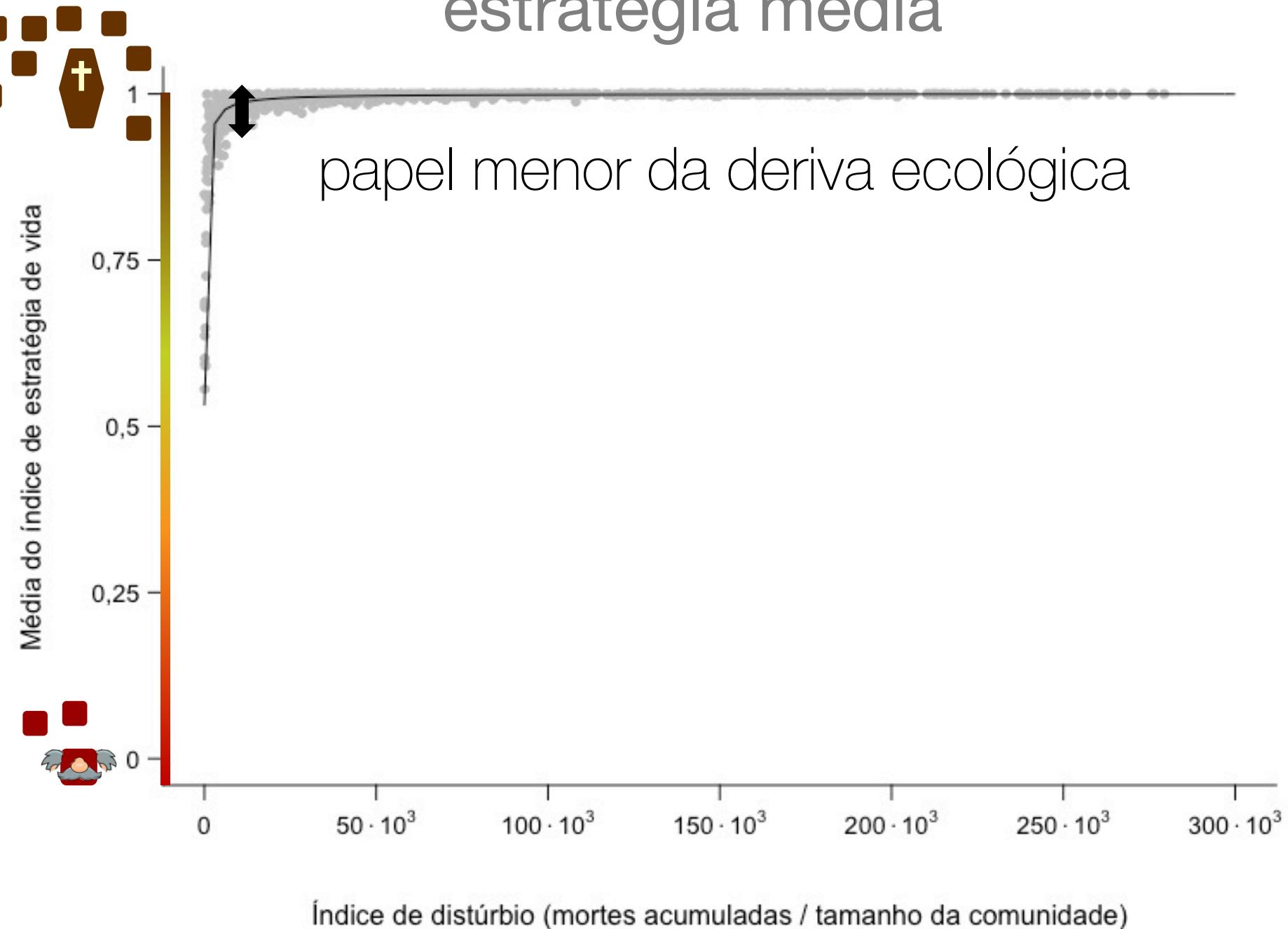
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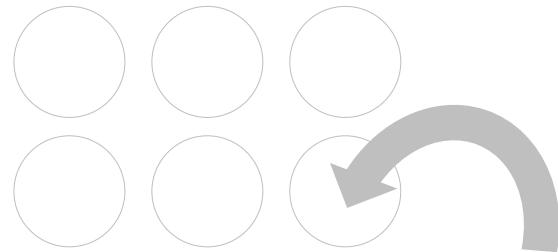
# estratégia média



# estratégia média



## evolutivo

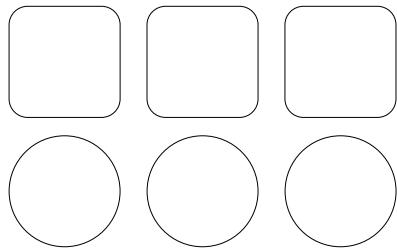


estratégia média

diversidade  
de estratégias

-

## ecológico

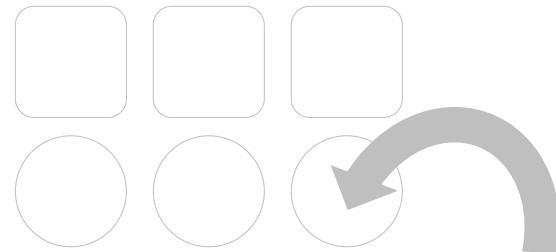


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

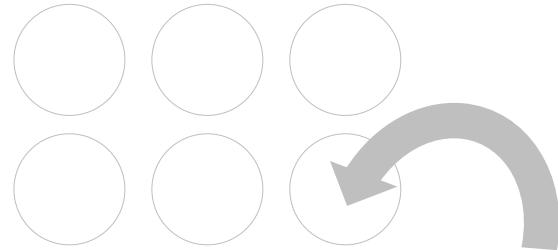


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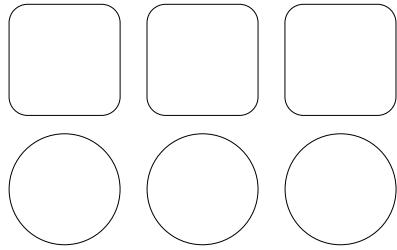


estratégia média

diversidade  
de estratégias

-

## ecológico

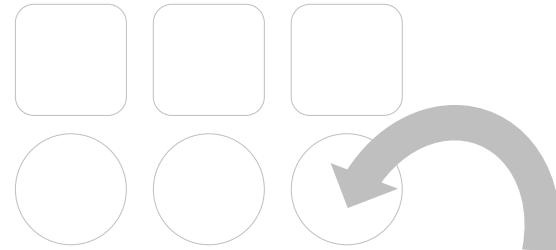


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo



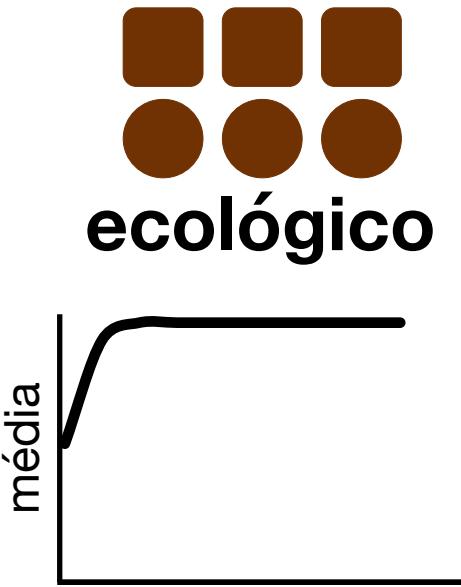
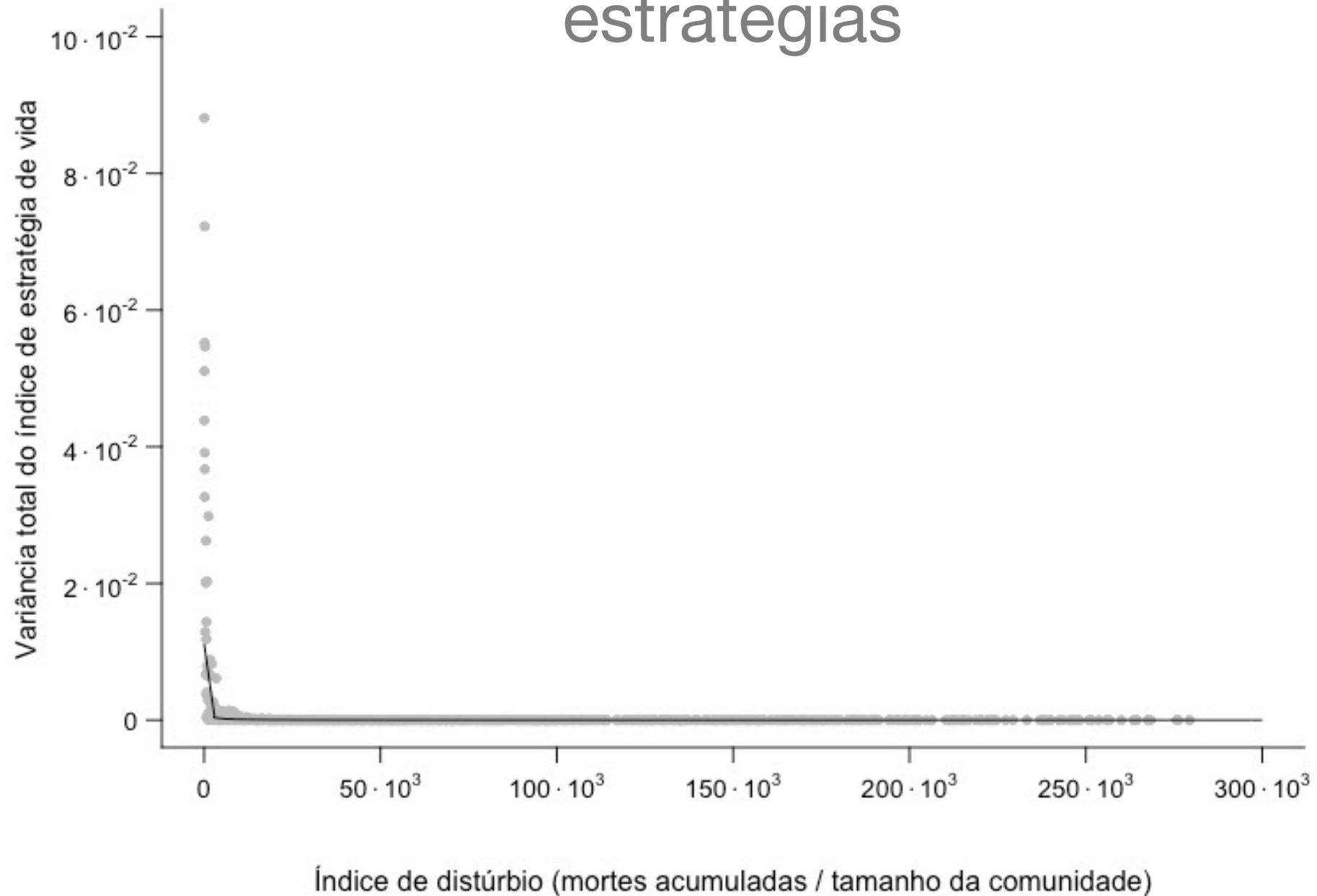
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diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

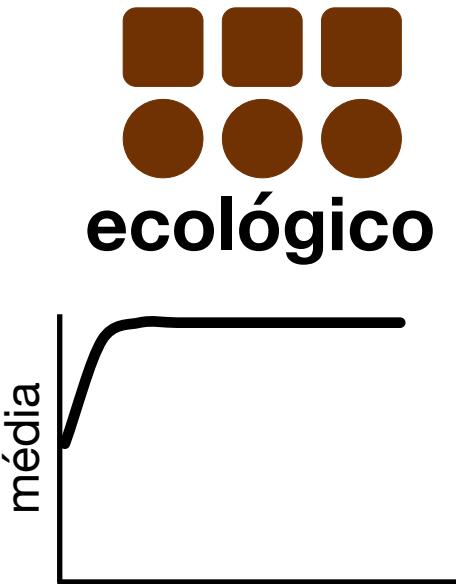
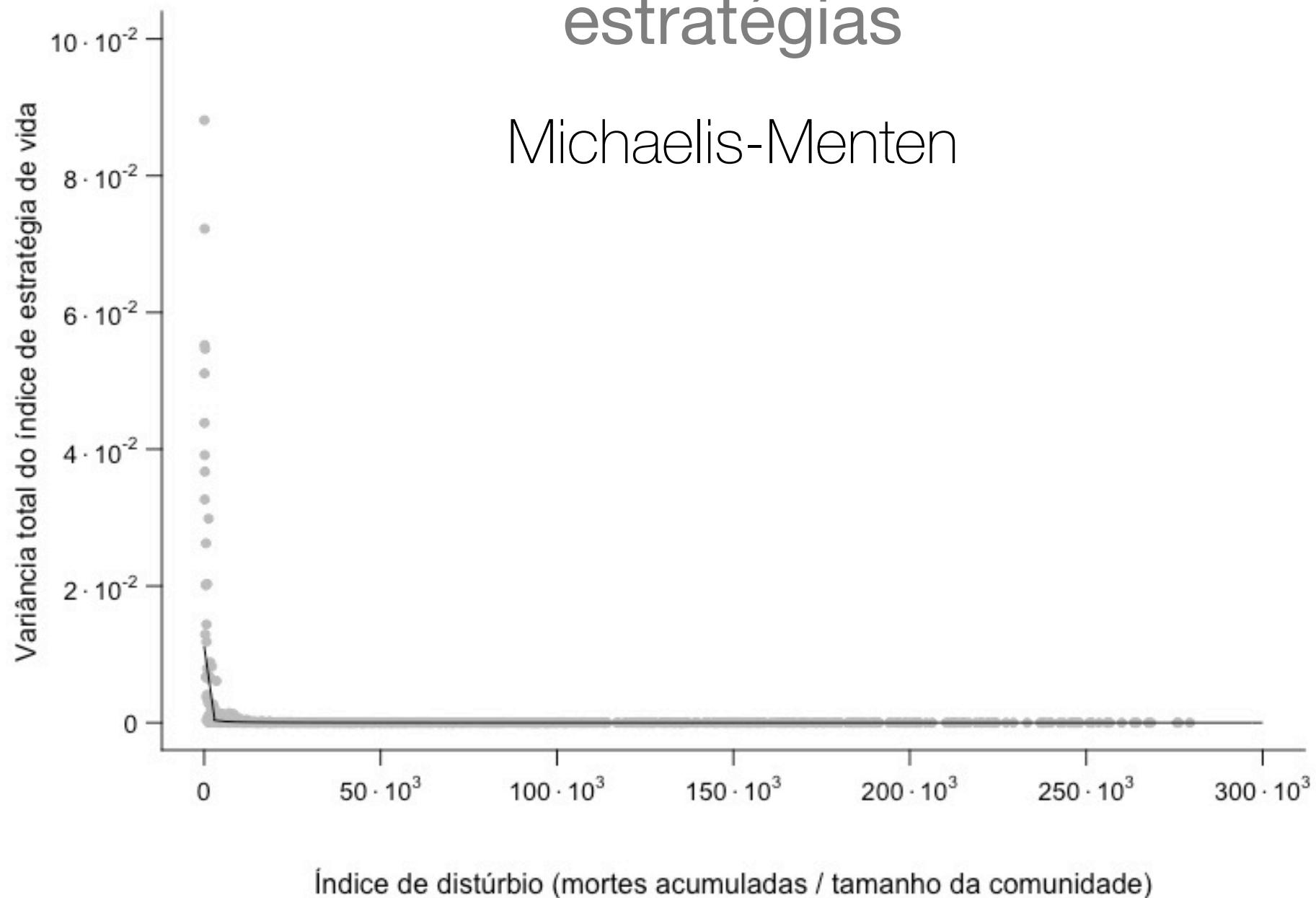
# diversidade de estratégias

resultados e discussão



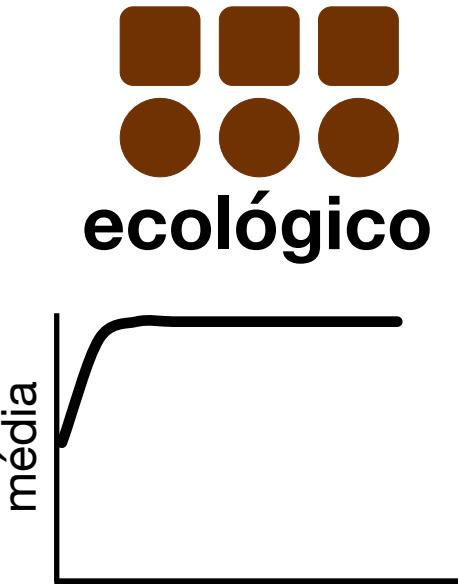
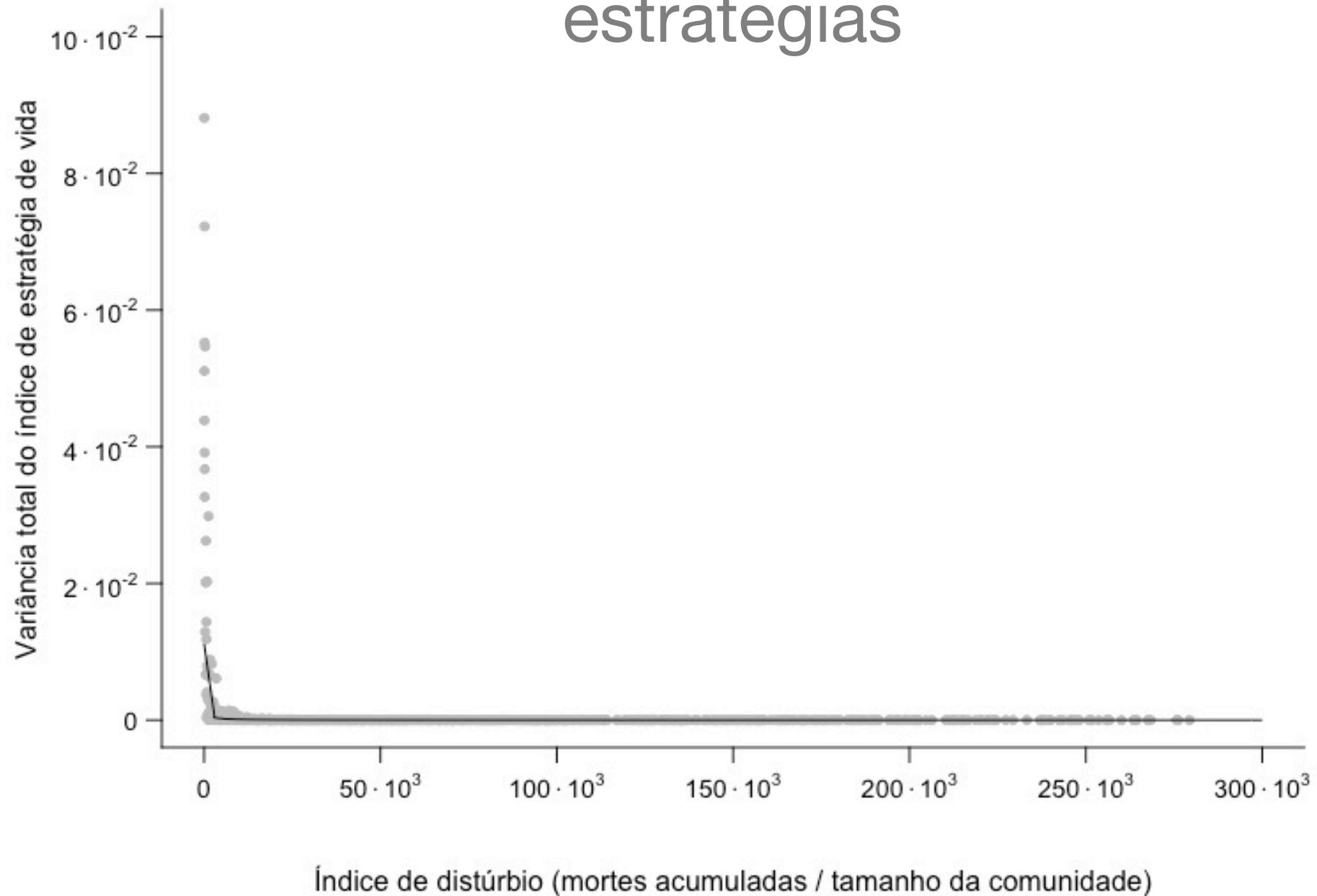
# diversidade de estratégias

## resultados e discussão

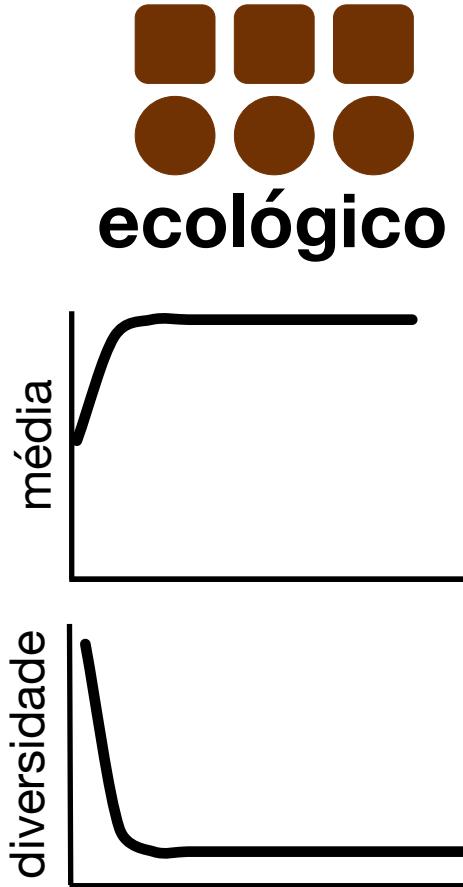
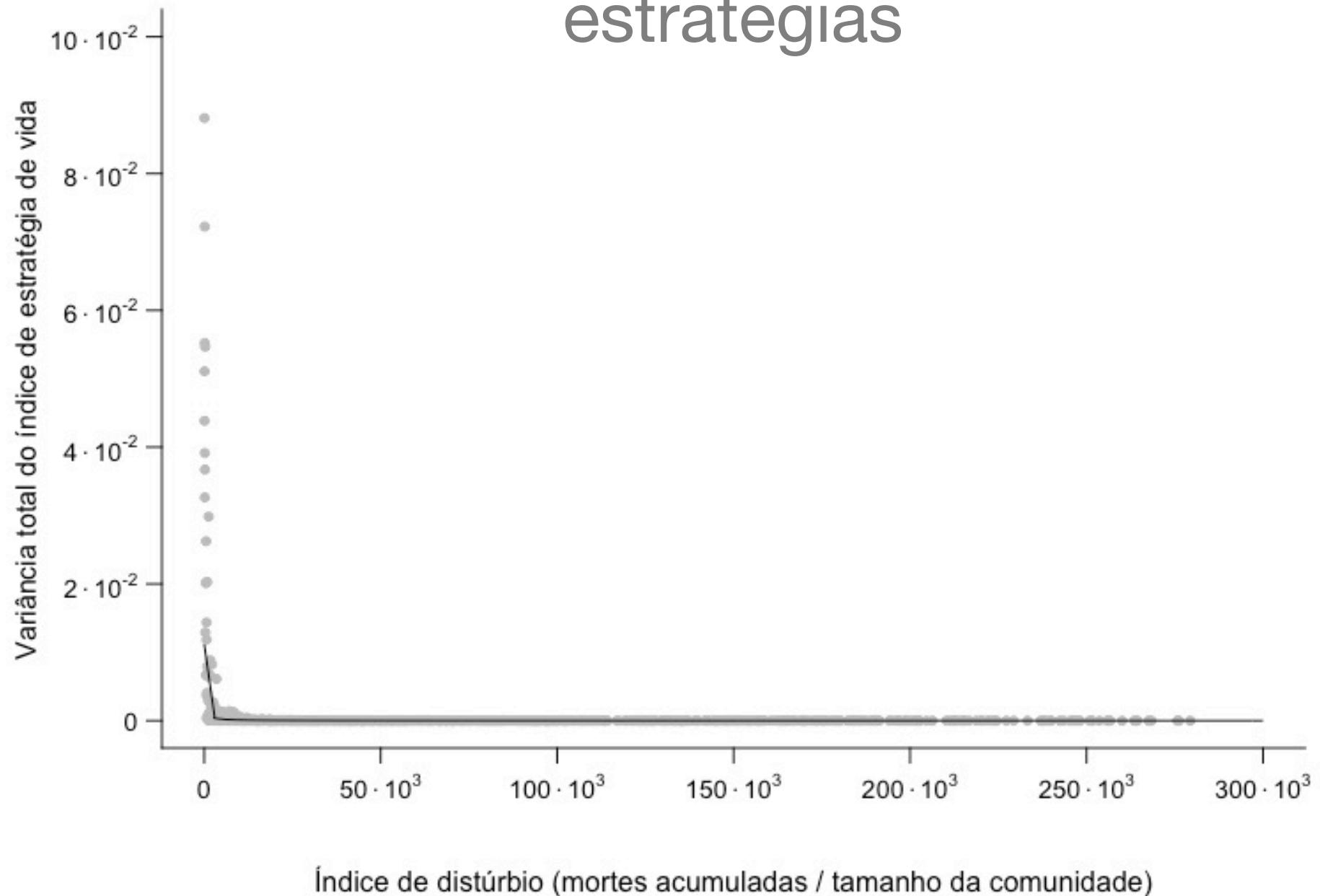


# diversidade de estratégias

## resultados e discussão

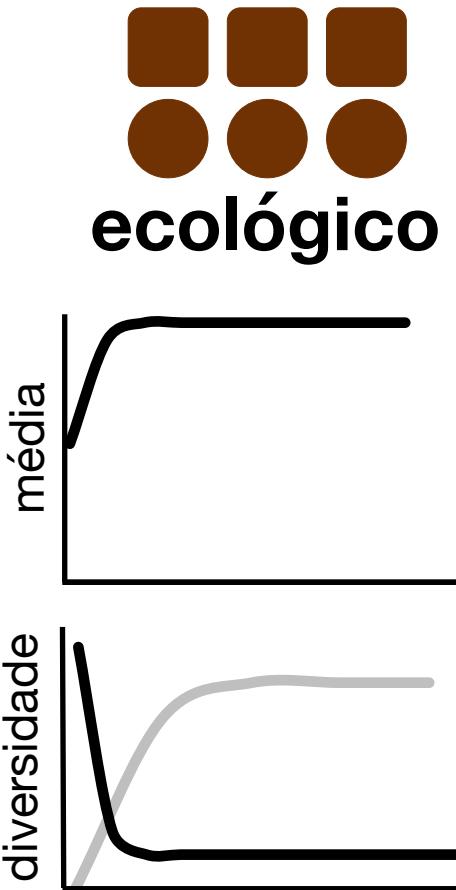
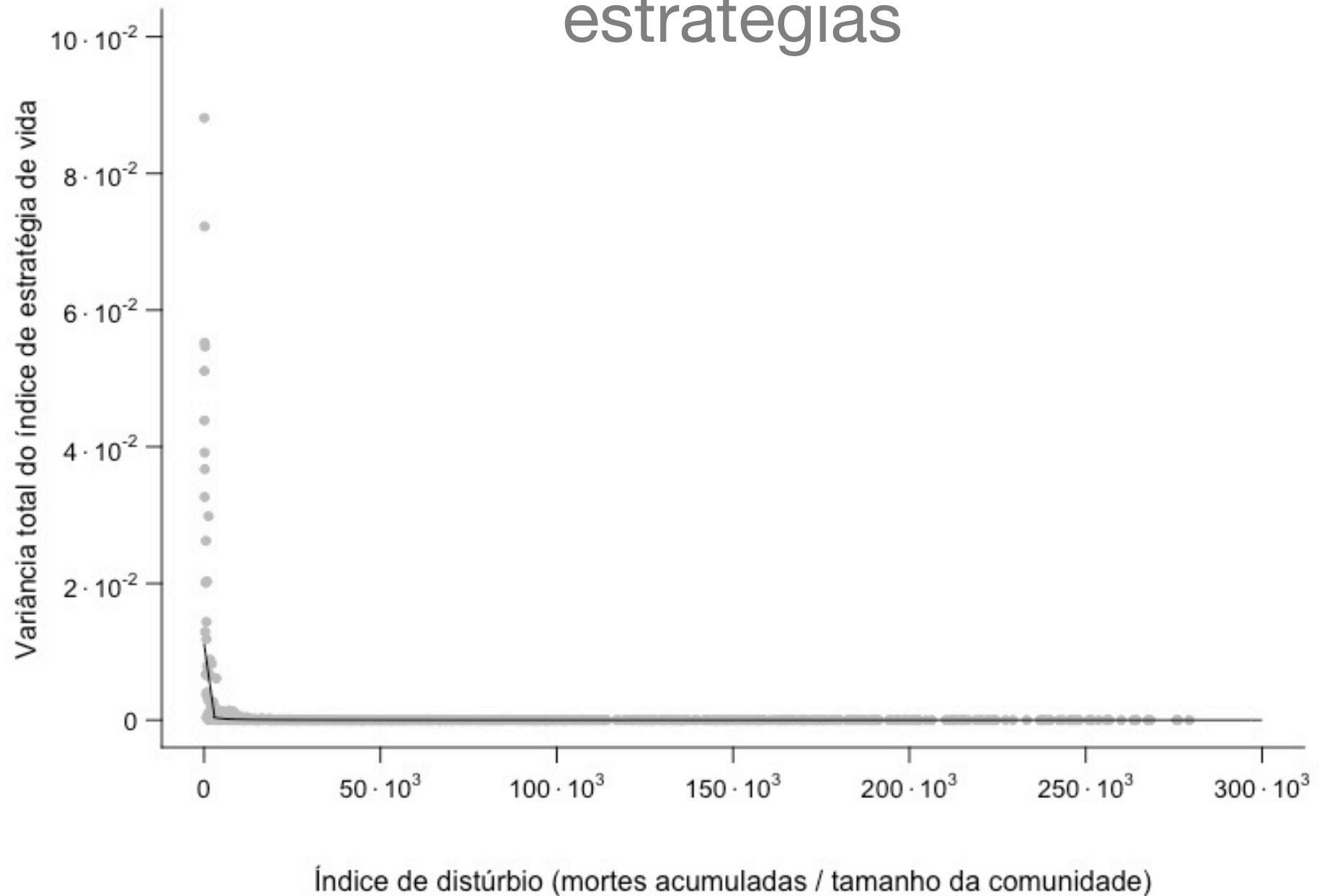


# diversidade de estratégias

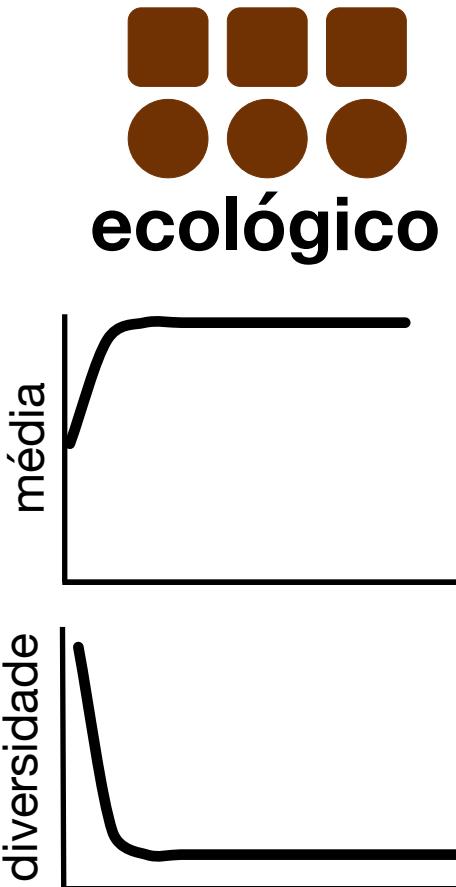
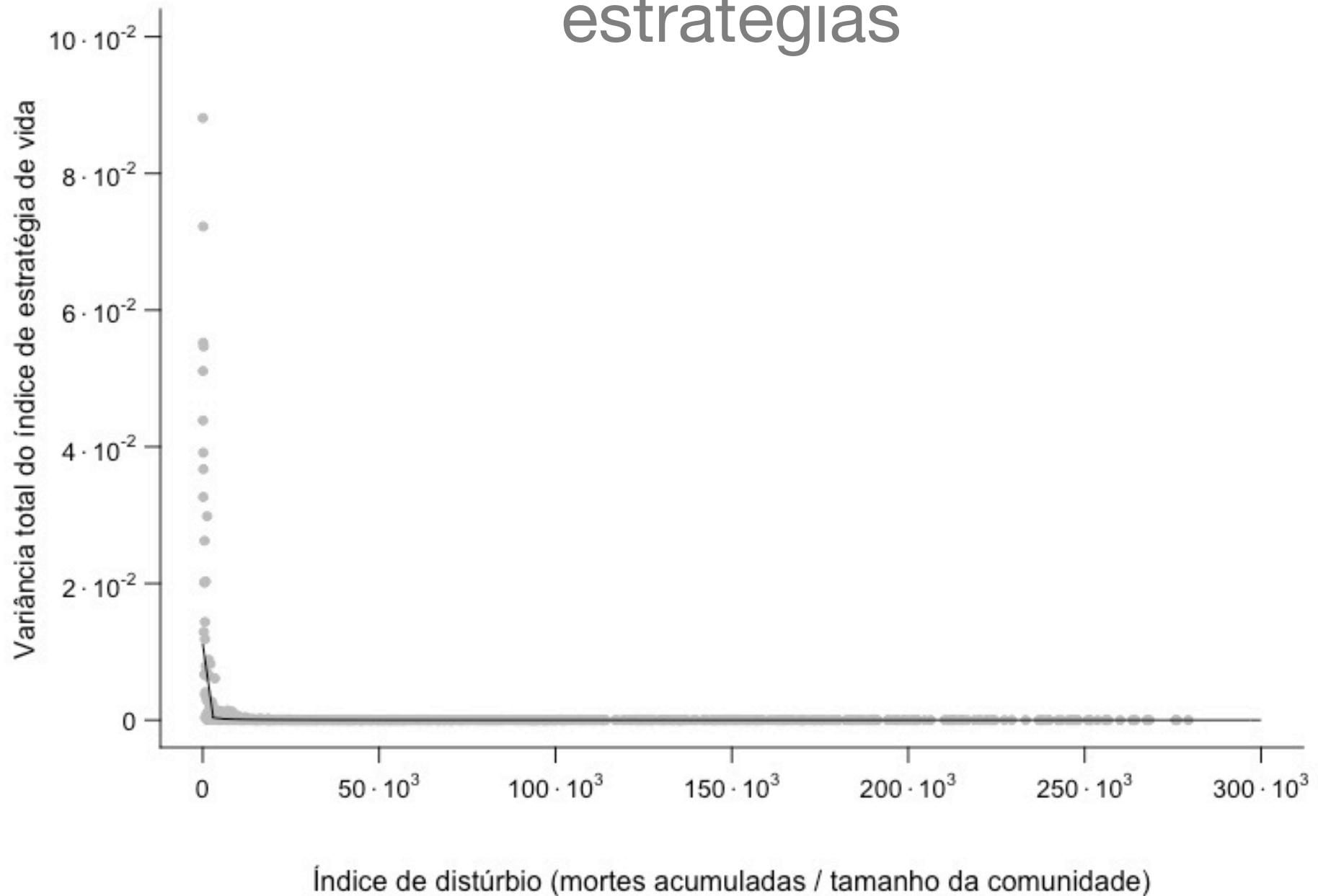


Índice de distúrbio (mortes acumuladas / tamanho da comunidade)

# diversidade de estratégias

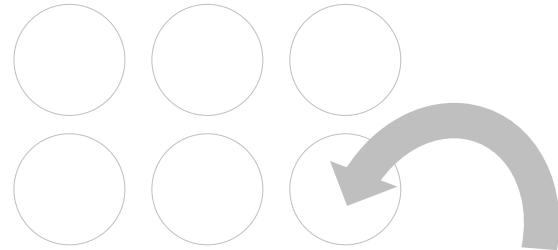


# diversidade de estratégias



**ecológico**

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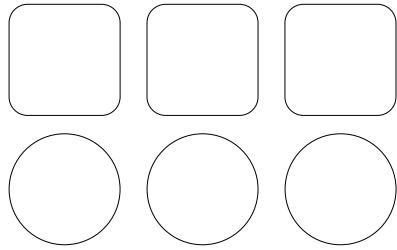


estratégia média

diversidade  
de estratégias

-

## ecológico

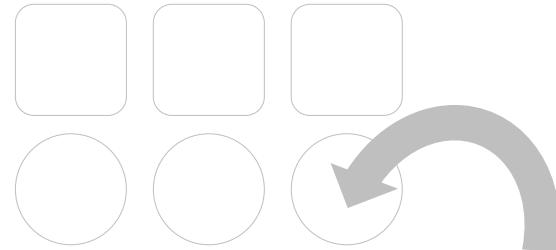


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

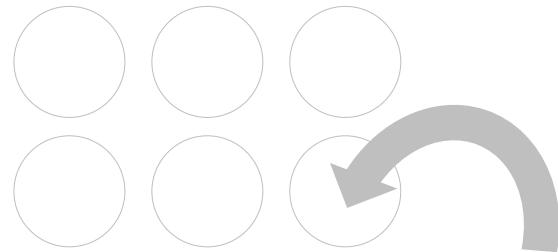


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## evolutivo

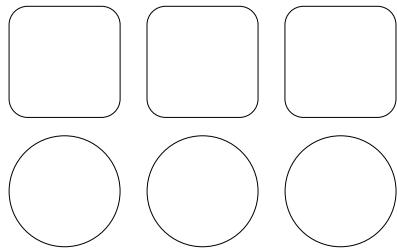


estratégia média

diversidade  
de estratégias

-

## ecológico

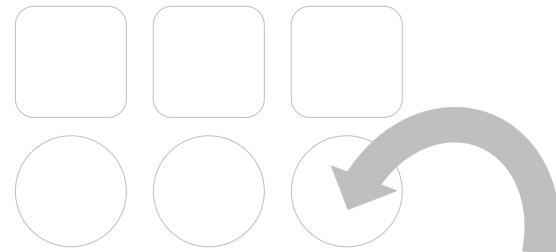


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

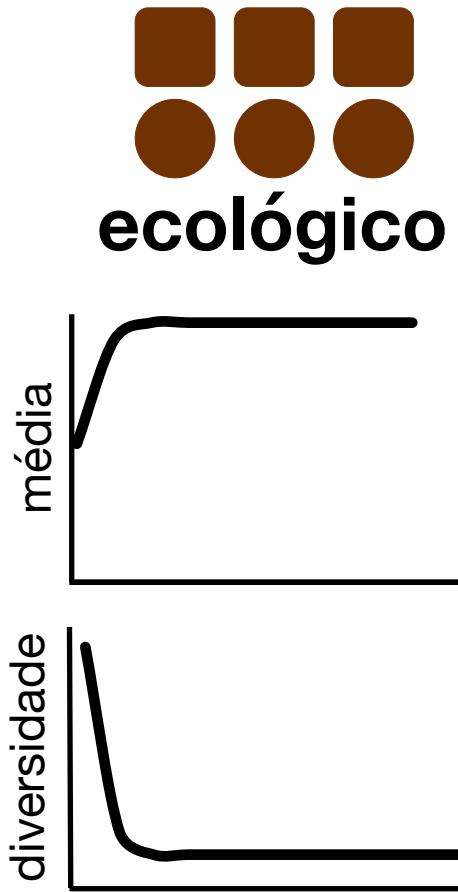
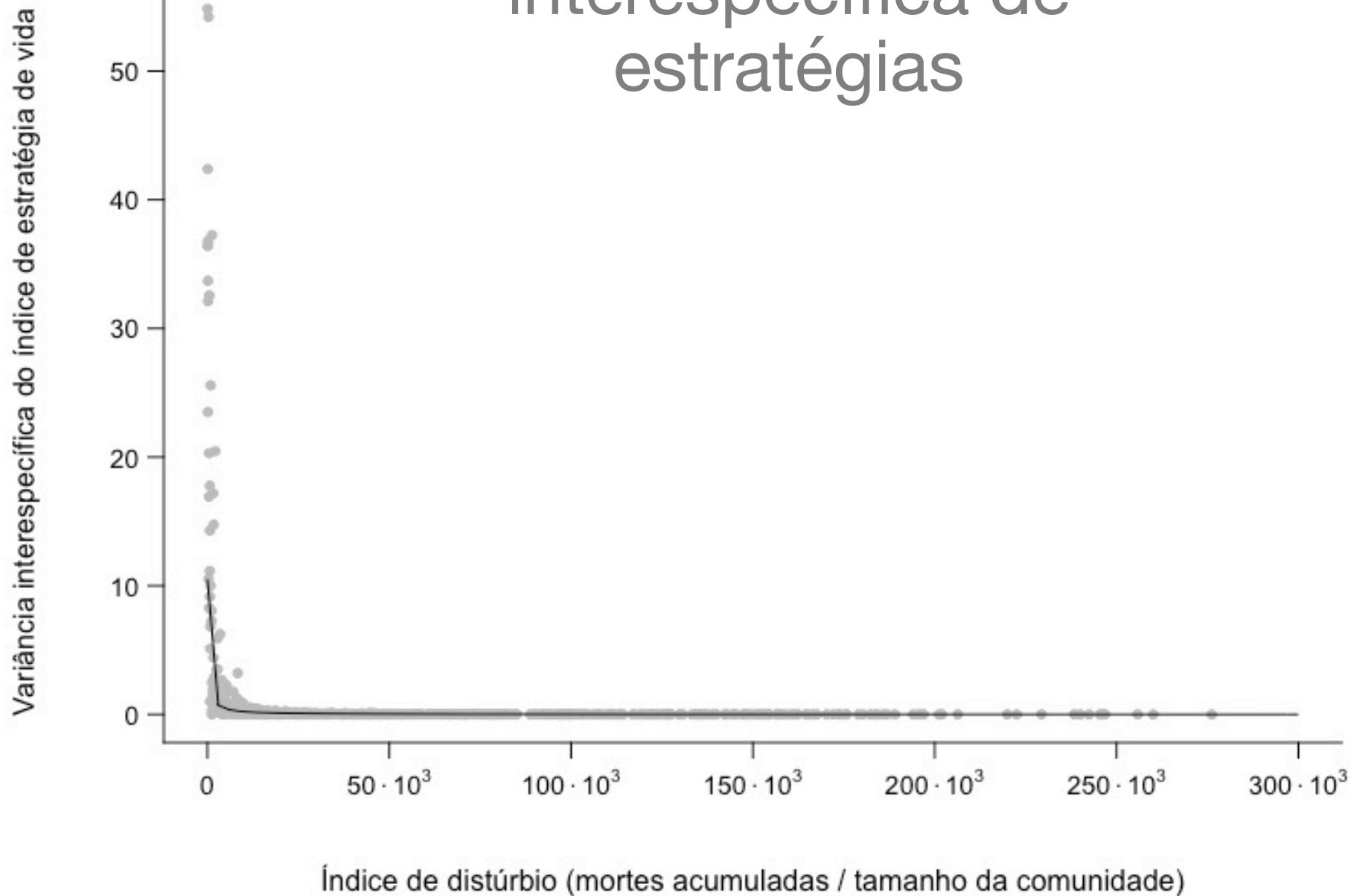


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

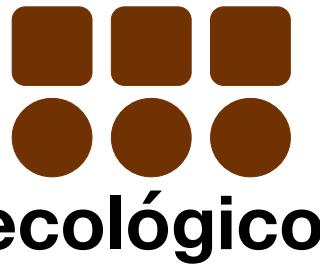
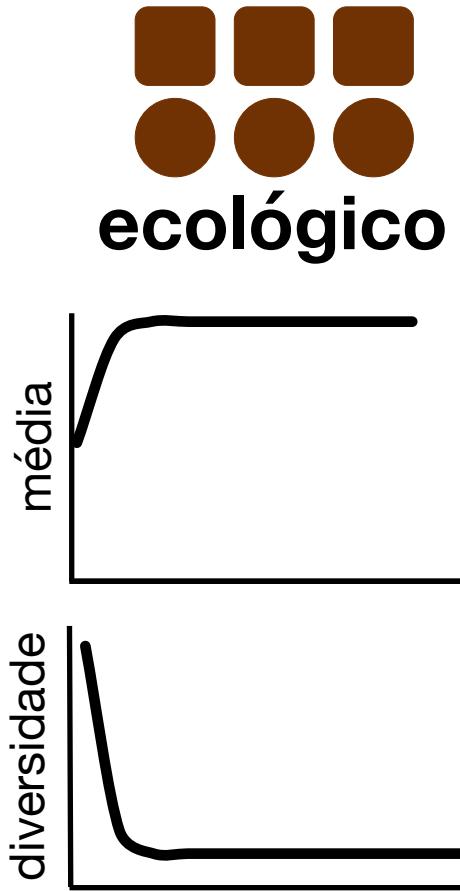
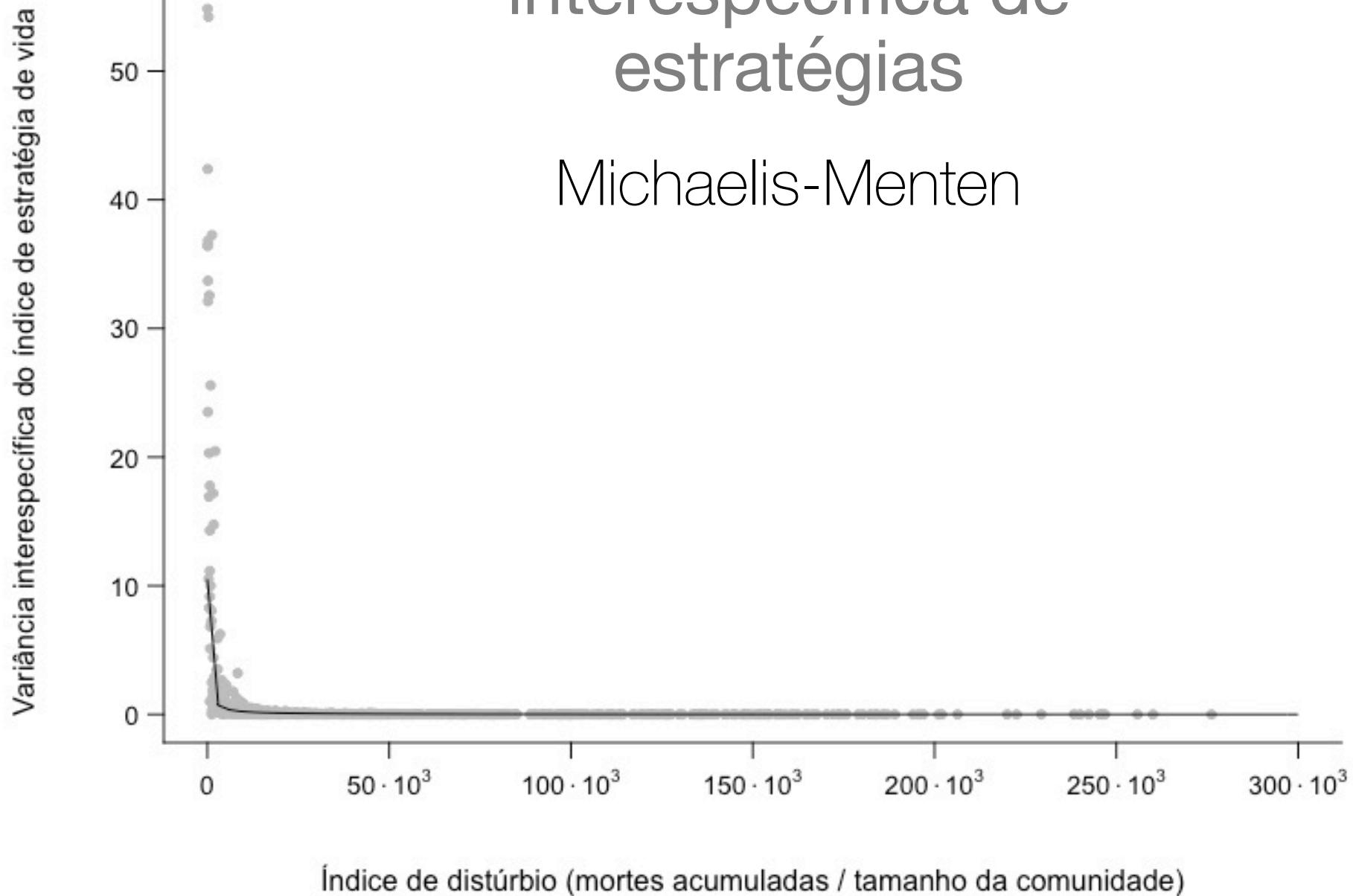
# heterogeneidade interespecífica de estratégias



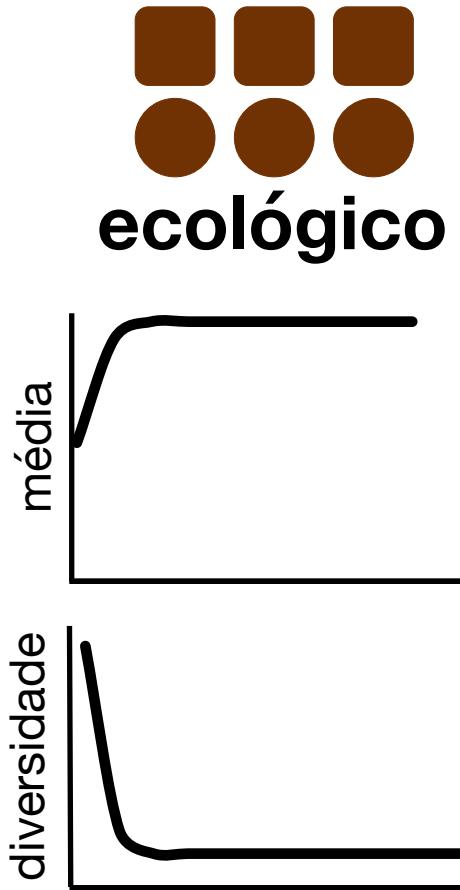
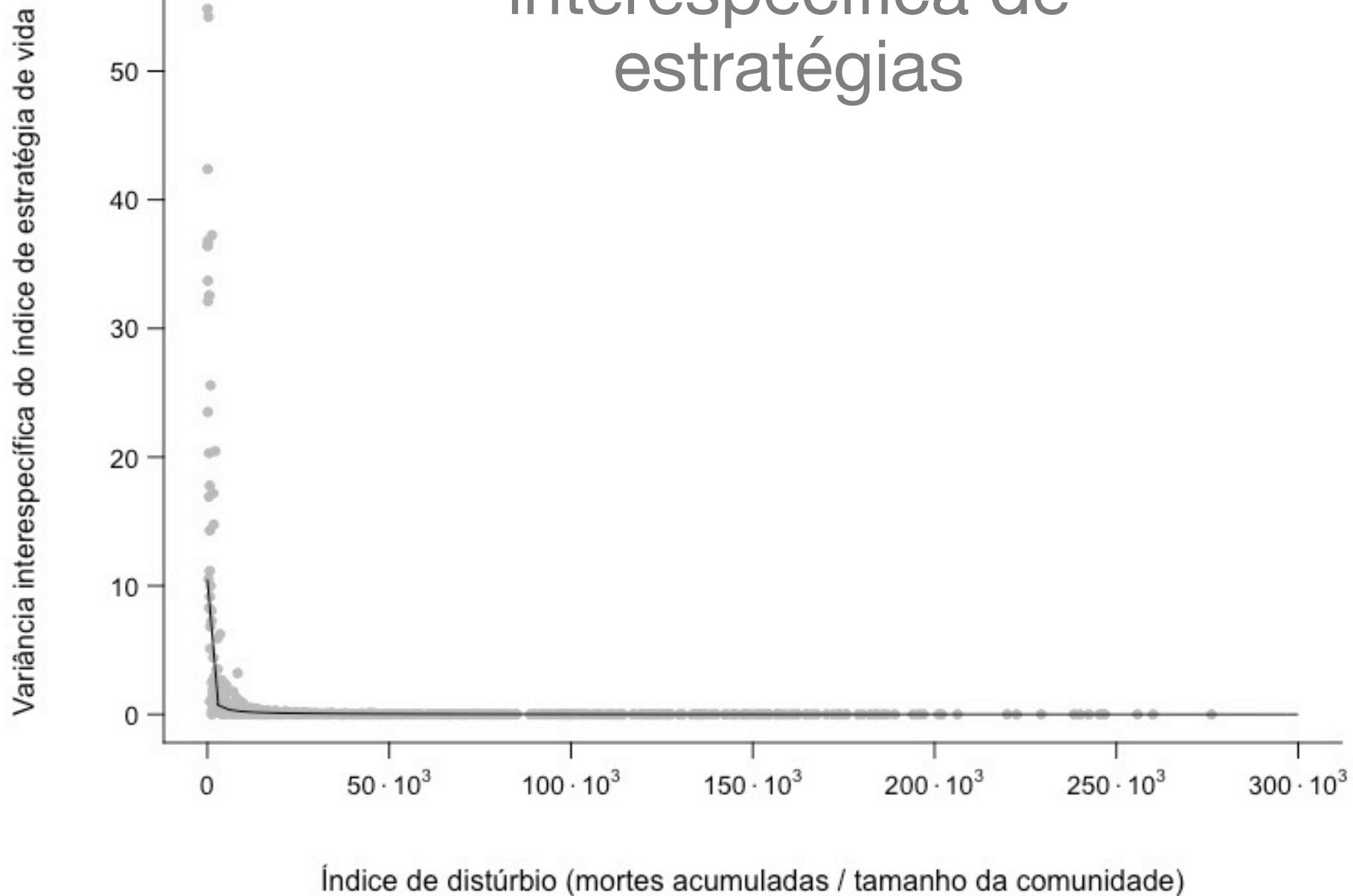
**ecológico**

# heterogeneidade interespecífica de estratégias

Michaelis-Menten

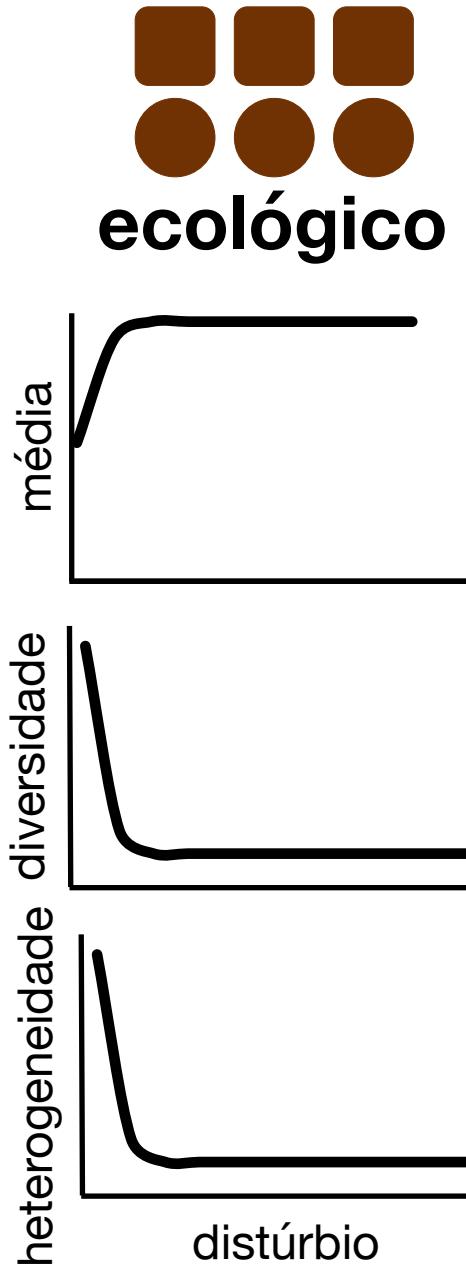
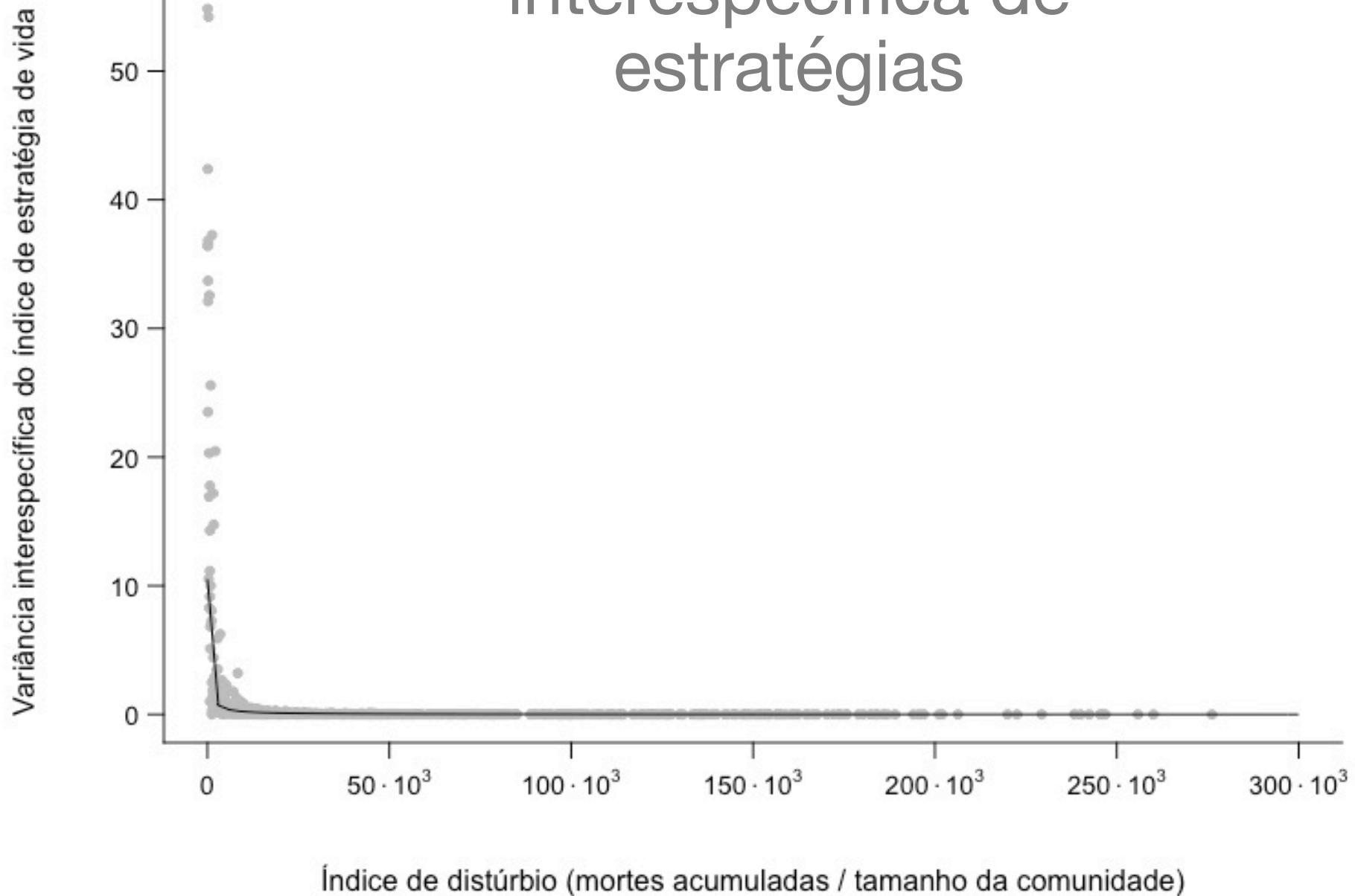


# heterogeneidade interespecífica de estratégias



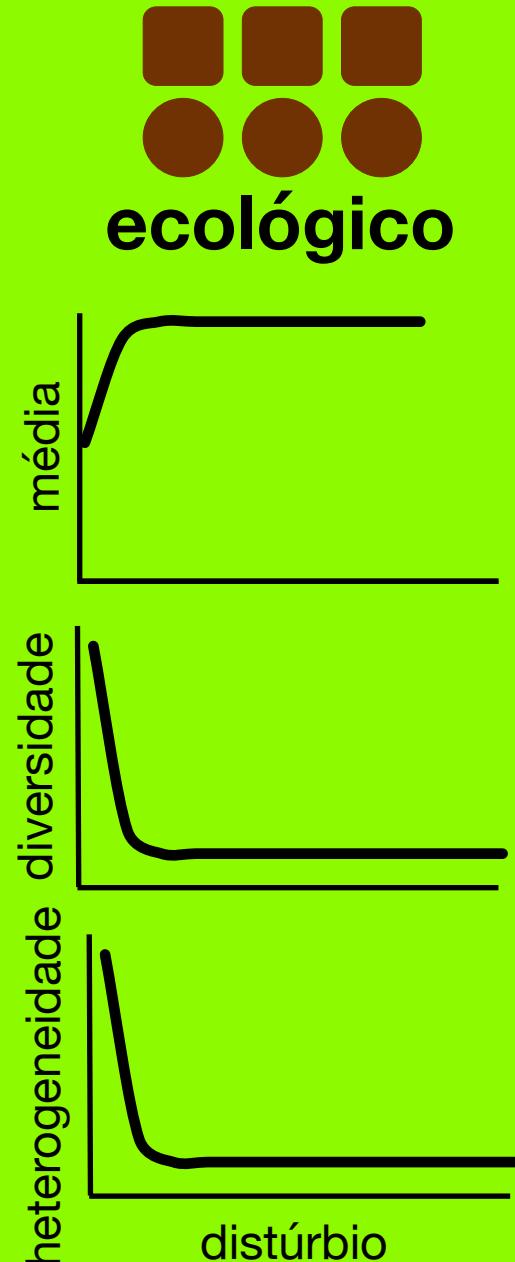
**ecológico**

# heterogeneidade interespecífica de estratégias

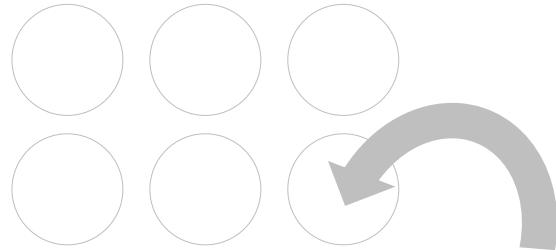


## Queda na diversidade:

- Maiores chances de **morte de populações inteiras** por distúrbio
- Redução nos tamanhos populacionais:
  - **Exclusão competitiva mais rápida**
  - Efeito da **deriva ecológica** no mesmo sentido



## evolutivo

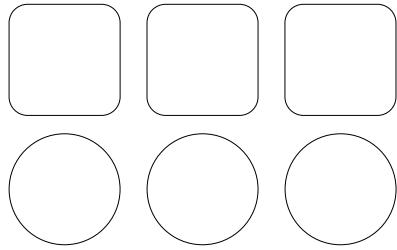


estratégia média

diversidade  
de estratégias

-

## ecológico

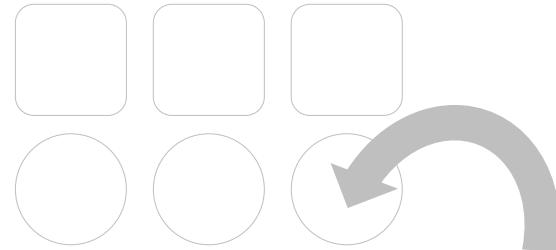


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

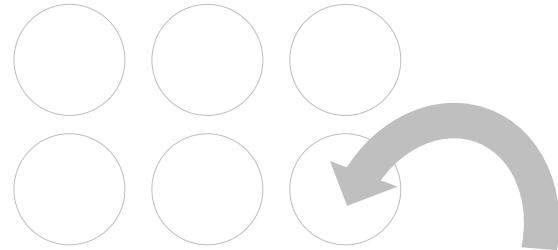


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## evolutivo

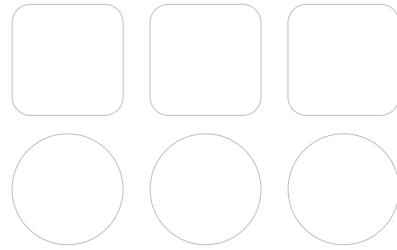


estratégia média

diversidade  
de estratégias

-

## ecológico

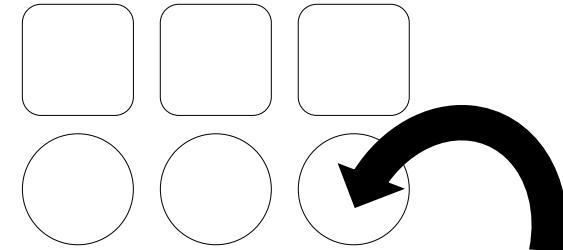


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de estratégias

heterogeneidade  
interespecífica de  
estratégias

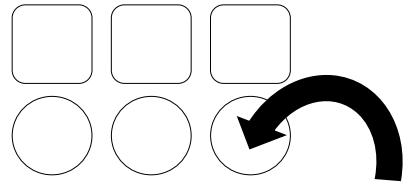
## eco-evolutivo



estratégia média

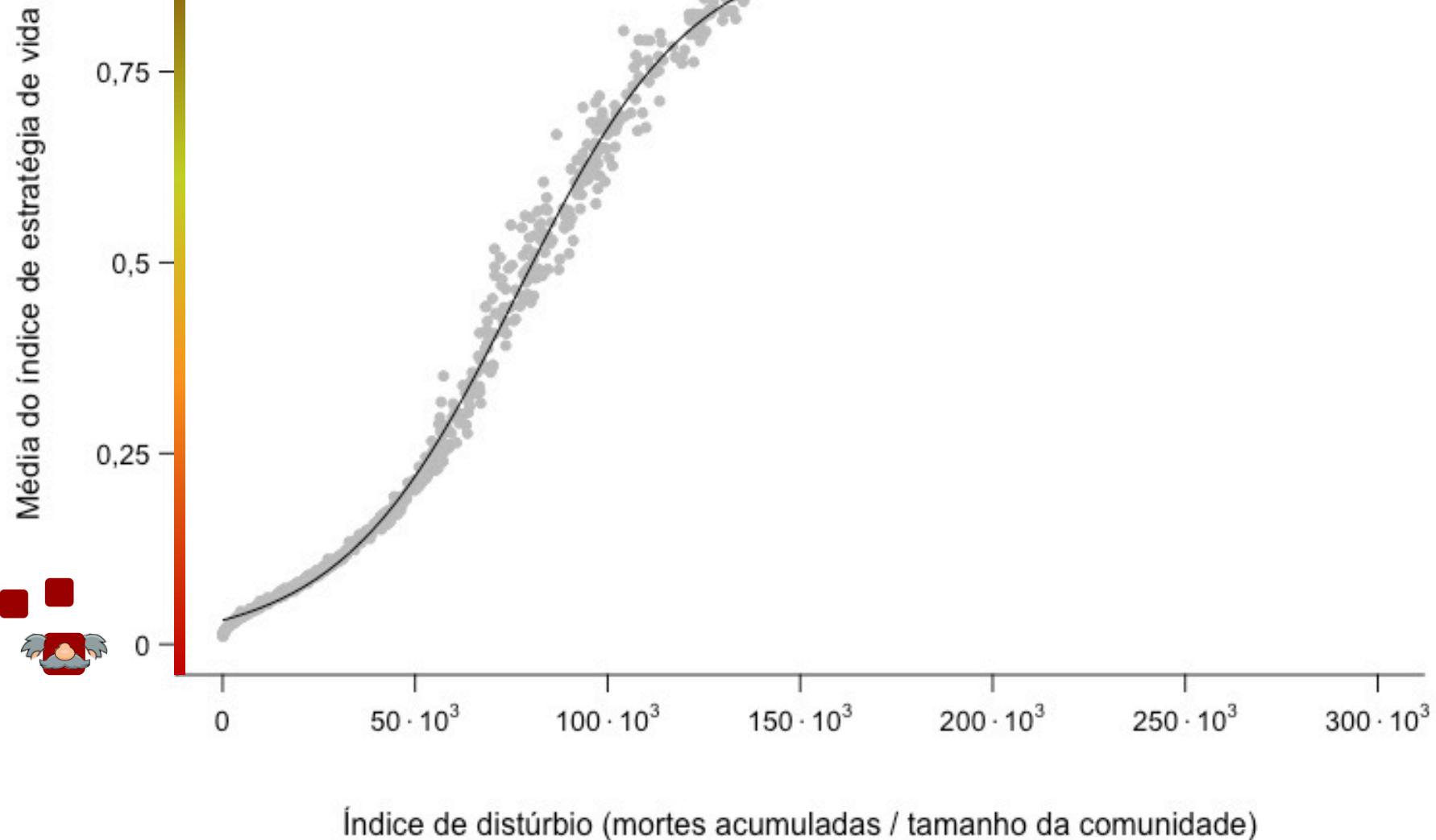
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de estratégias

heterogeneidade  
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estratégias

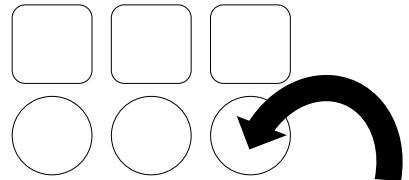


**eco-evolutivo**

# estratégia média



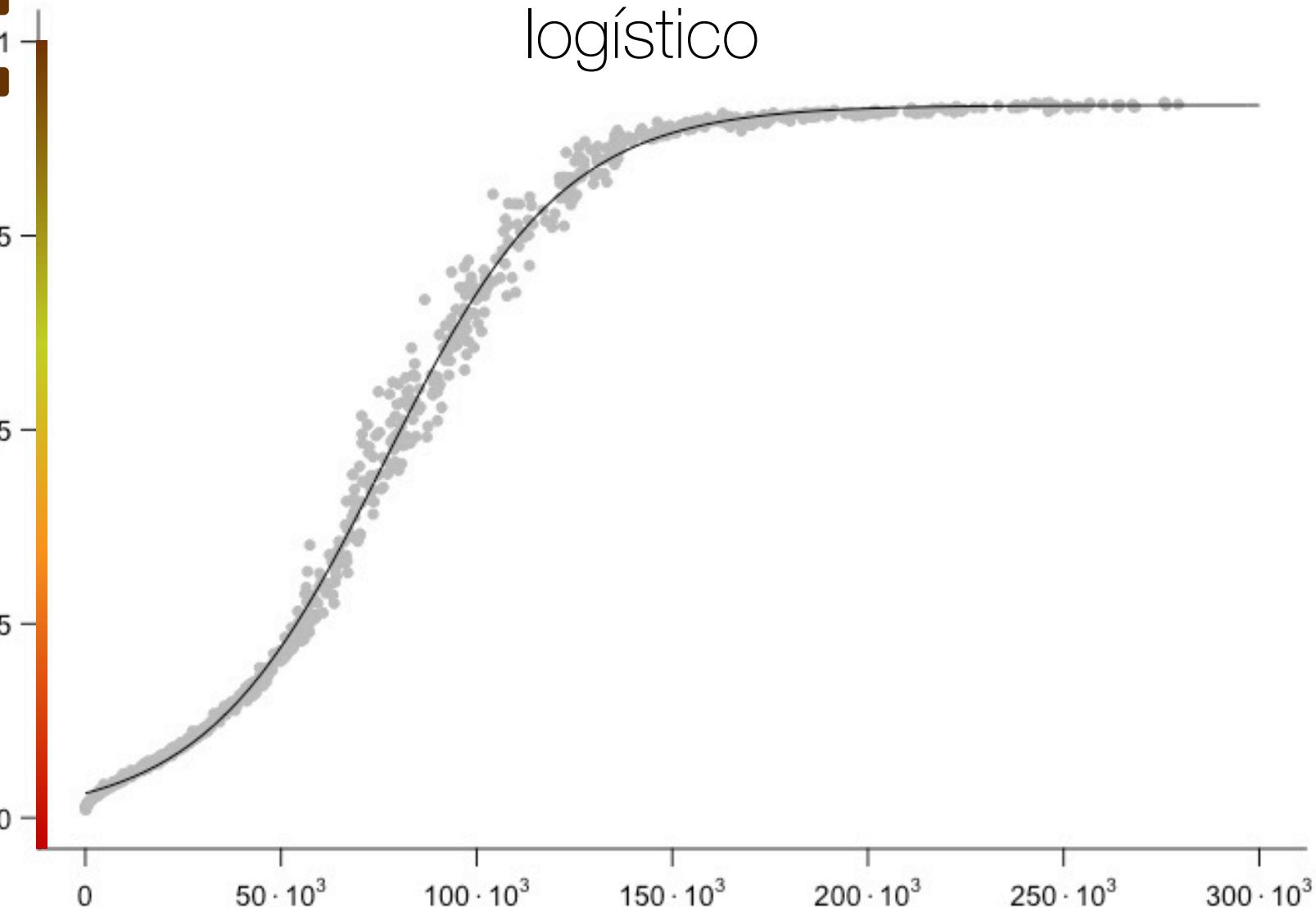
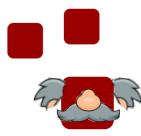
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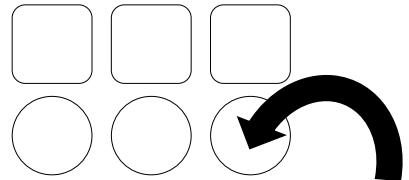
# estratégia média

logístico

Média do índice de estratégia de vida

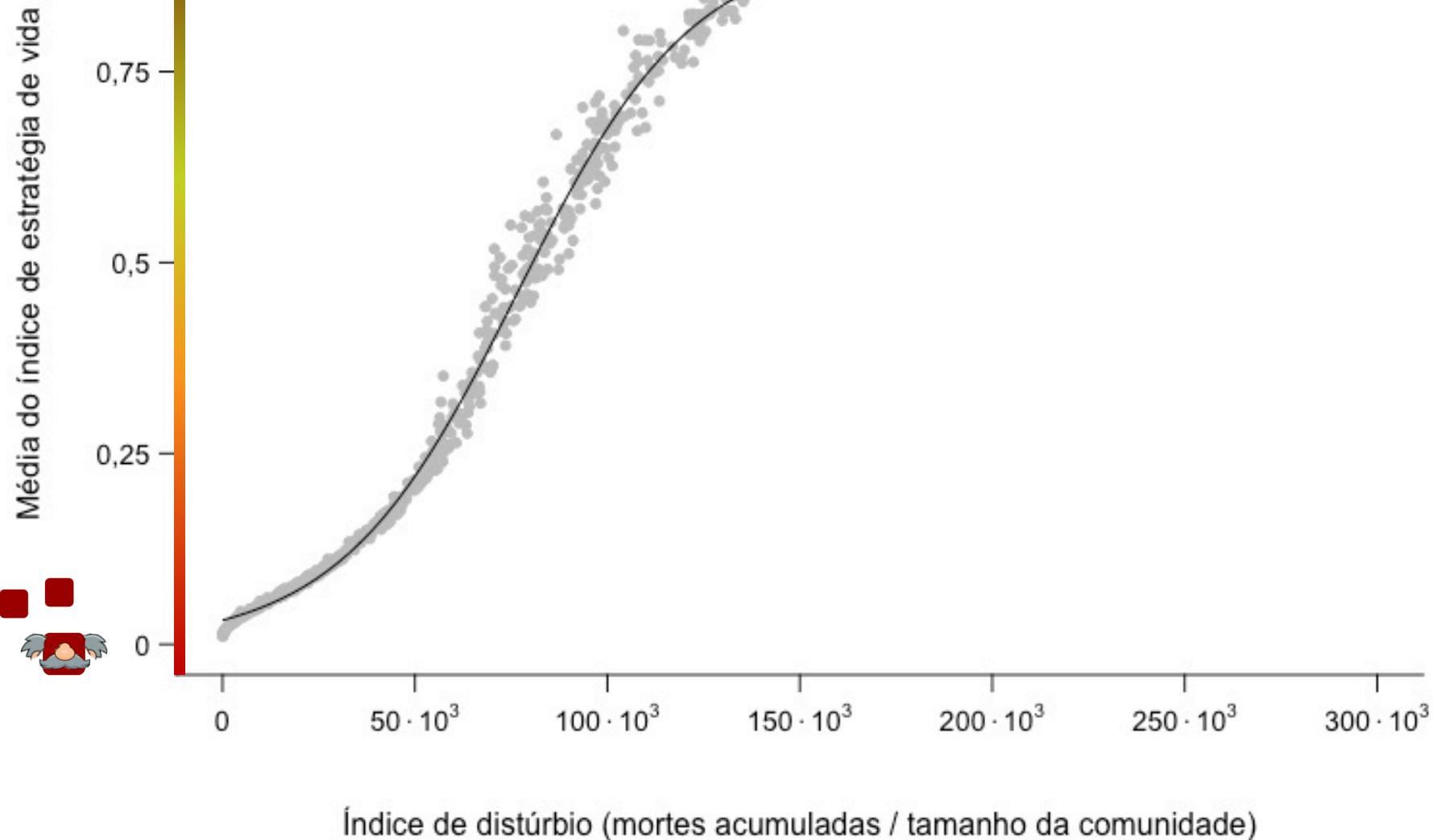


Índice de distúrbio (mortes acumuladas / tamanho da comunidade)

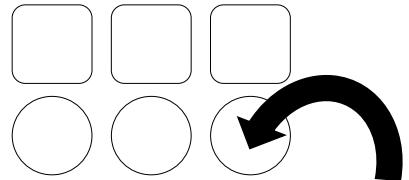


**eco-evolutivo**

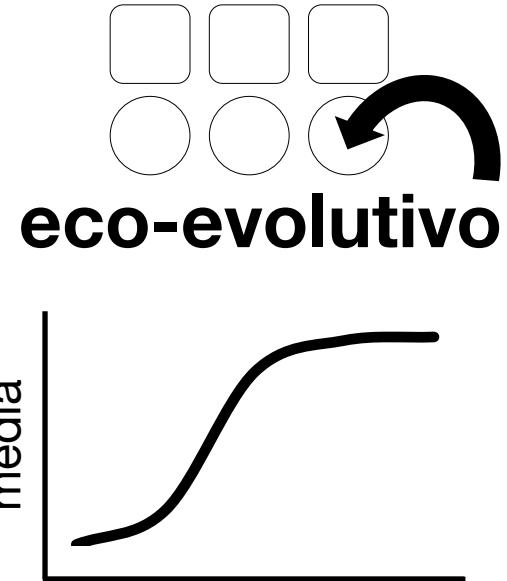
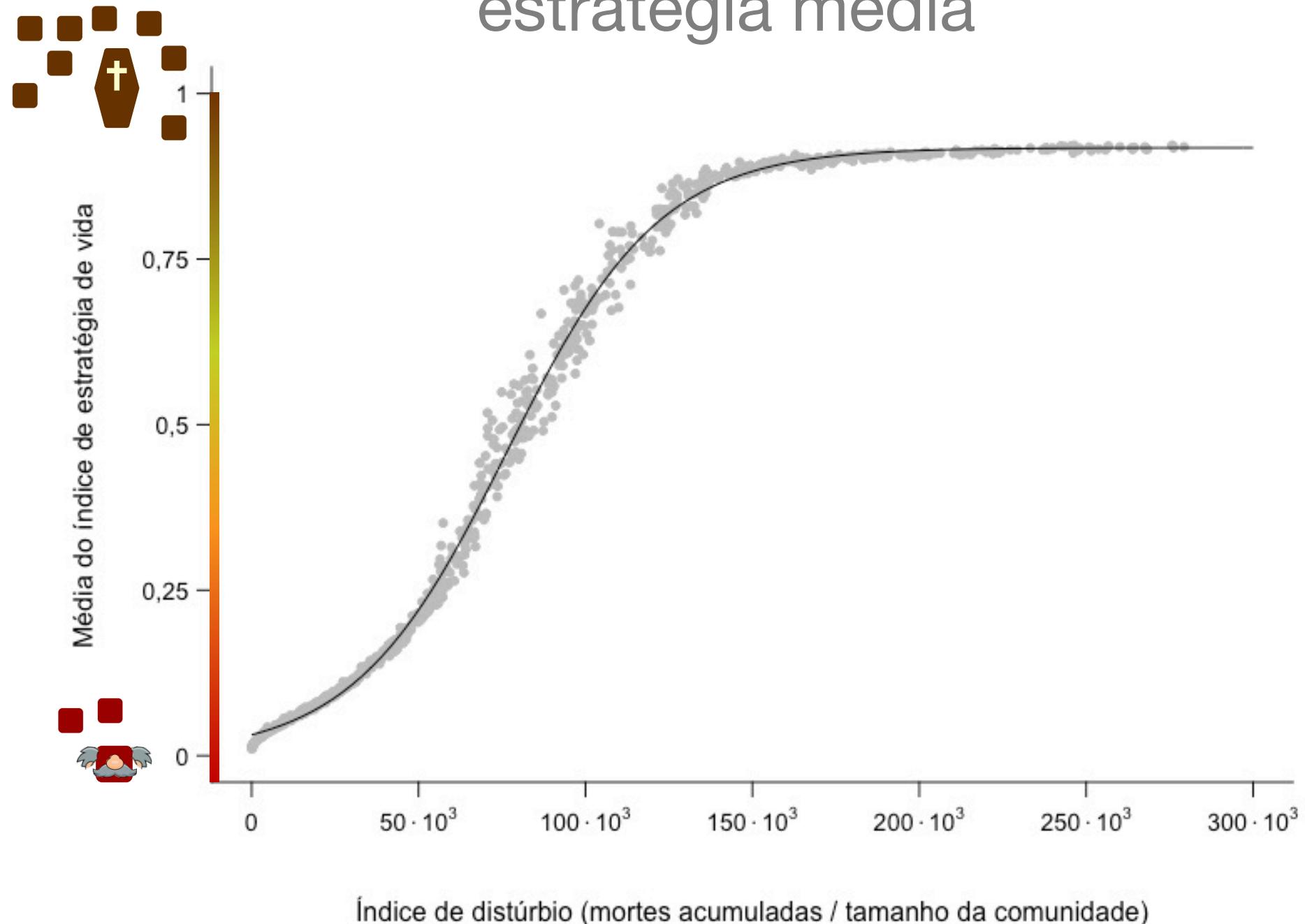
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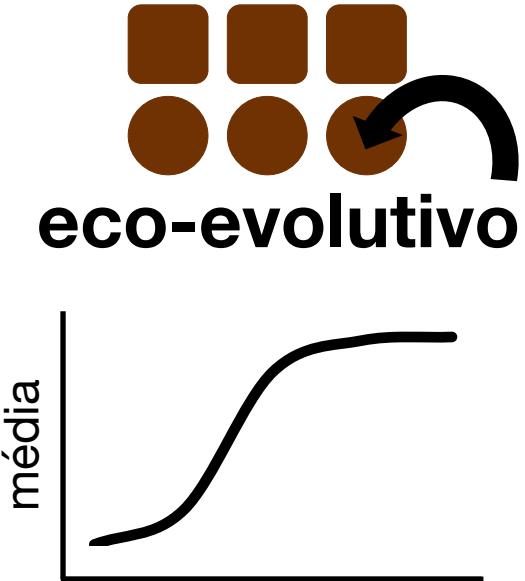
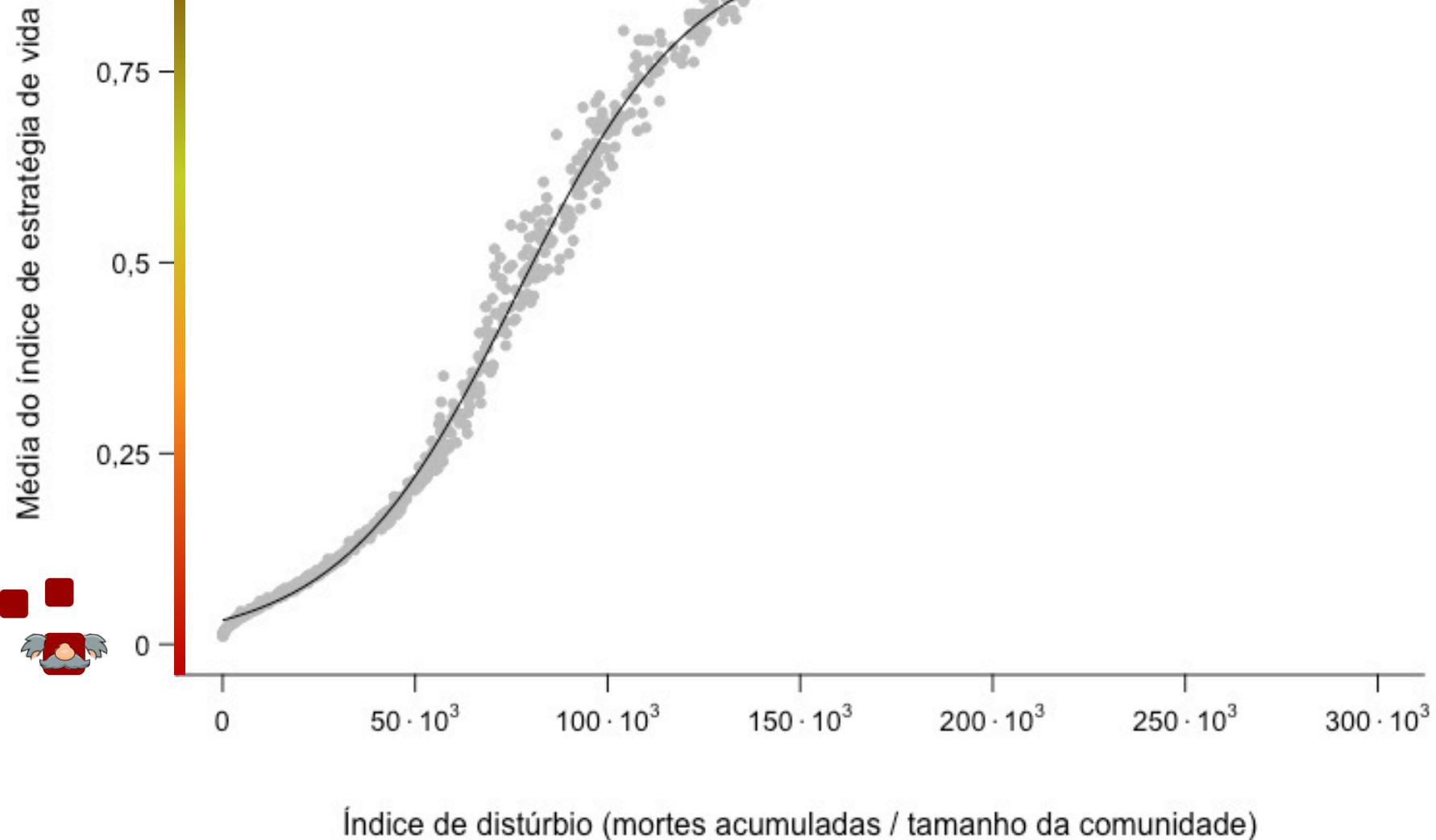
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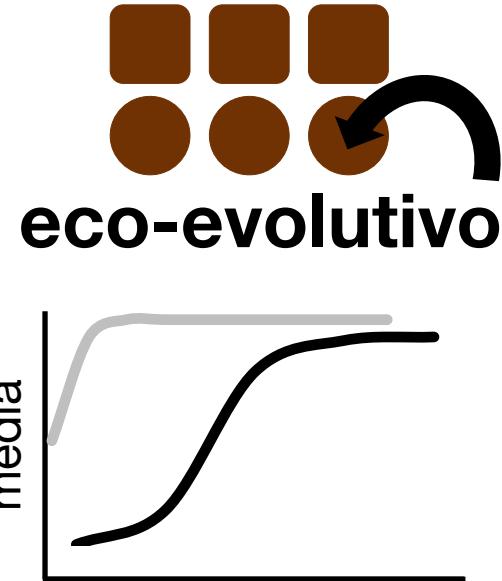
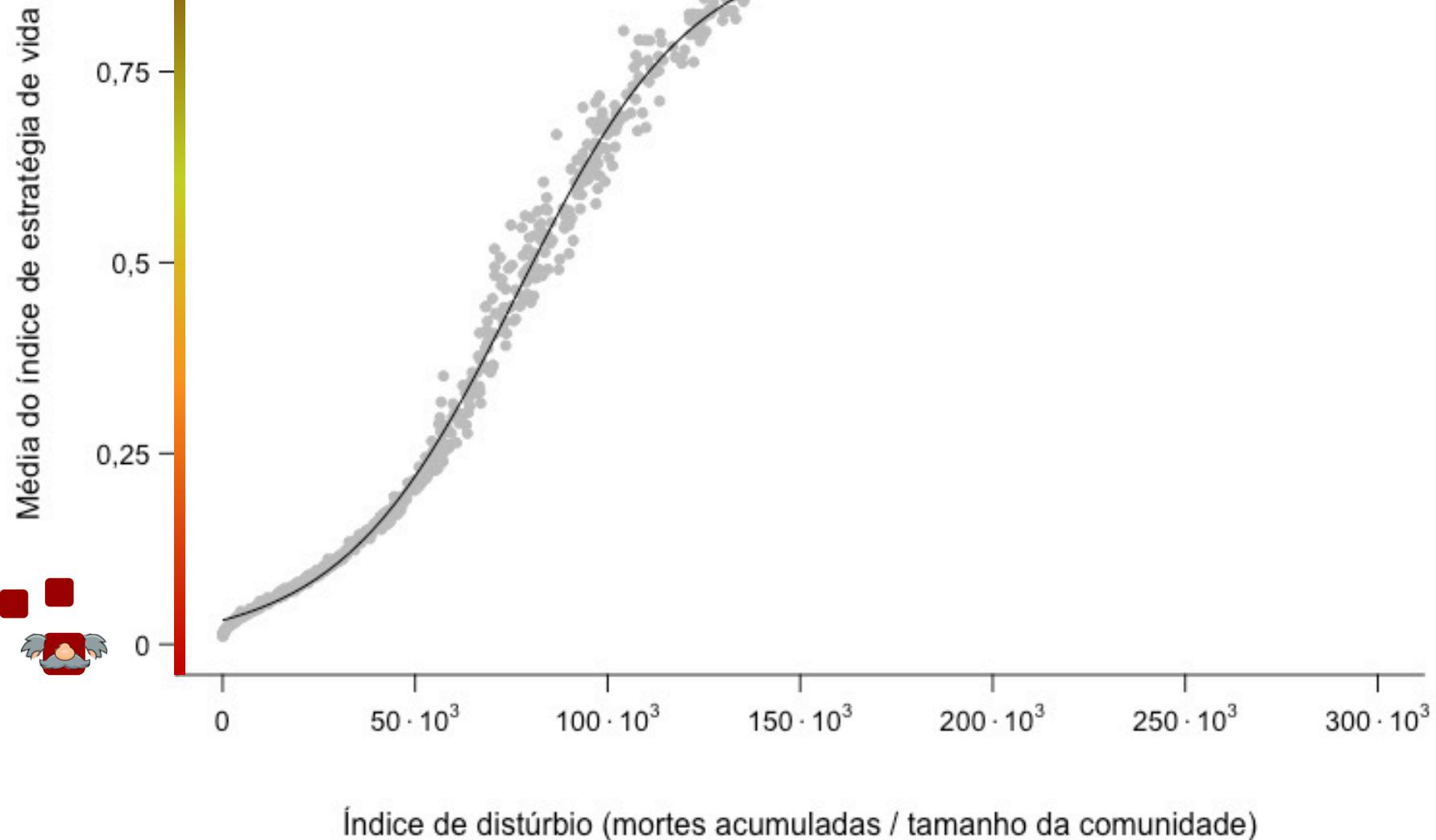
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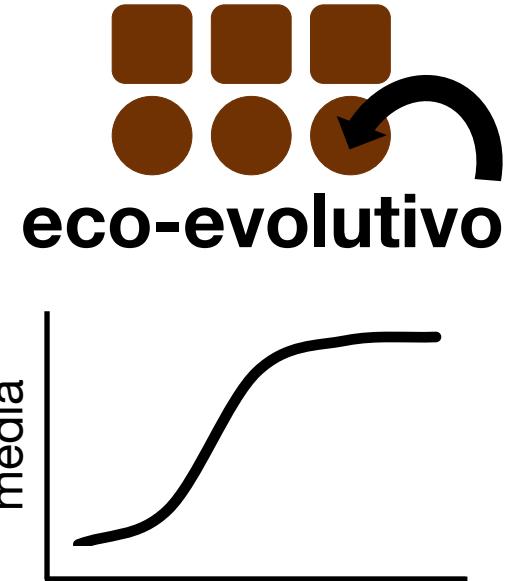
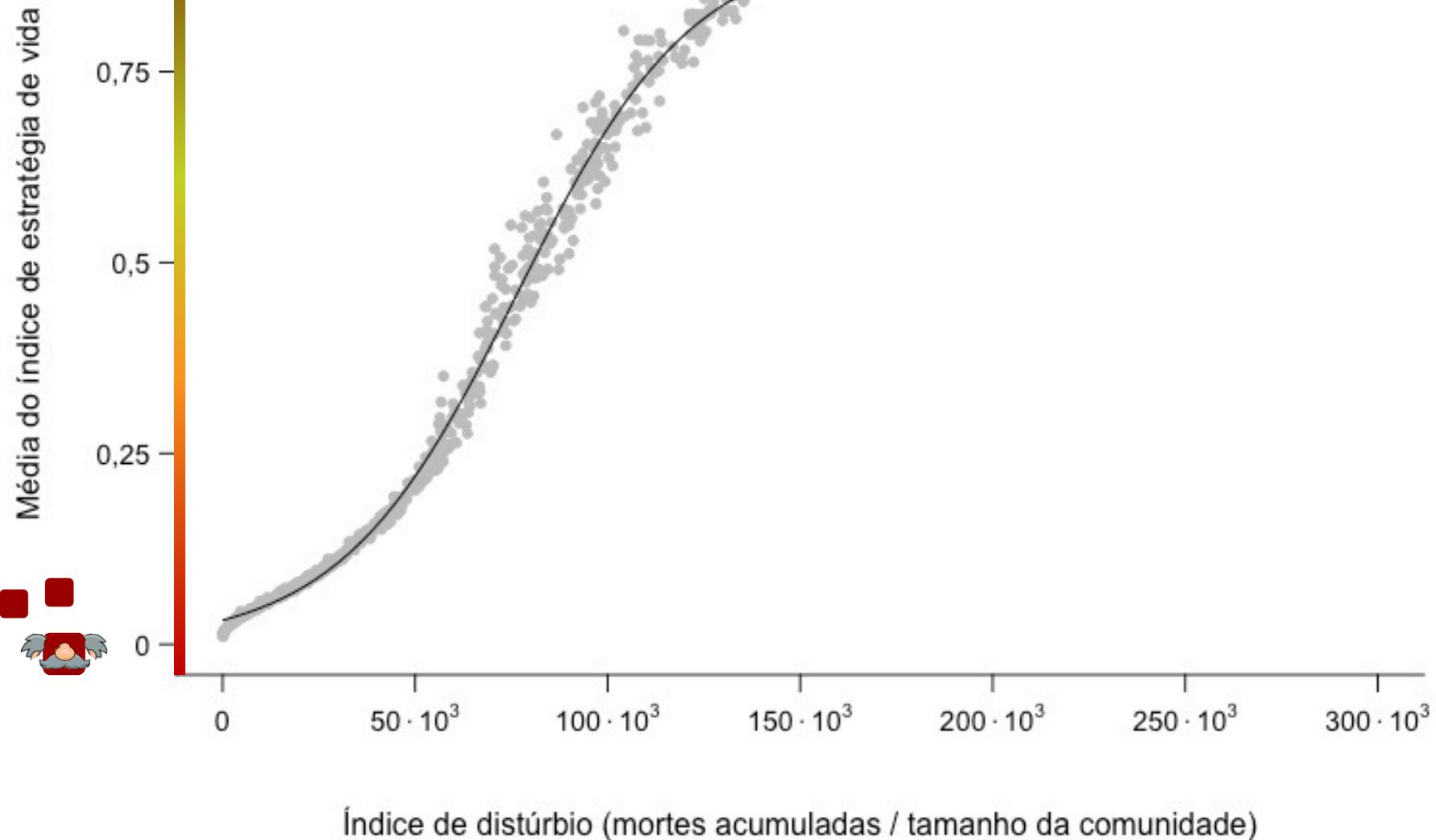
# estratégia média



# estratégia média



# estratégia média



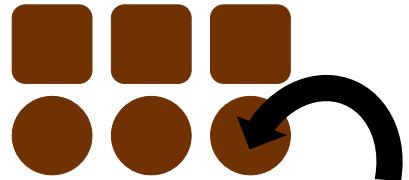
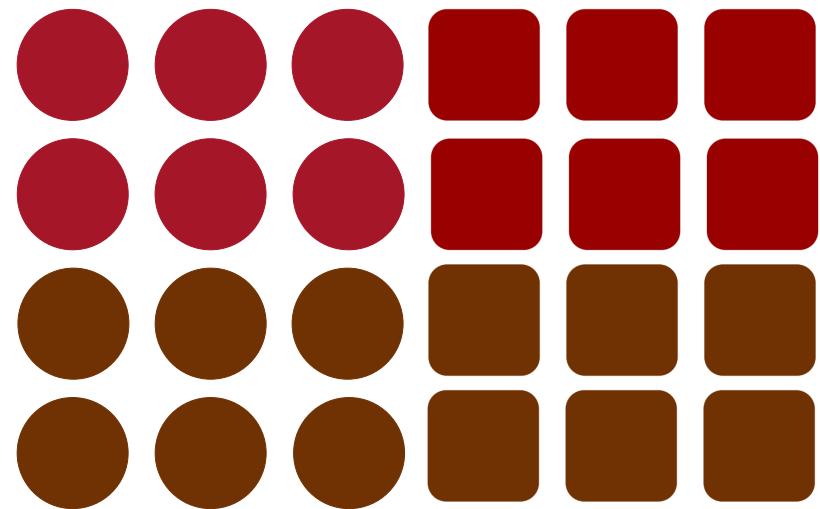
banco

x 48

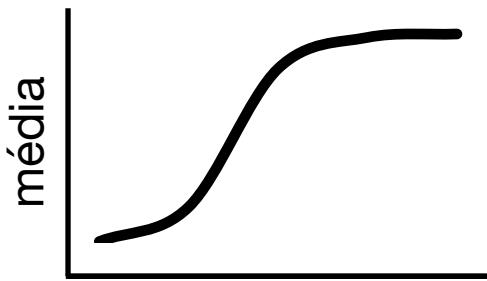
x 12

x 48

x 12



**eco-evolutivo**



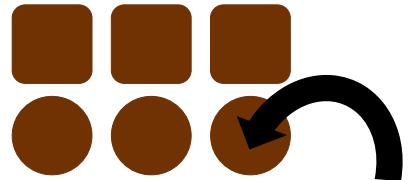
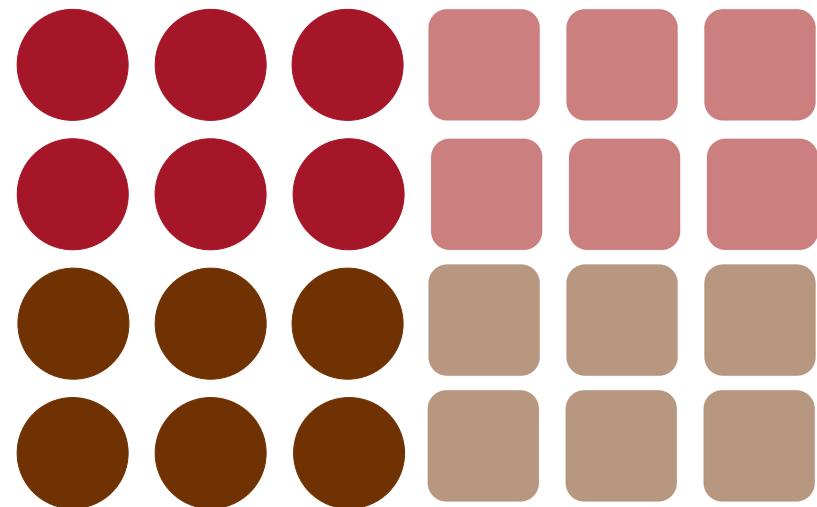
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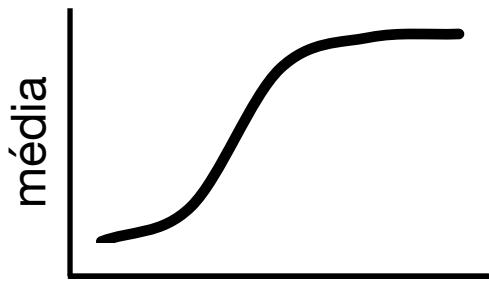
x 12

x 48

x 12



**eco-evolutivo**



# seleção natural

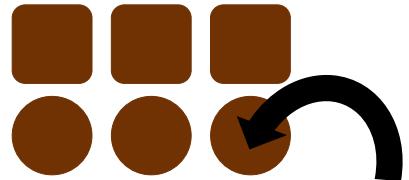
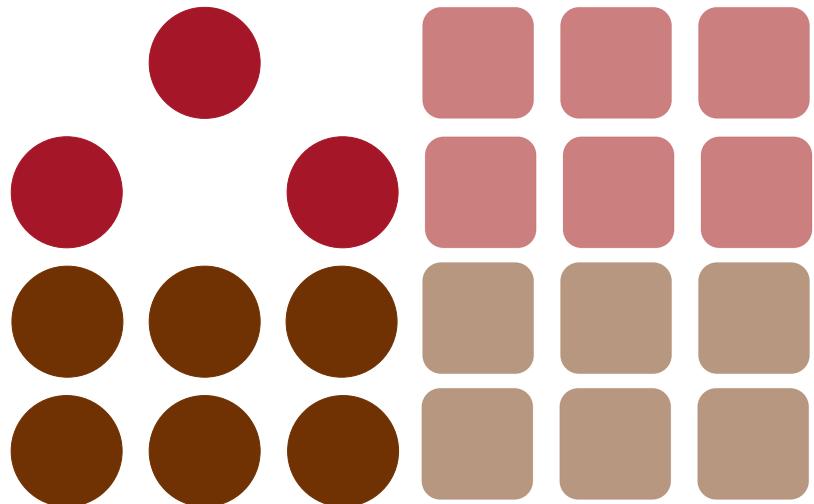
banco

x 48

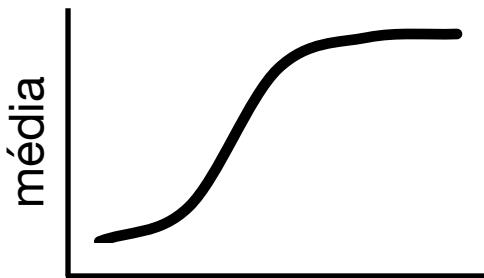
x 12

x 48

x 12



**eco-evolutivo**



# seleção natural

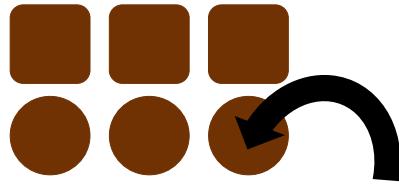
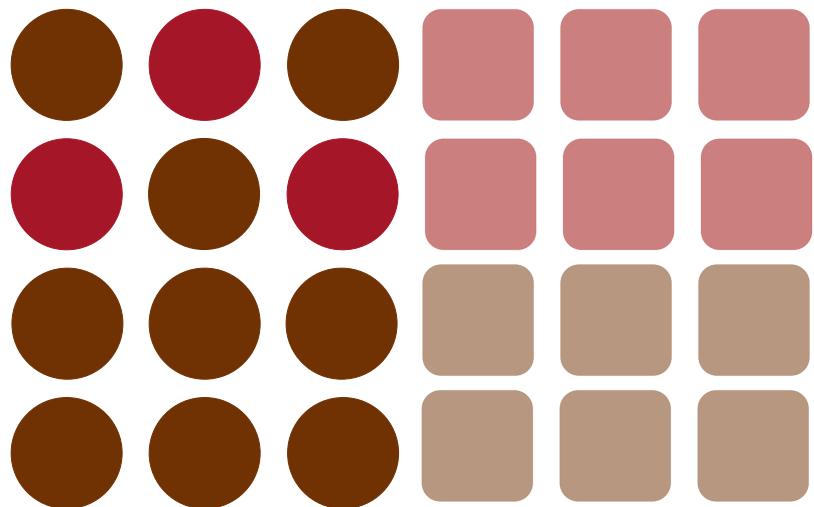
banco

x 72

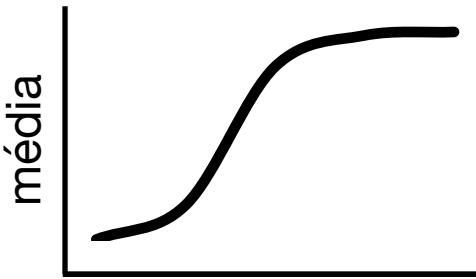
x 6

x 48

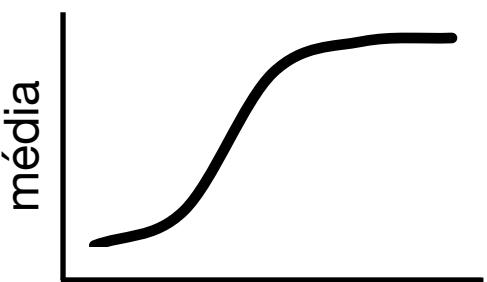
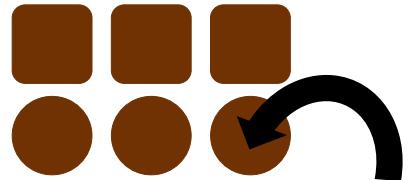
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**eco-evolutivo**



# seleção natural + exclusão competitiva de espécies



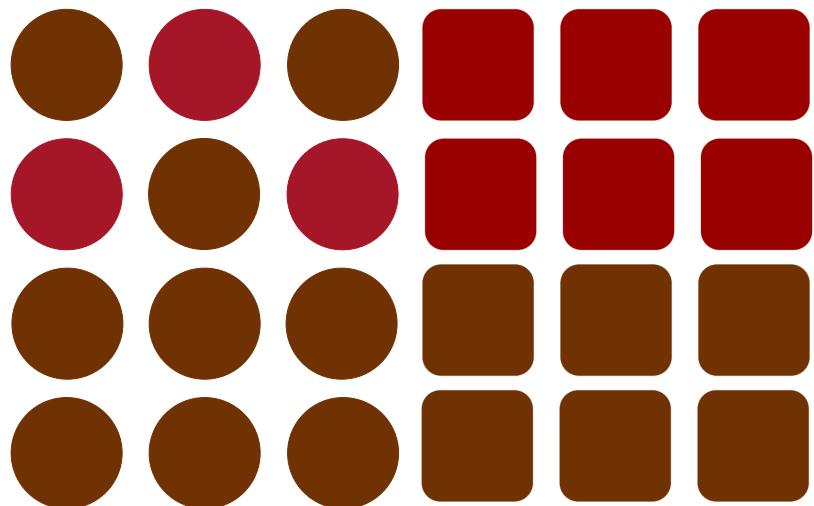
banco

x 72

x 6

x 48

x 12



# seleção natural + exclusão competitiva de espécies

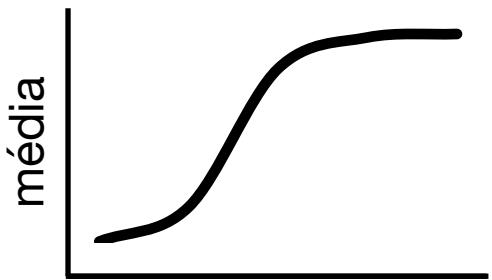
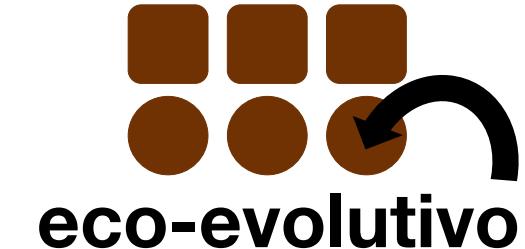
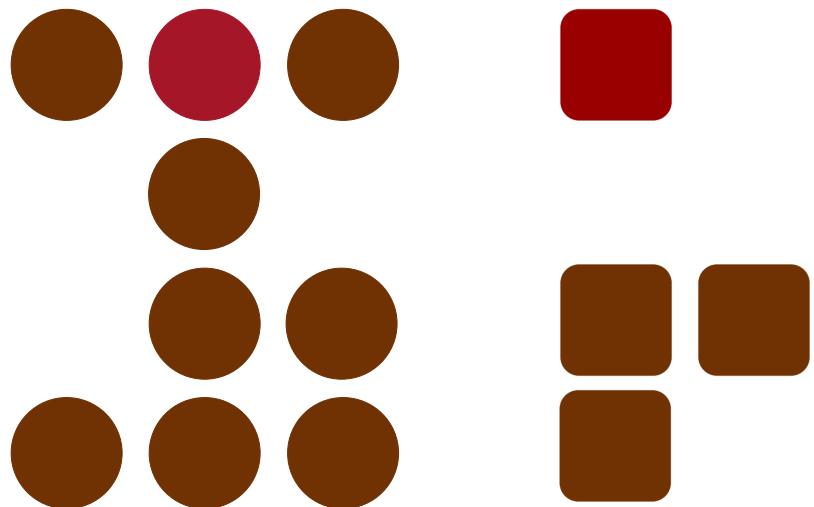
banco

x 72

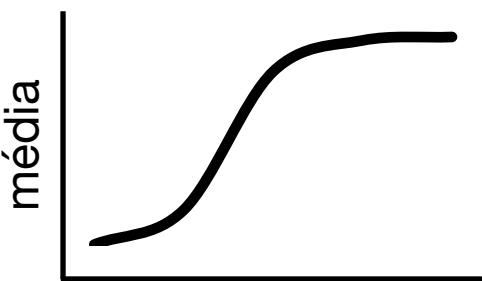
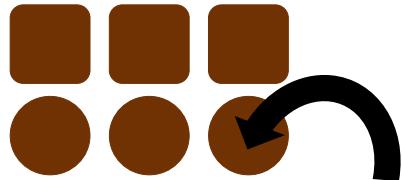
x 6

x 48

x 12



# seleção natural + exclusão competitiva de espécies



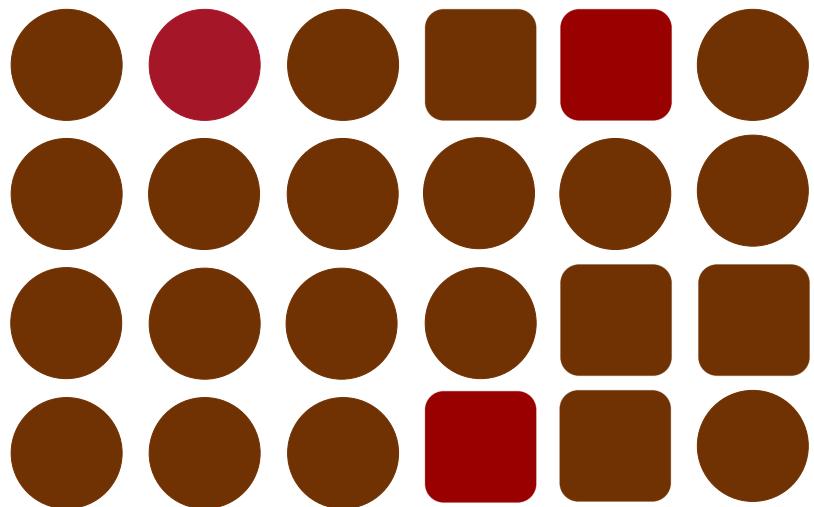
banco

● x 136

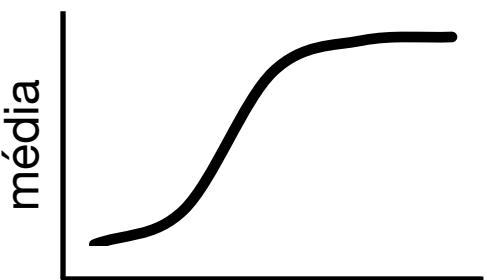
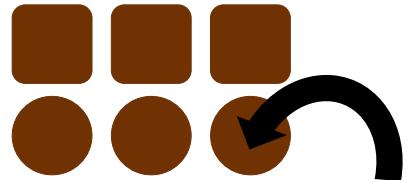
● x 2

■ x 32

■ x 4



# seleção natural + exclusão competitiva de espécies



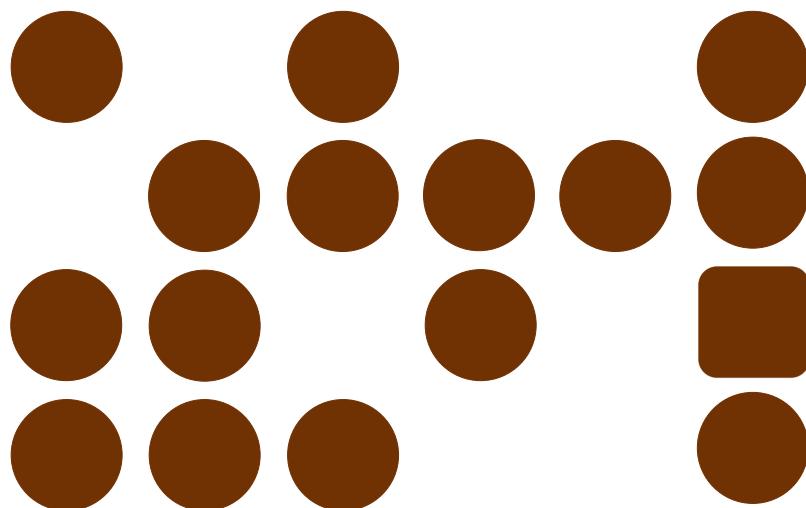
banco

x 136

x 2

x 32

x 4

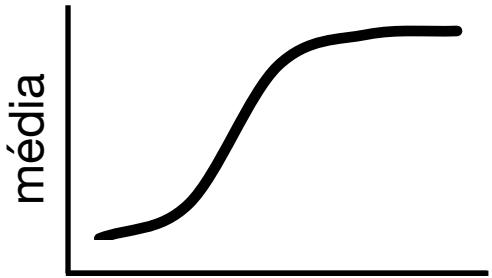
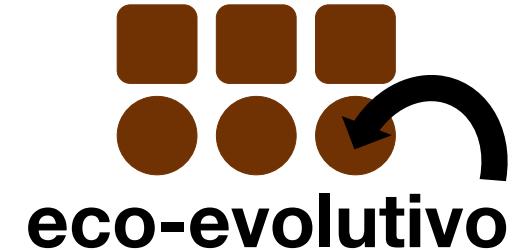
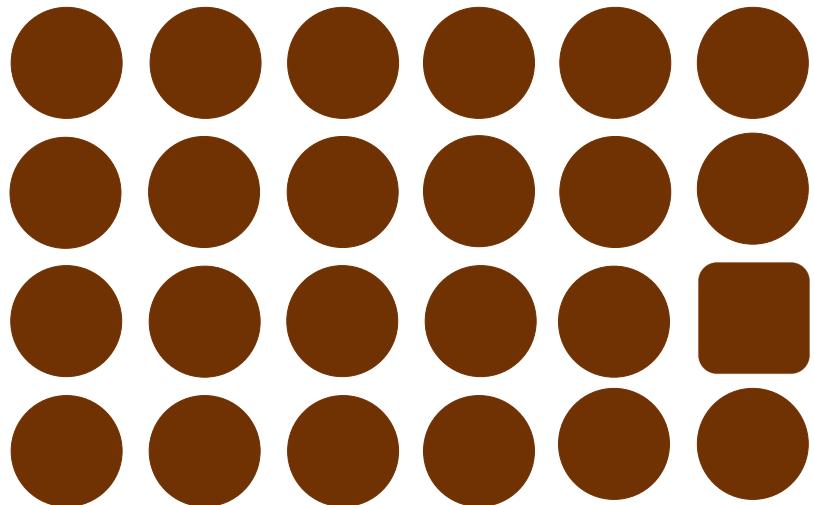


# seleção natural + exclusão competitiva de espécies

banco

x 184

x 8

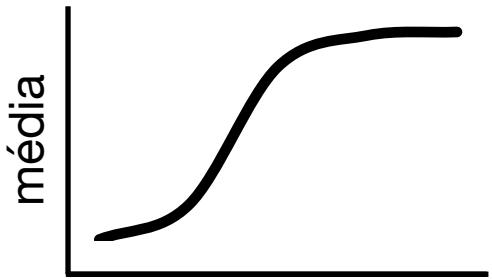
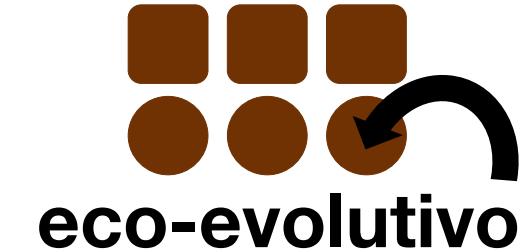
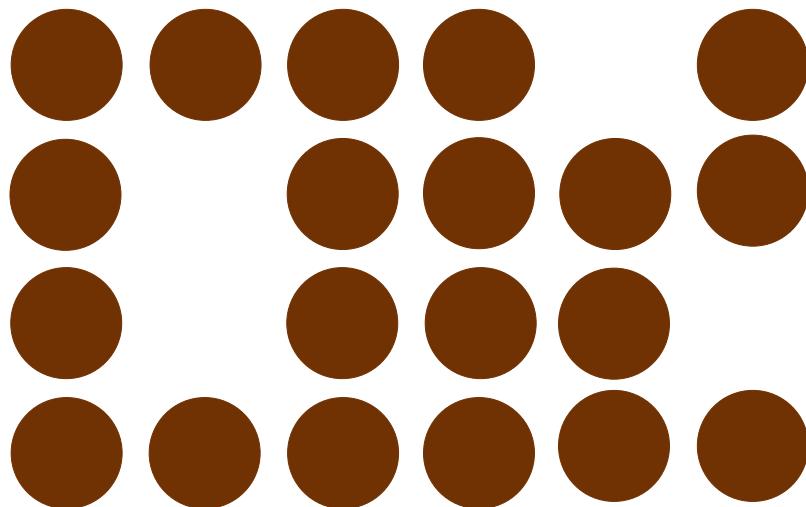


# seleção natural + exclusão competitiva de espécies

banco

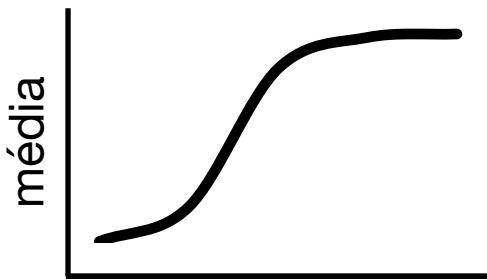
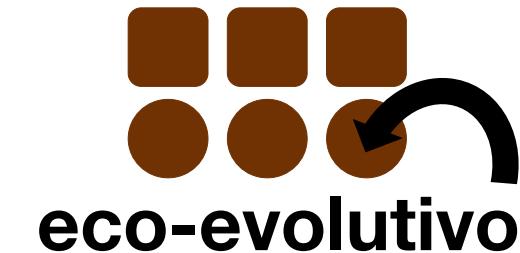
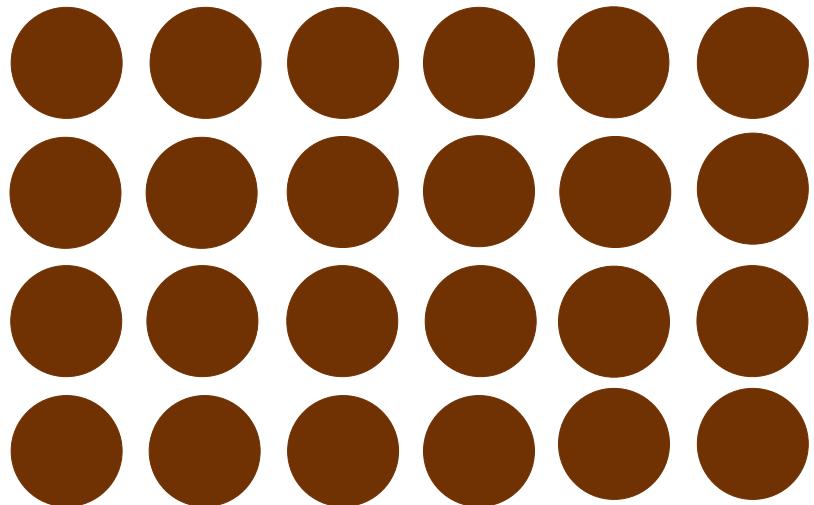
● x 184

■ x 8

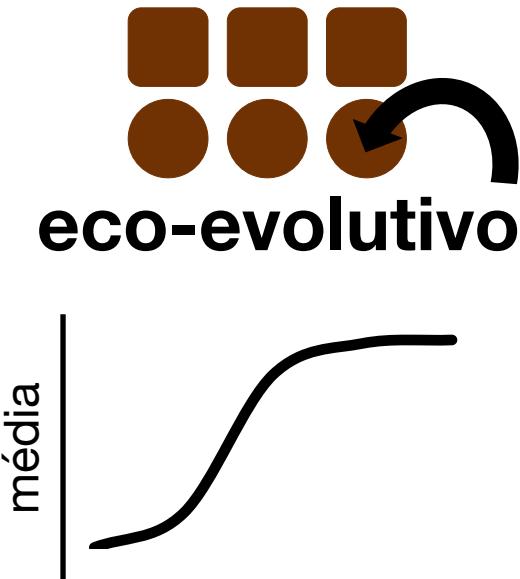
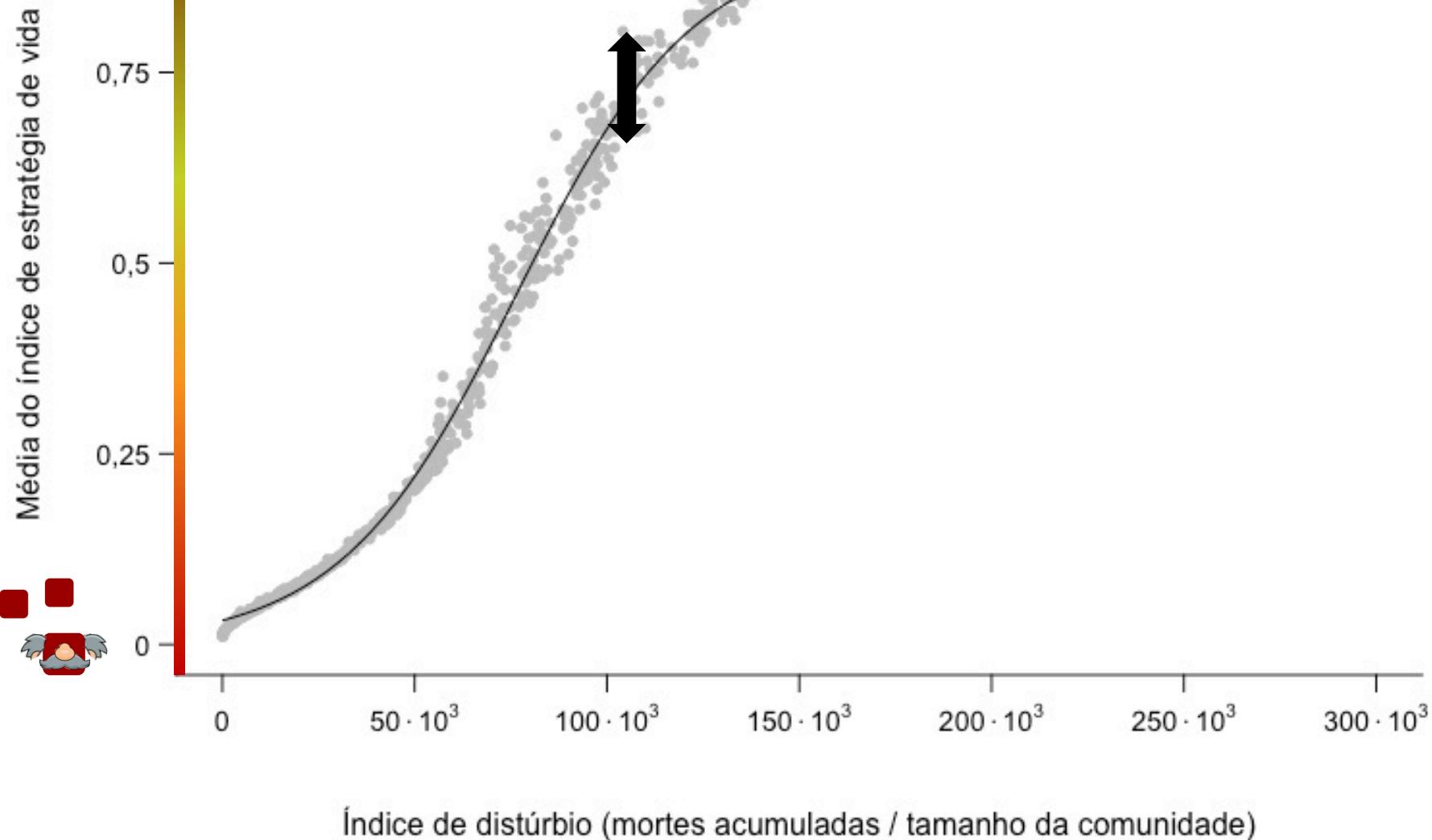


# seleção natural + exclusão competitiva de espécies

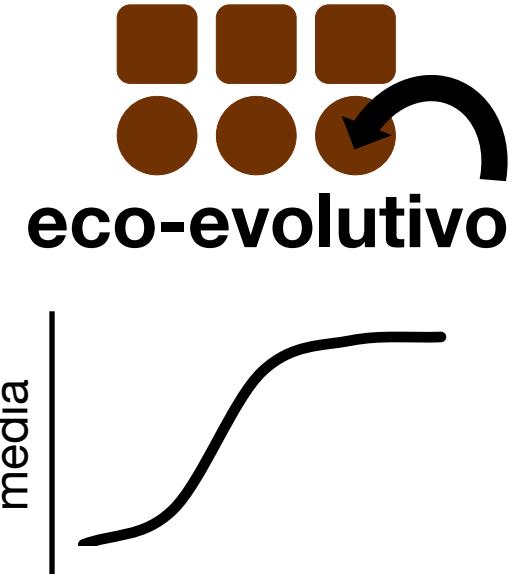
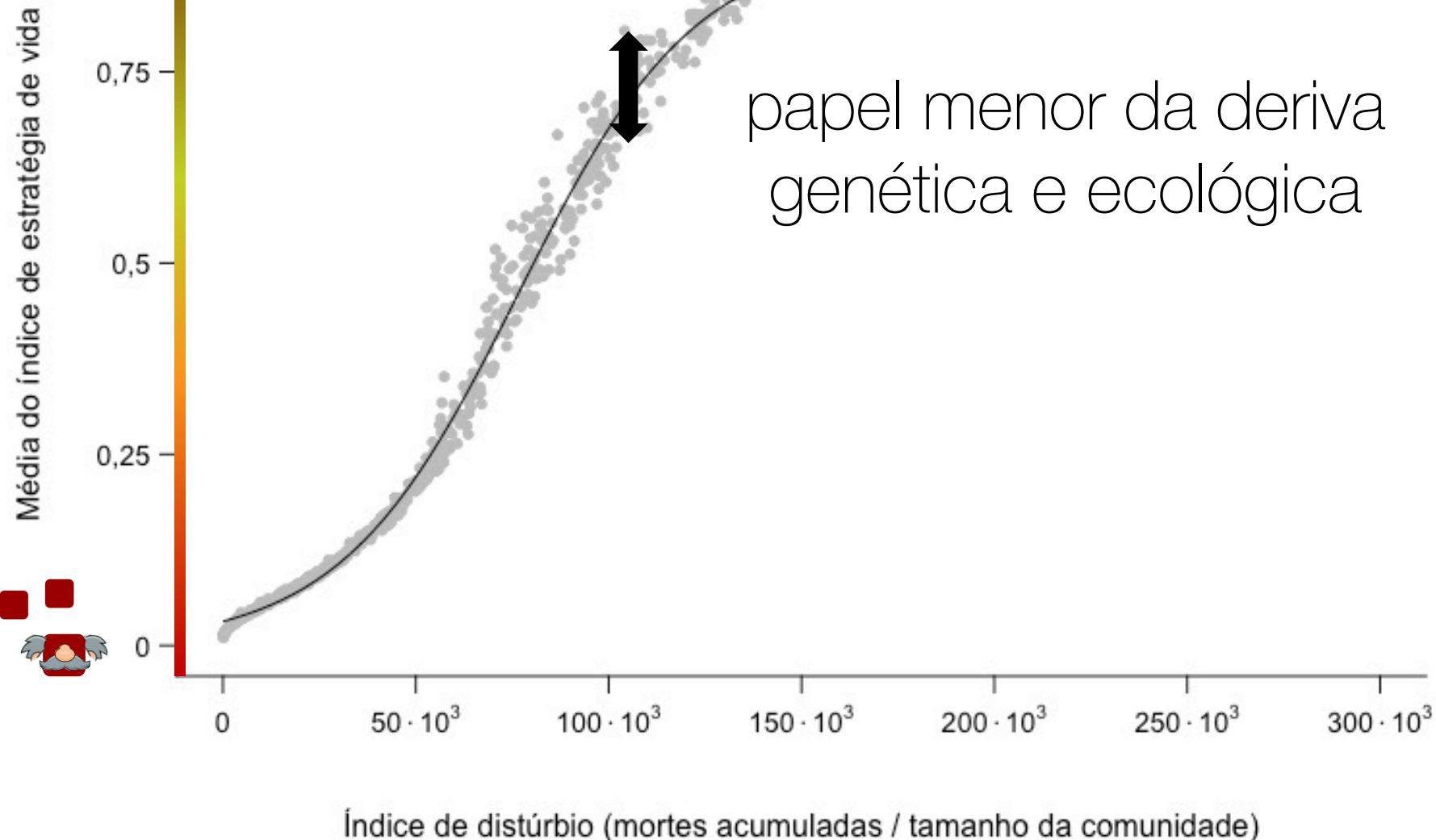
banco  
 x 192



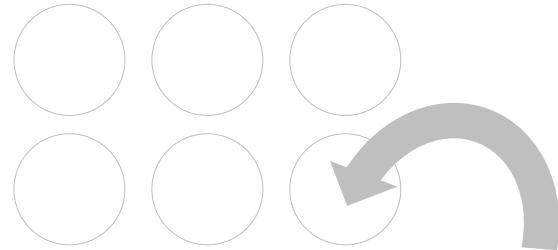
# estratégia média



# estratégia média



## evolutivo

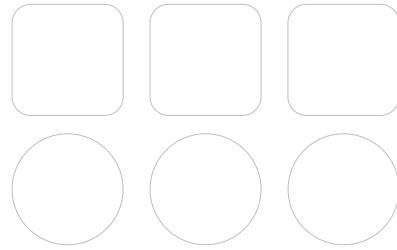


estratégia média

diversidade  
de estratégias

-

## ecológico

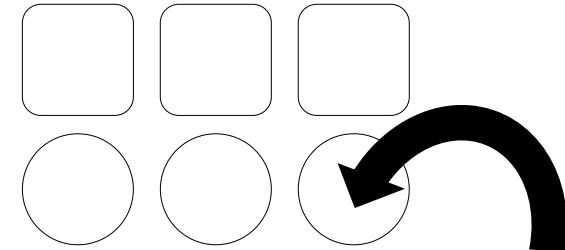


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

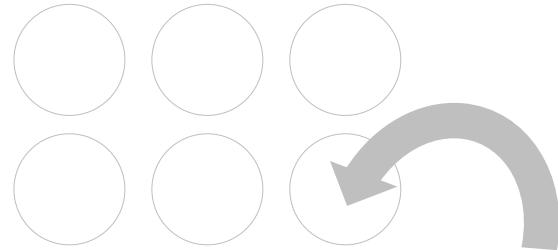


estratégia média

diversidade  
de estratégias

heterogeneidade  
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estratégias

## evolutivo

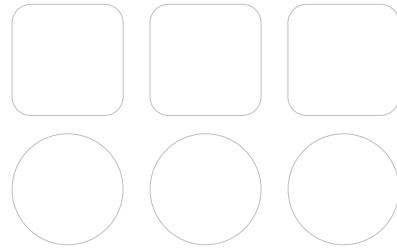


estratégia média

diversidade  
de estratégias

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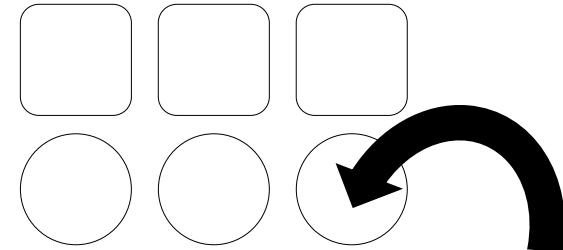


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
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## eco-evolutivo

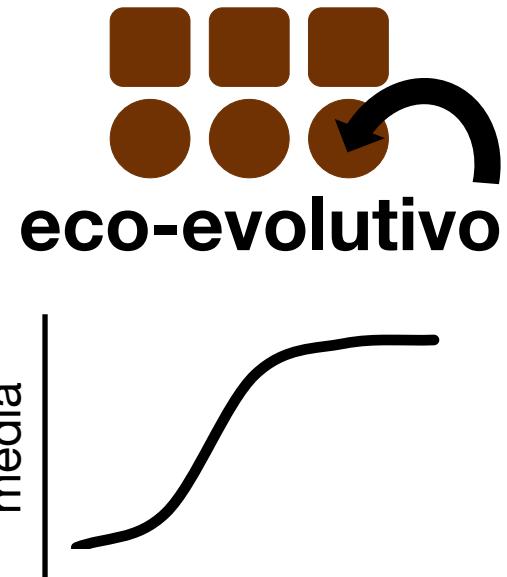
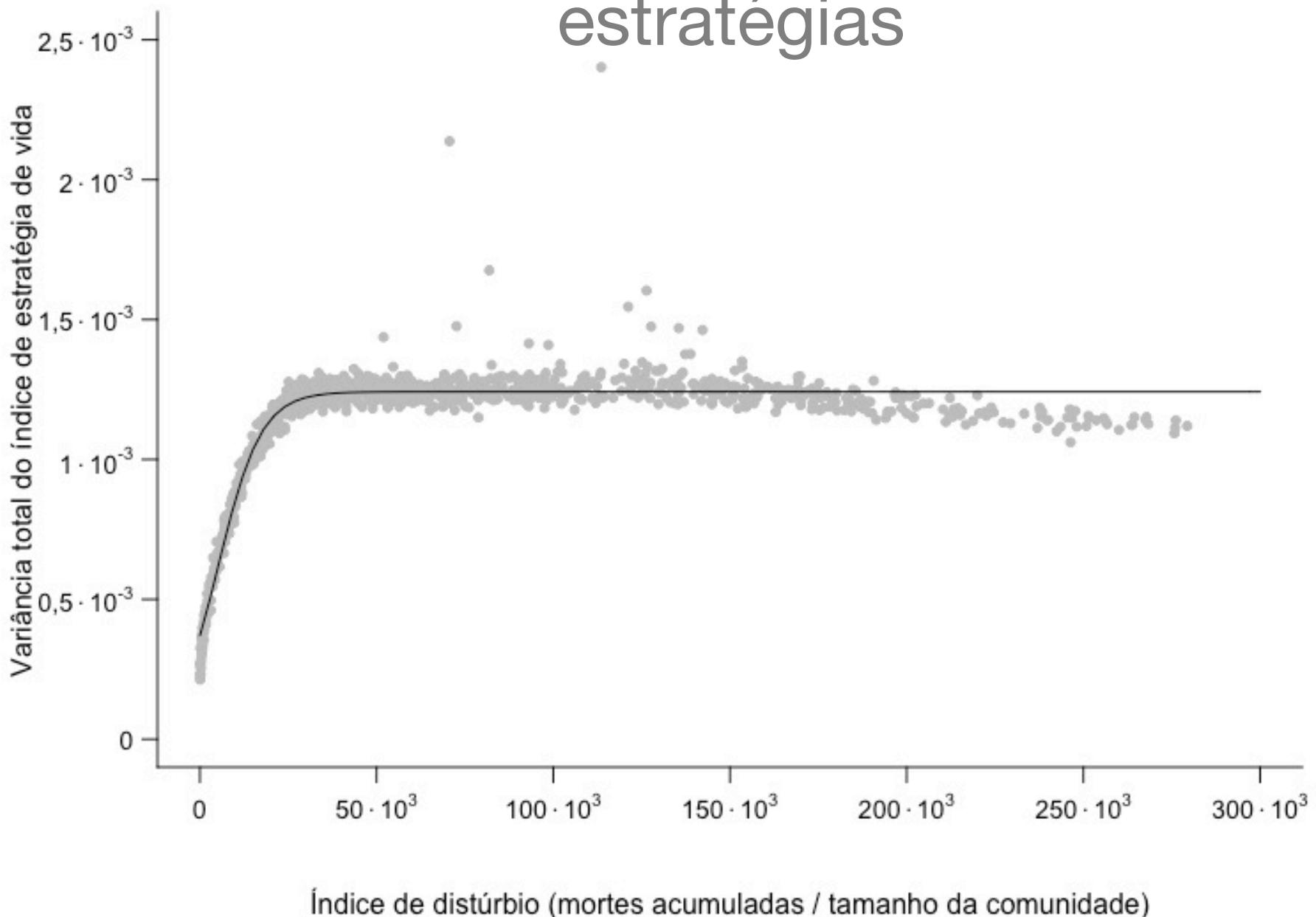


estratégia média

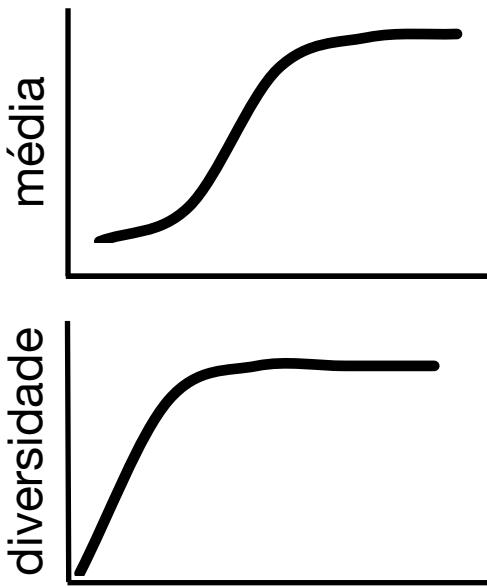
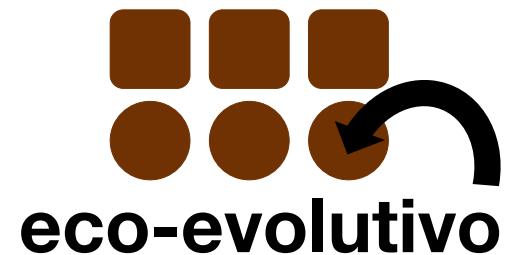
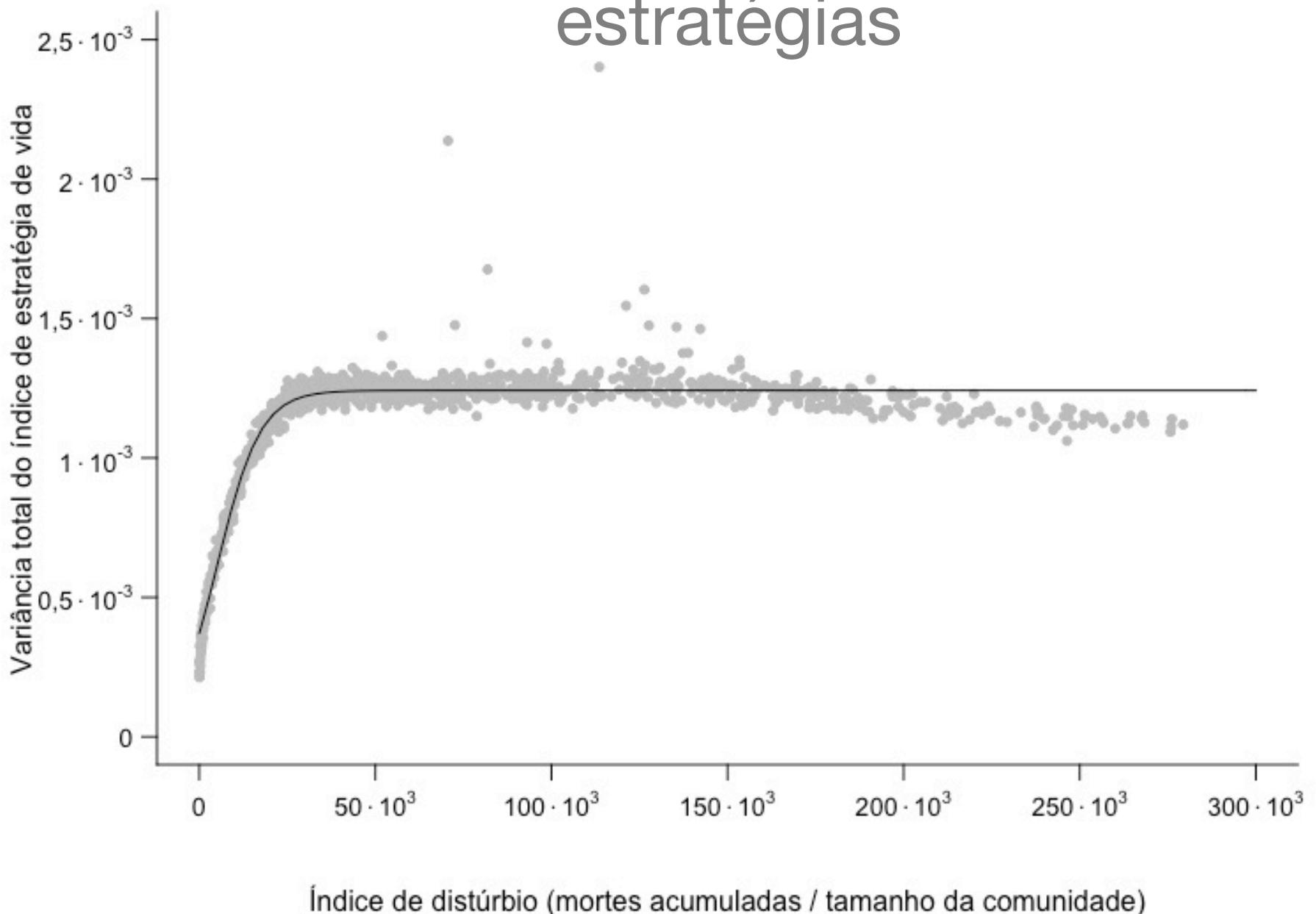
diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

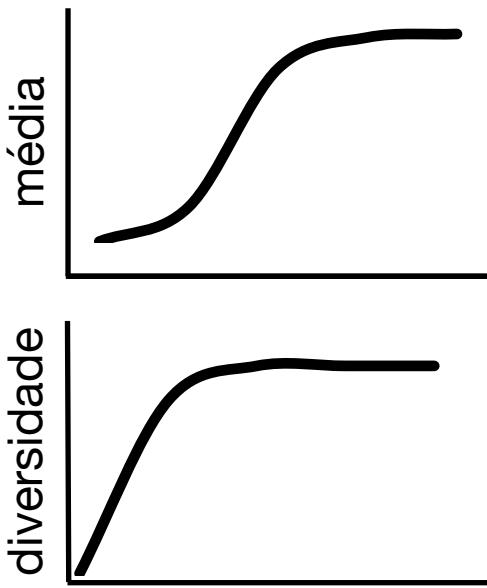
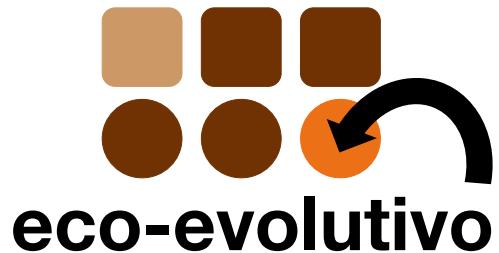
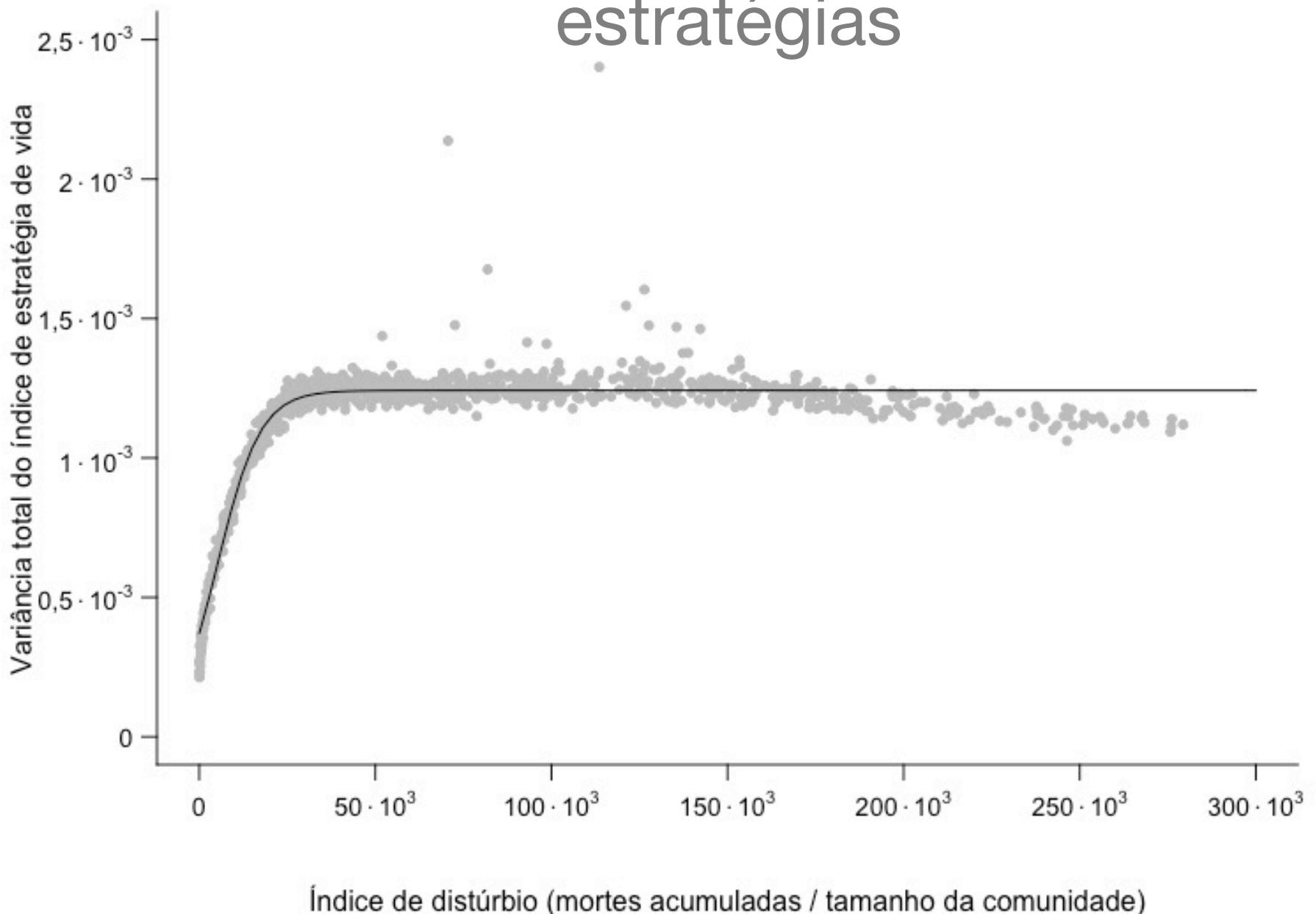
# diversidade de estratégias



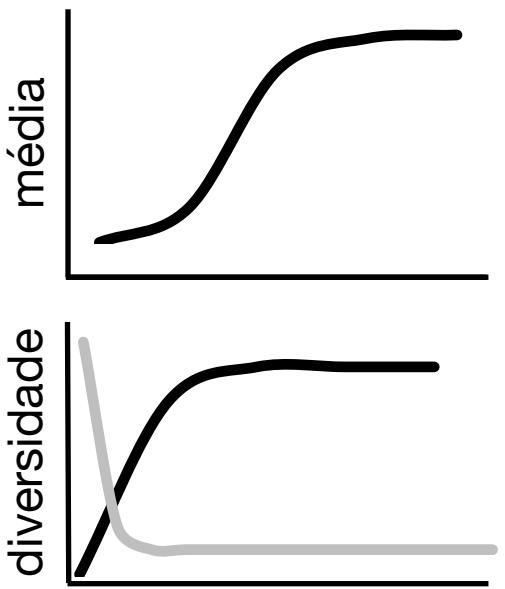
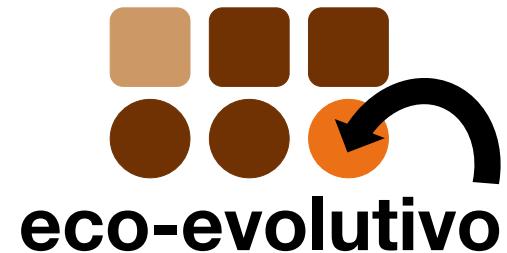
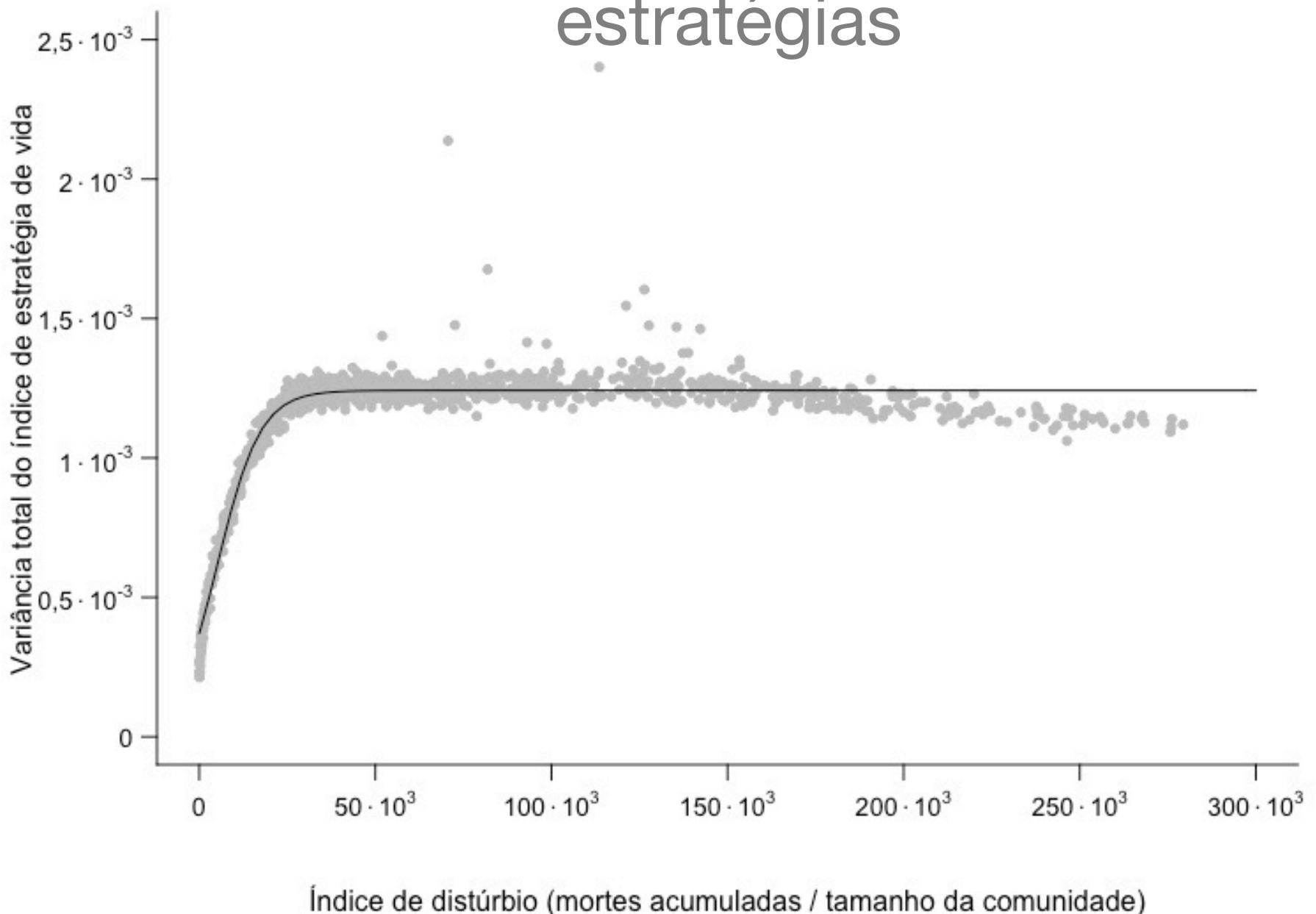
# diversidade de estratégias



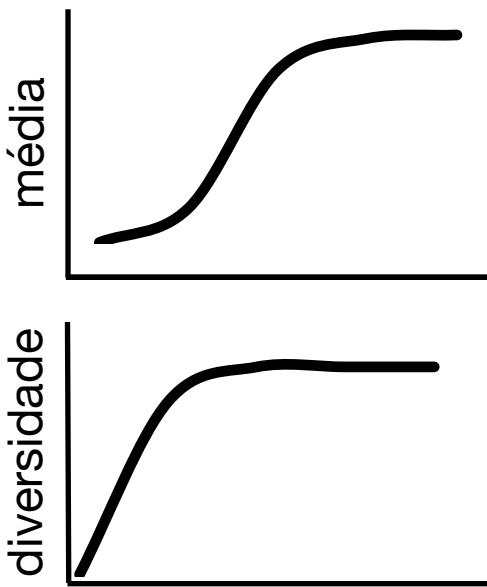
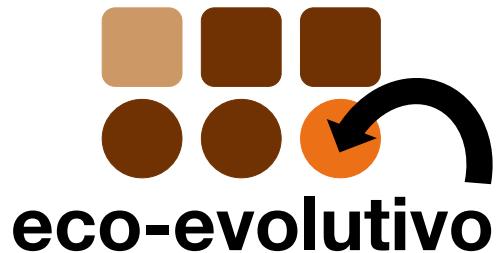
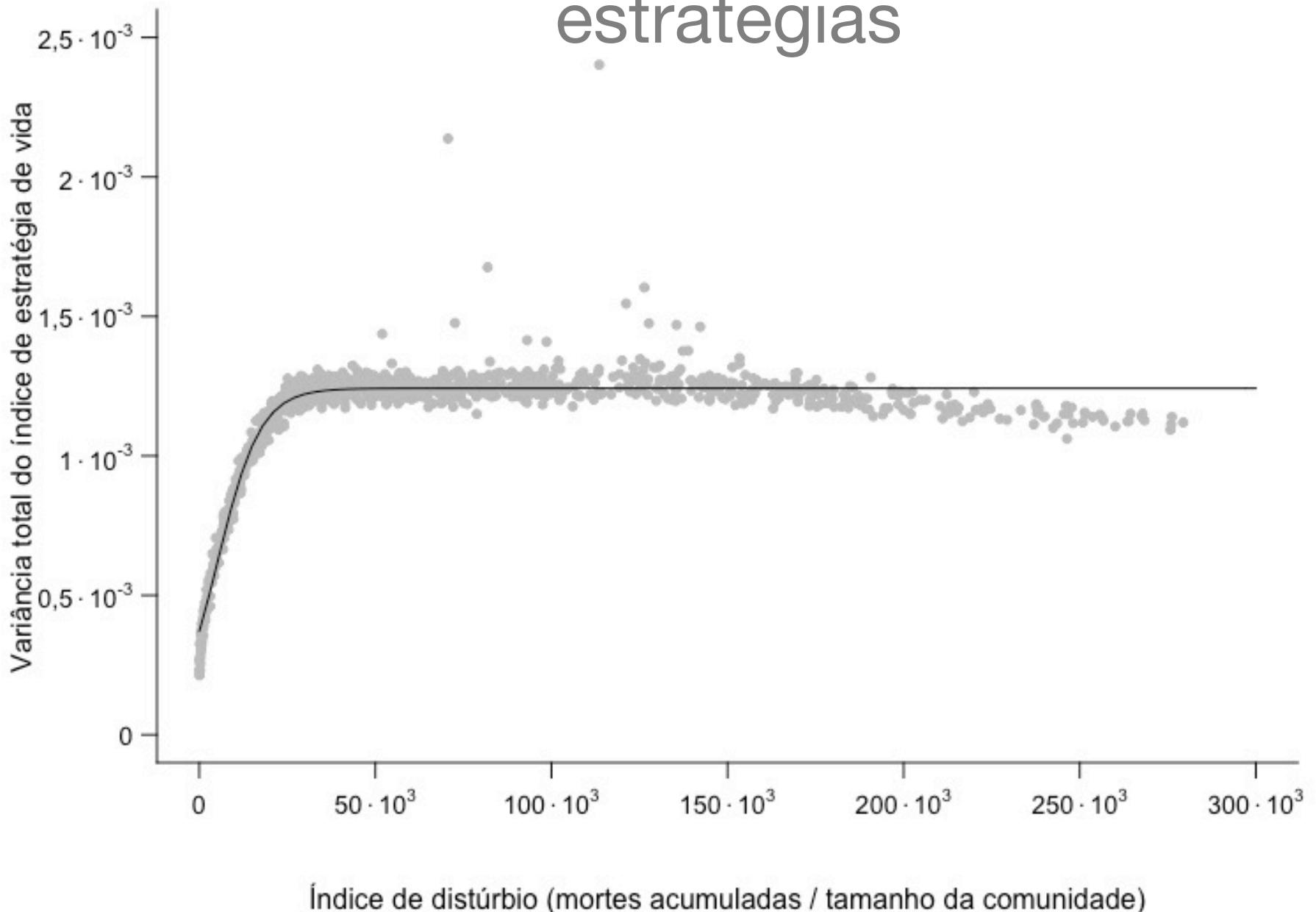
# diversidade de estratégias



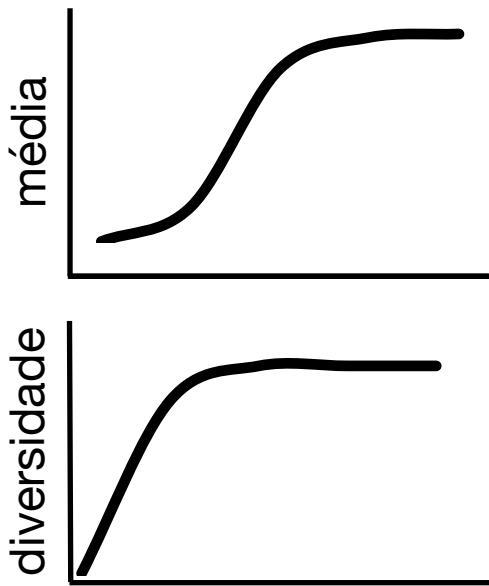
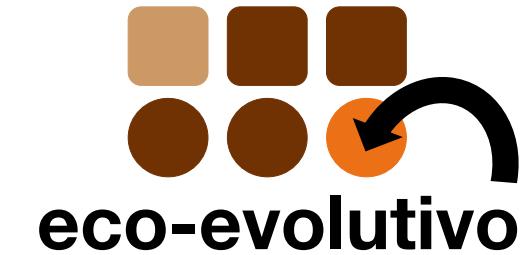
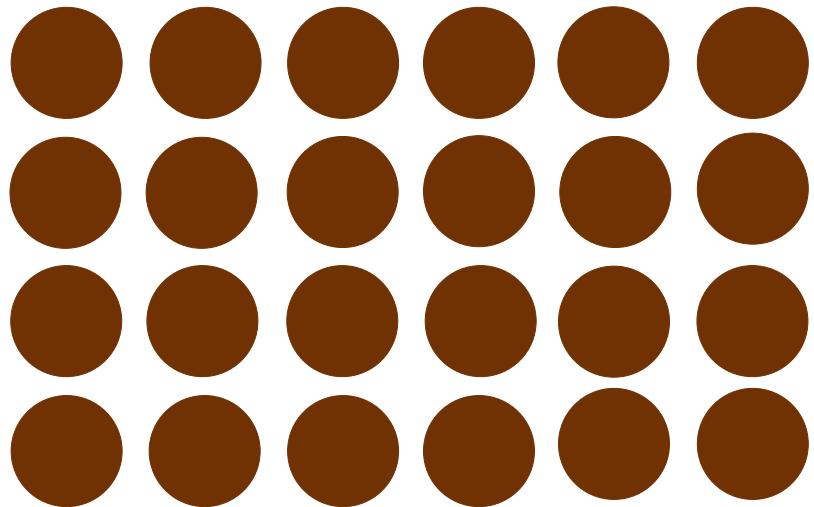
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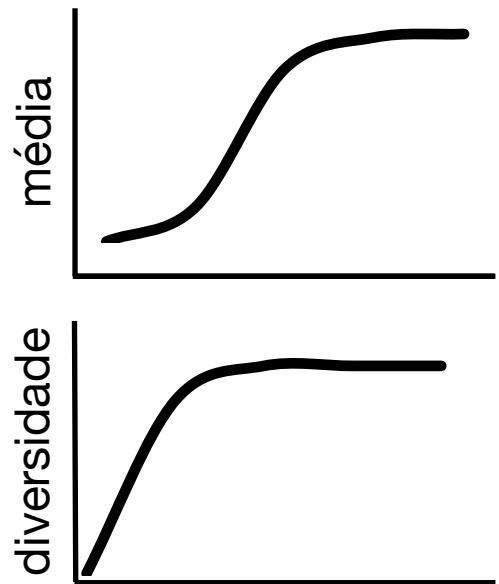
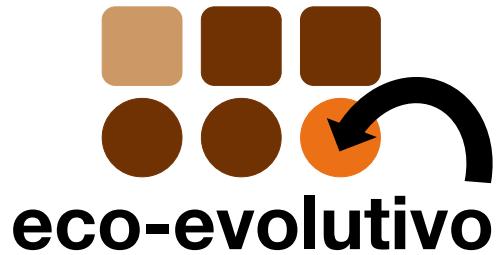
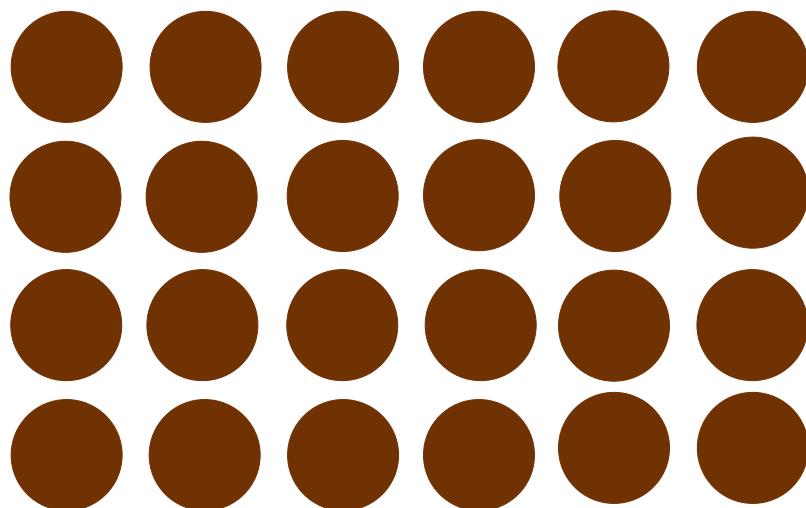
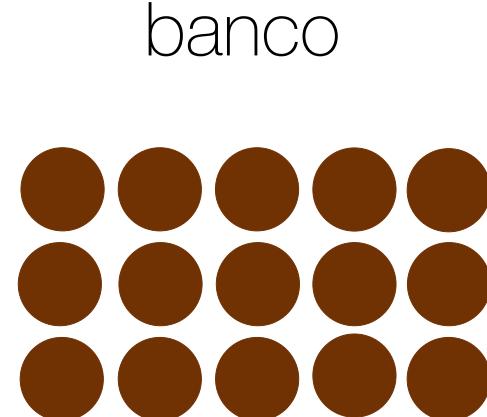


# diversidade de estratégias

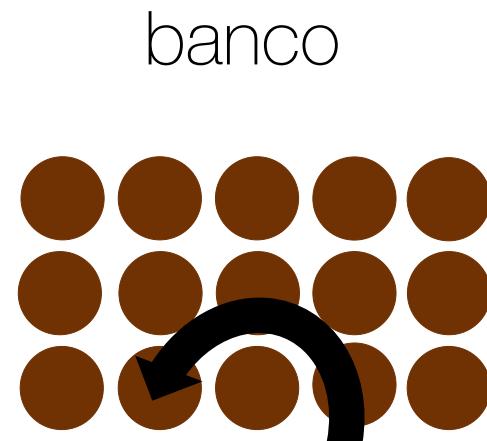


banco  
● x 192

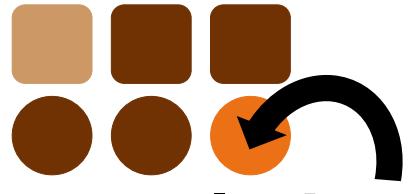
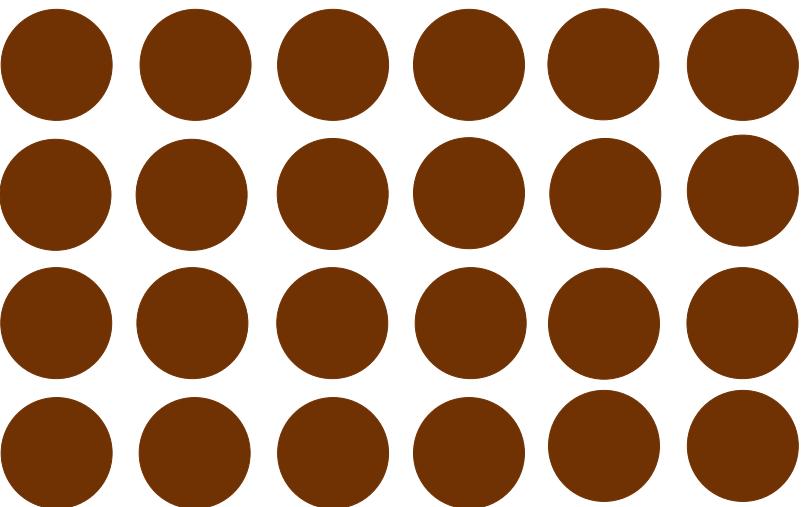




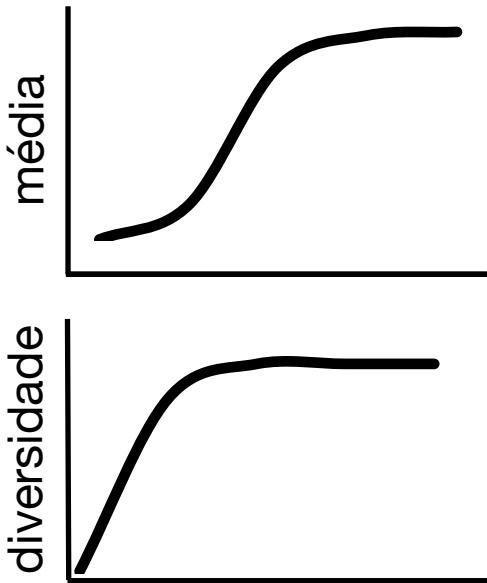
# mutação



banco

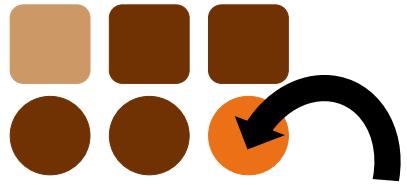
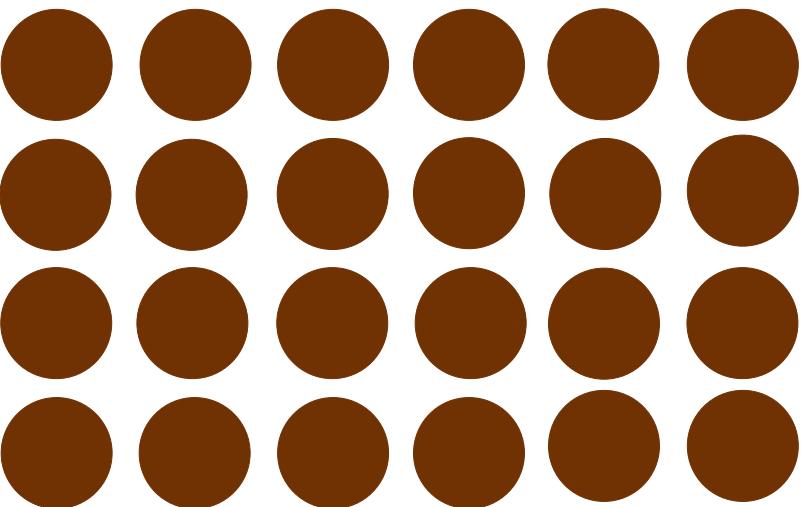
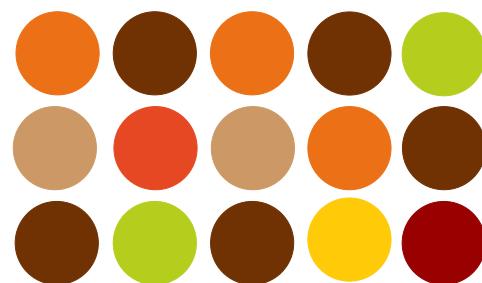


**eco-evolutivo**

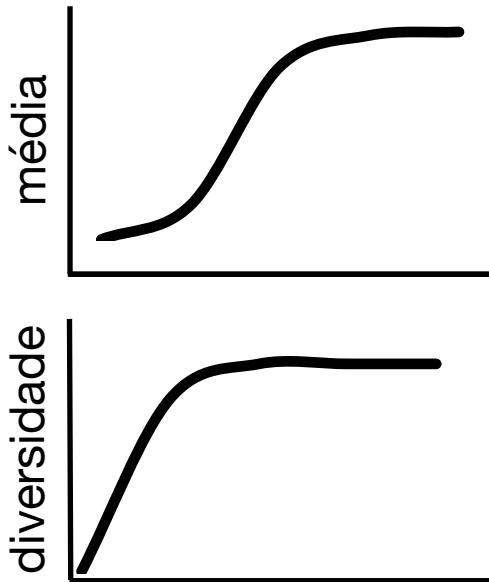


# mutação

banco

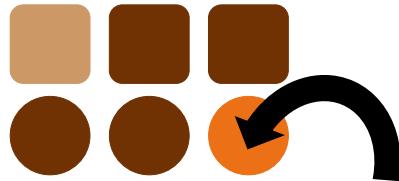
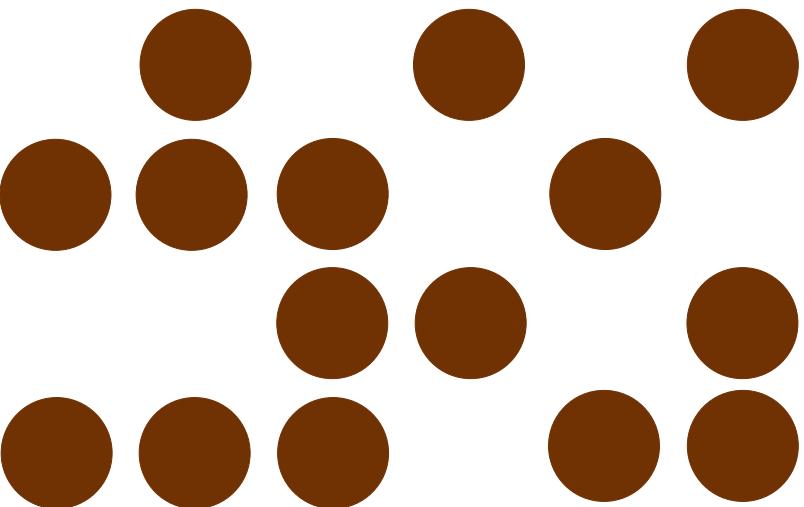
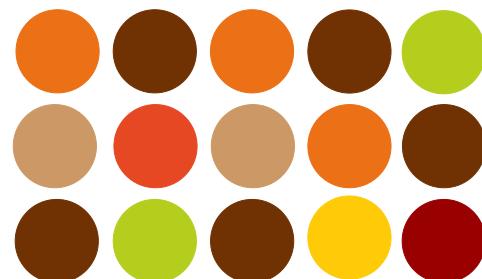


**eco-evolutivo**

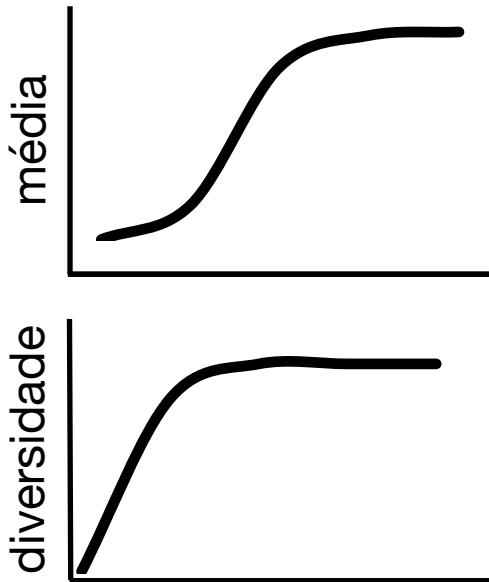


# mutação

banco

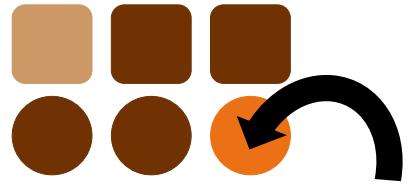
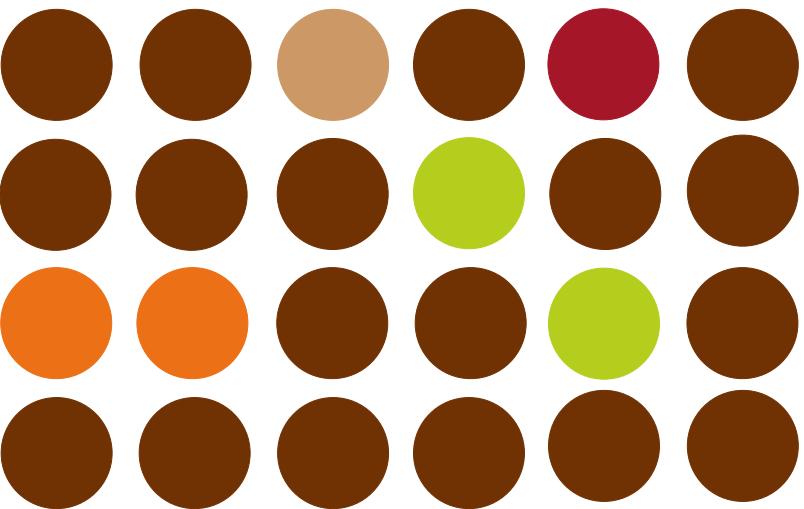
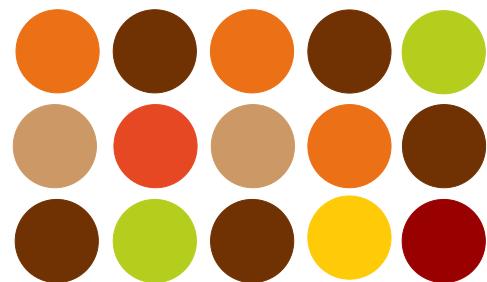


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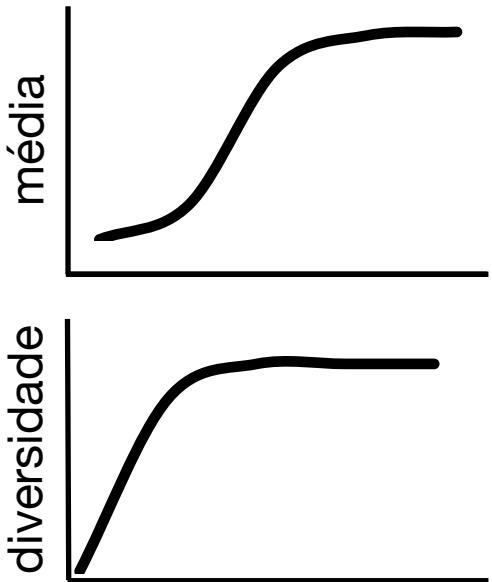


# mutação + amostragem

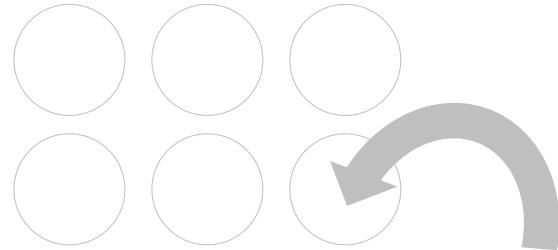
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**eco-evolutivo**



## evolutivo

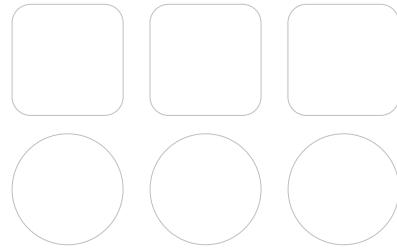


estratégia média

diversidade  
de estratégias

-

## ecológico

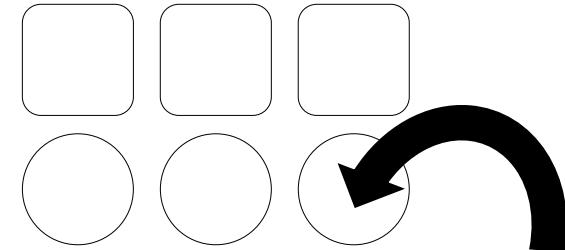


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

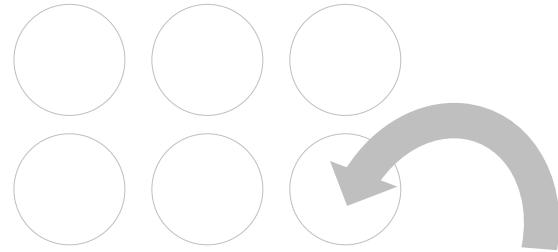


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## evolutivo

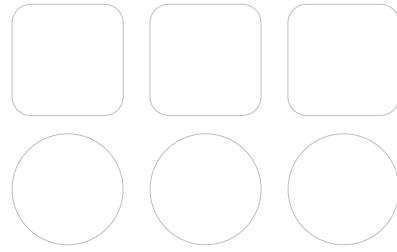


estratégia média

diversidade  
de estratégias

-

## ecológico

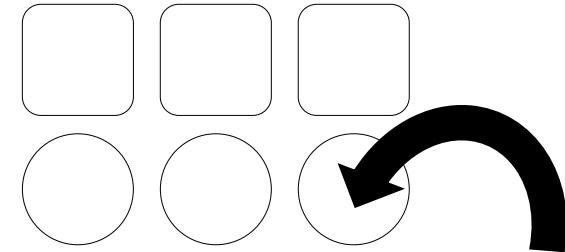


estratégia média

diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

## eco-evolutivo

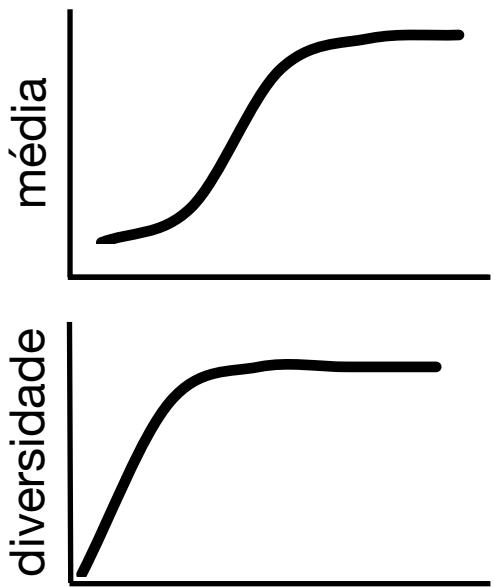
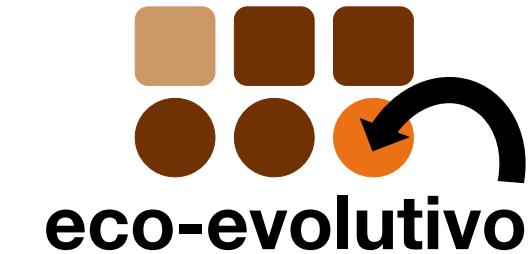
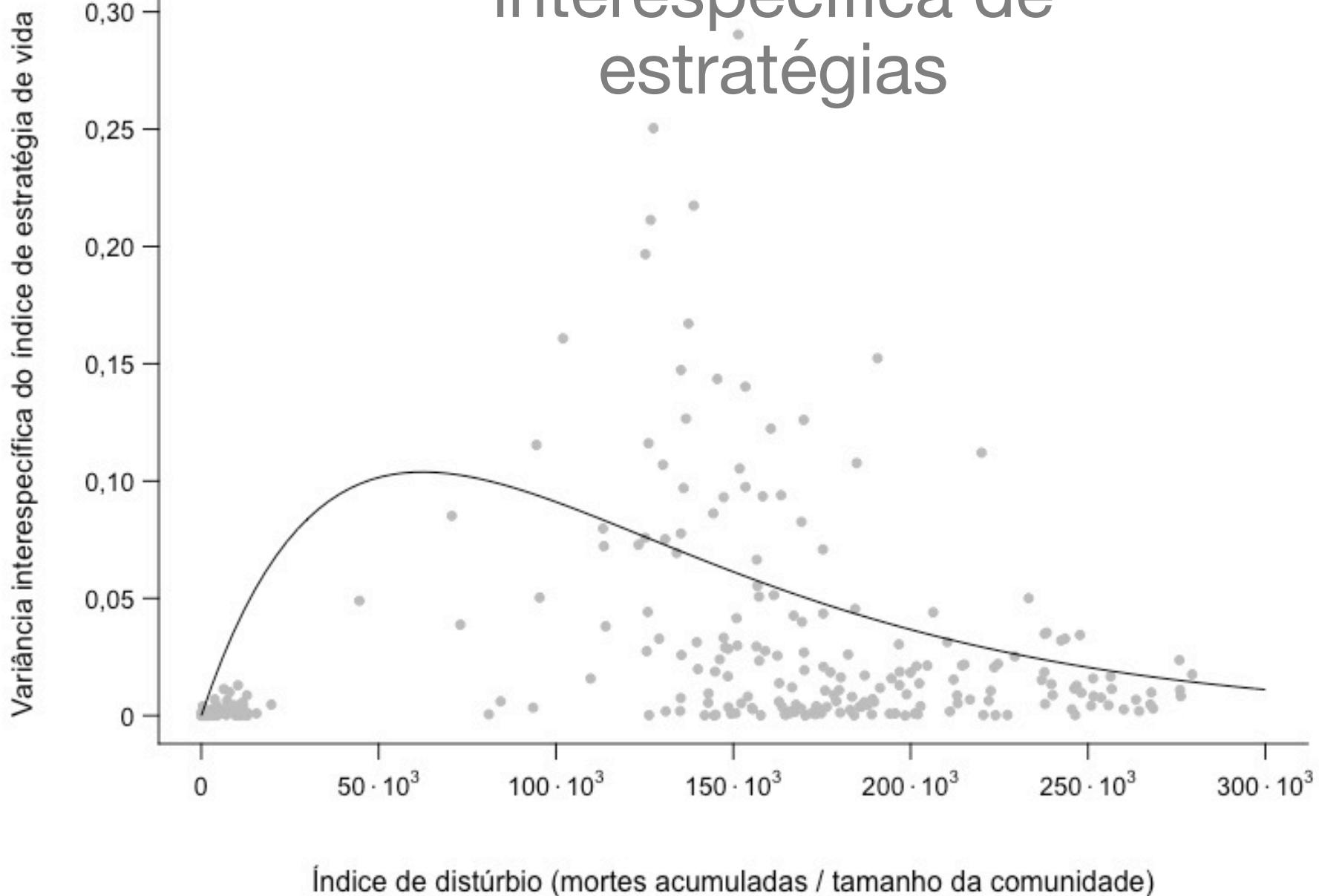


estratégia média

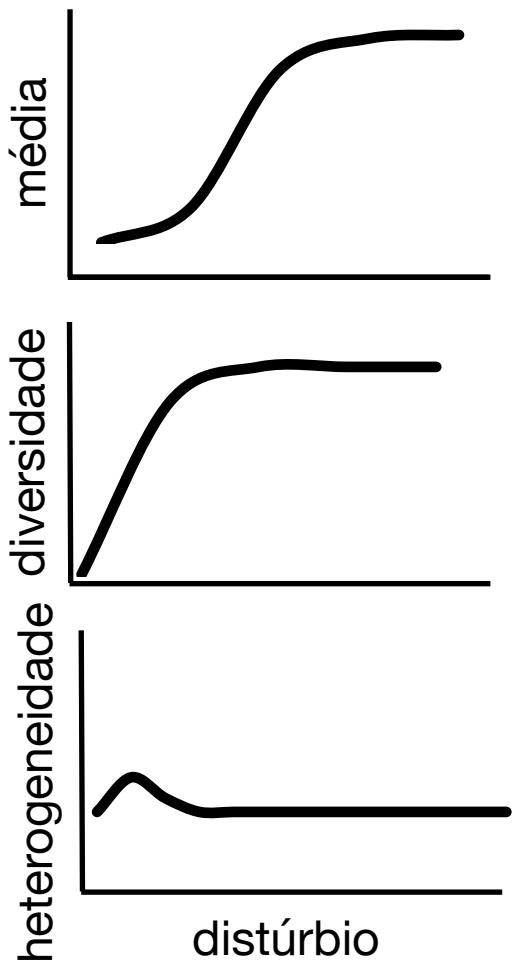
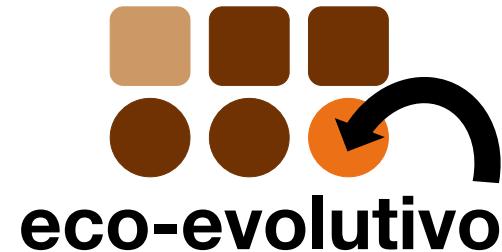
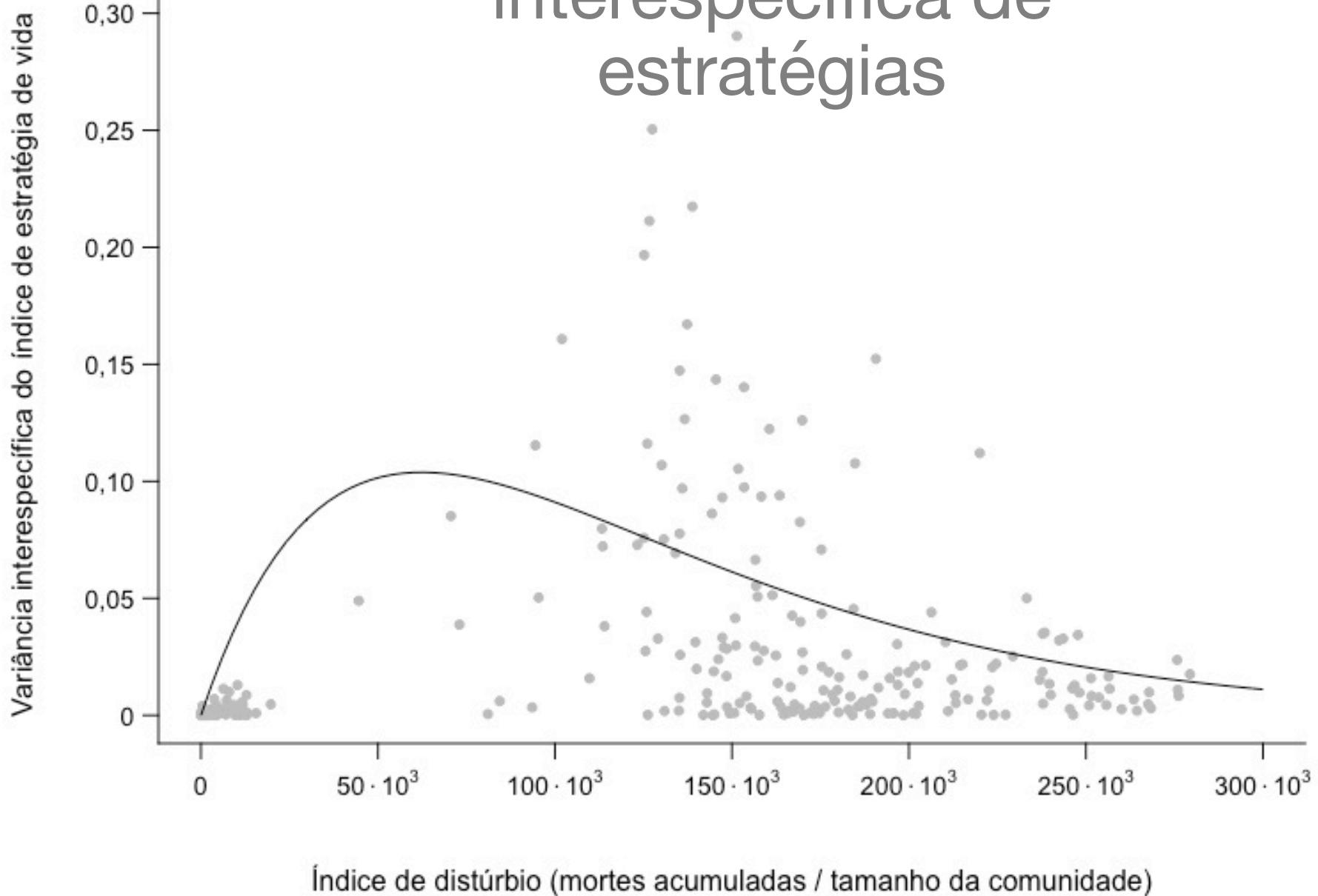
diversidade  
de estratégias

heterogeneidade  
interespecífica de  
estratégias

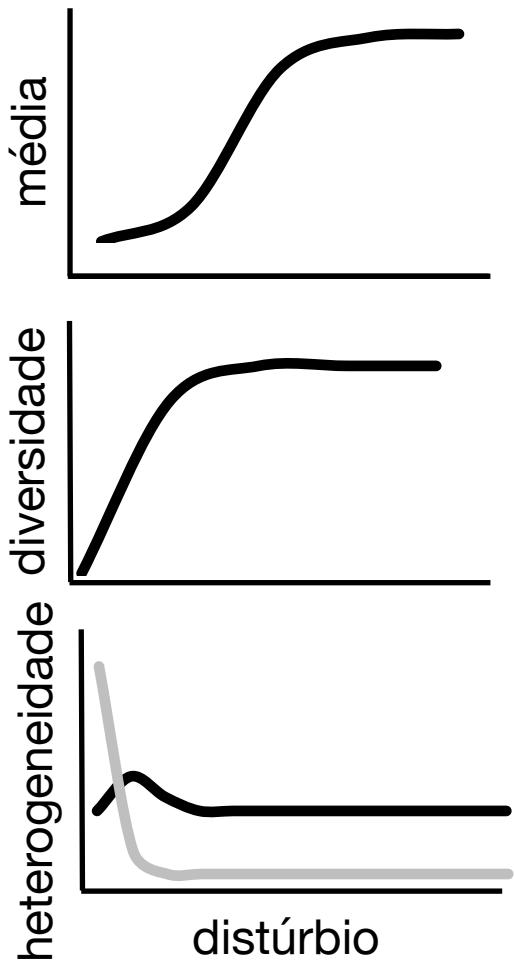
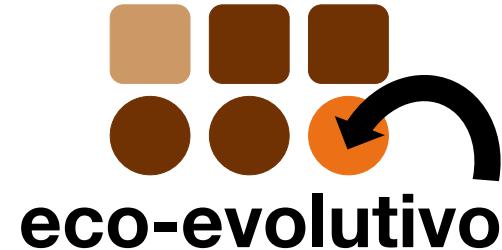
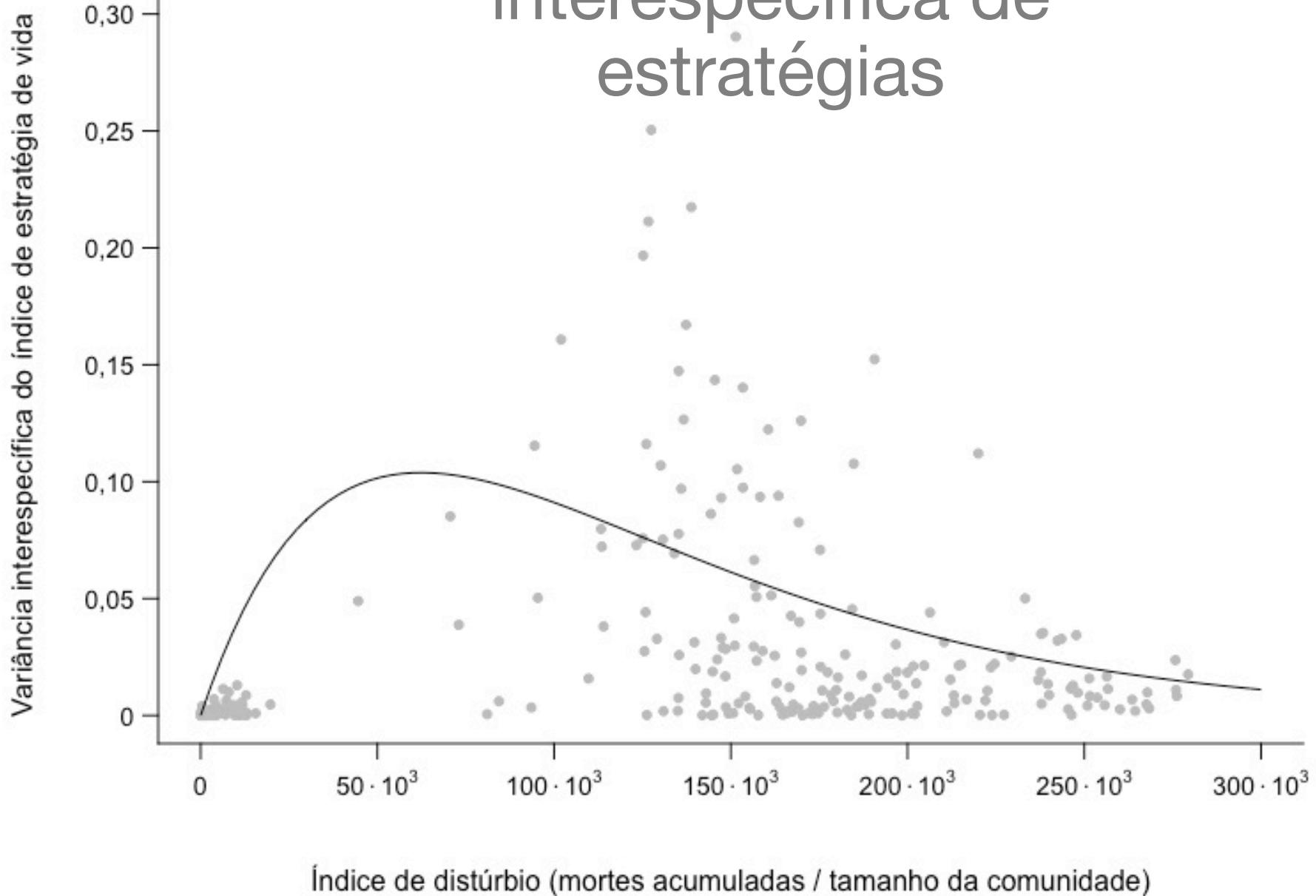
# heterogeneidade interespecífica de estratégias



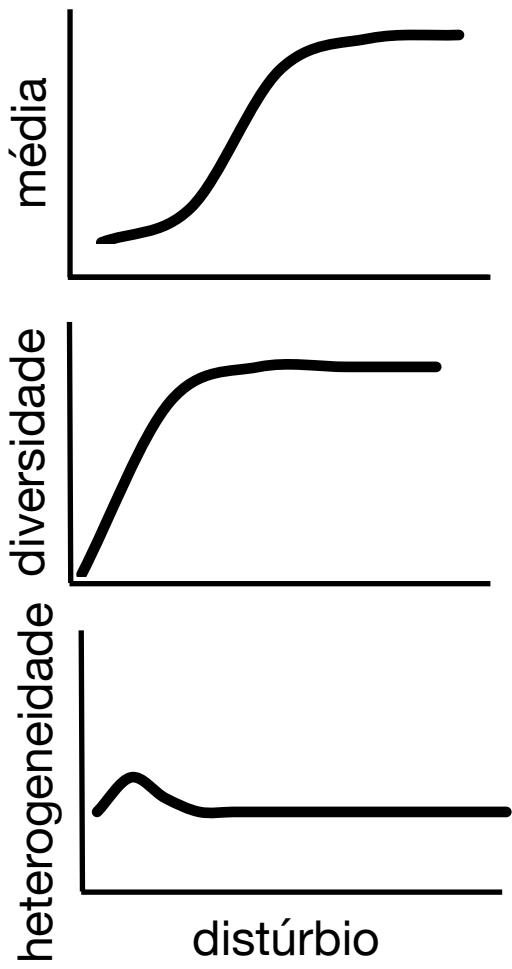
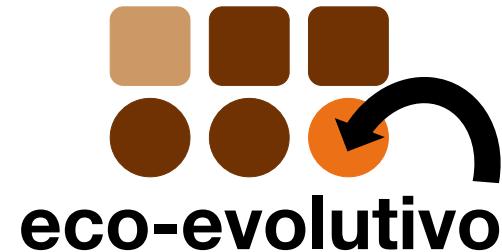
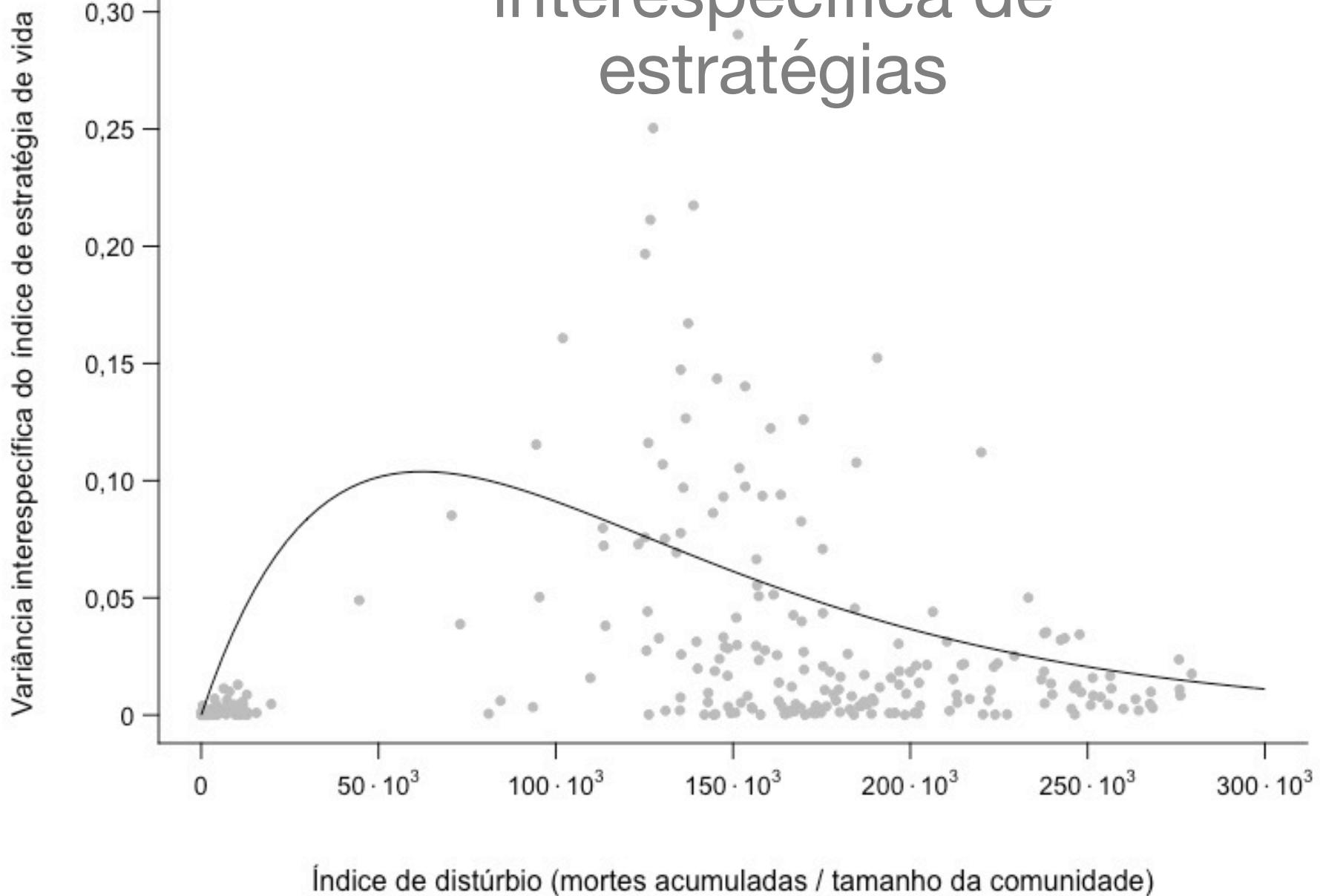
# heterogeneidade interespecífica de estratégias



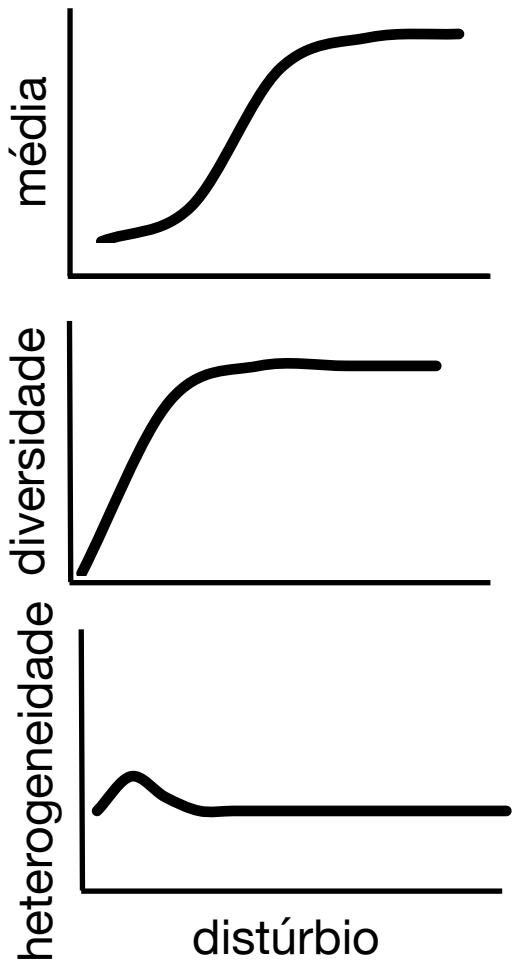
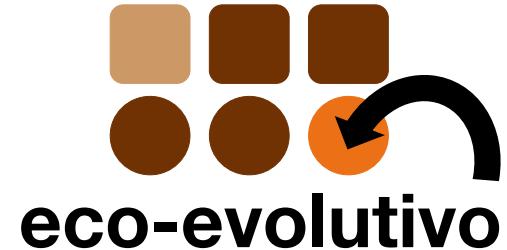
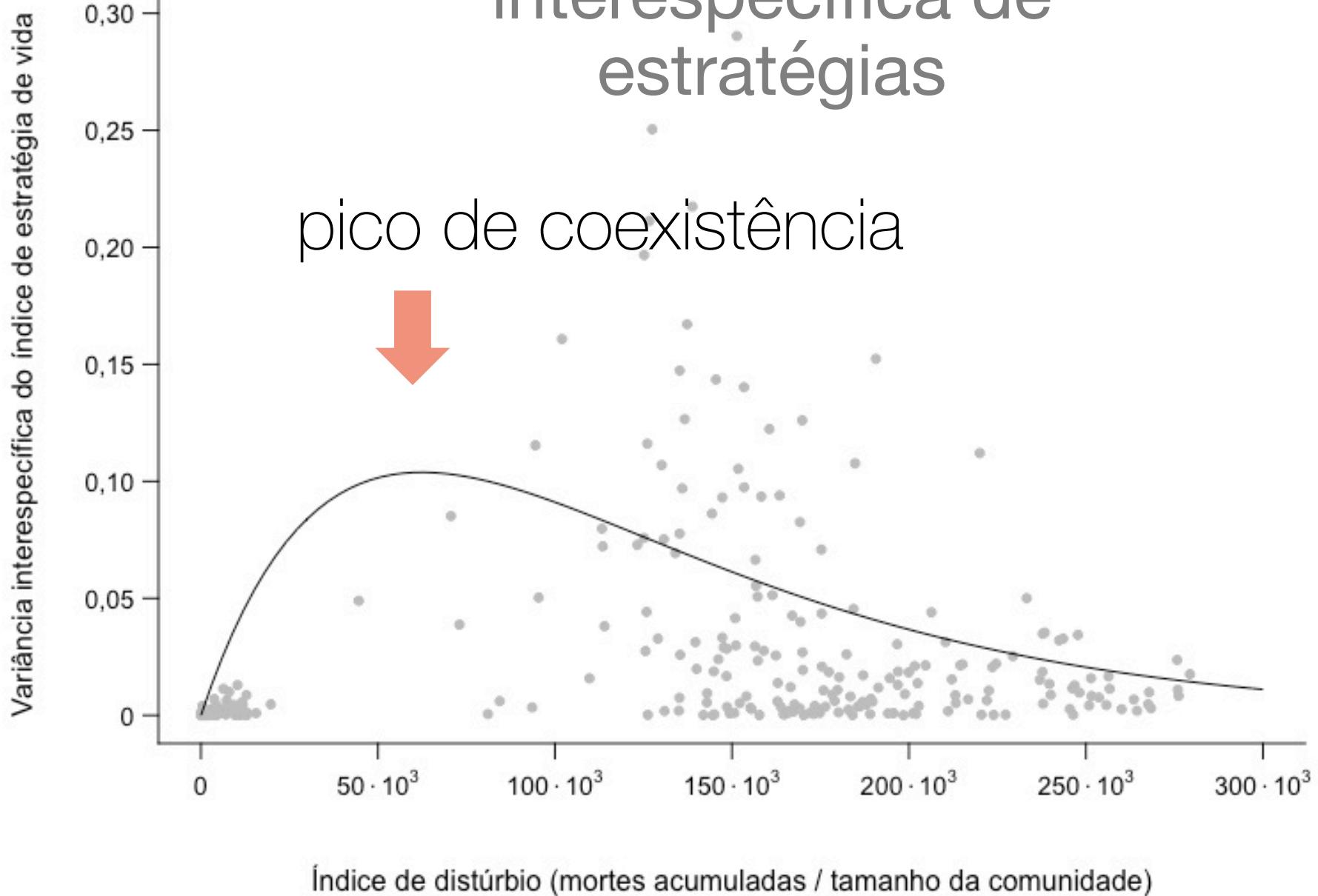
# heterogeneidade interespecífica de estratégias



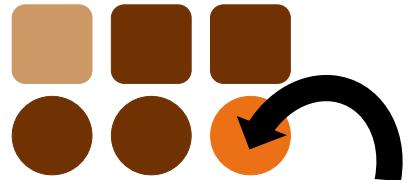
# heterogeneidade interespecífica de estratégias



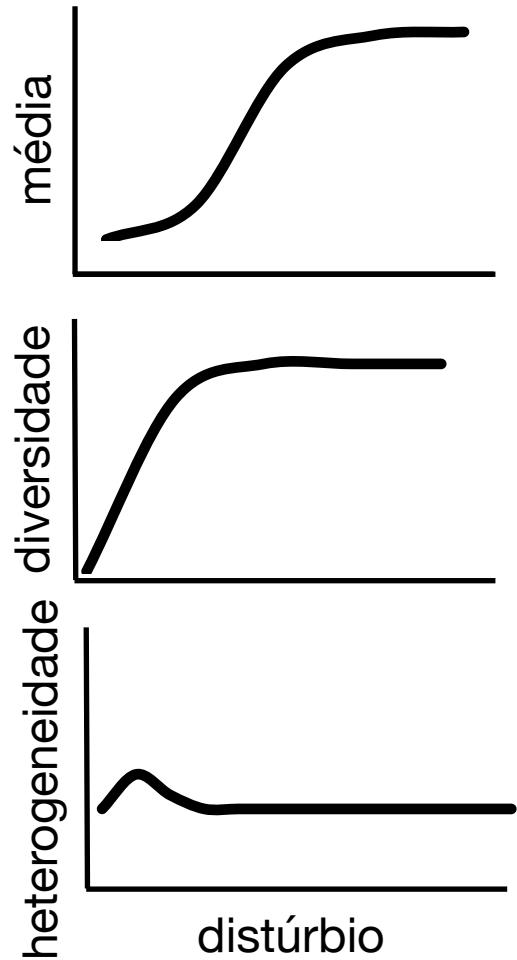
# heterogeneidade interespecífica de estratégias



# coexistência de estratégias mediada pelo distúrbio

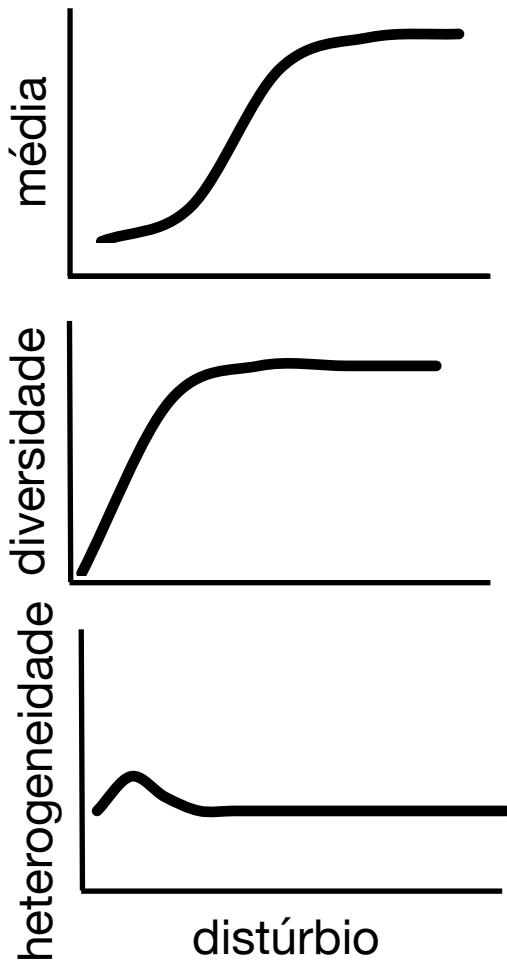
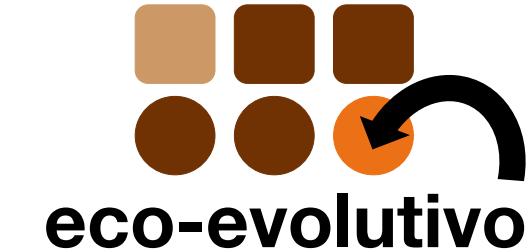
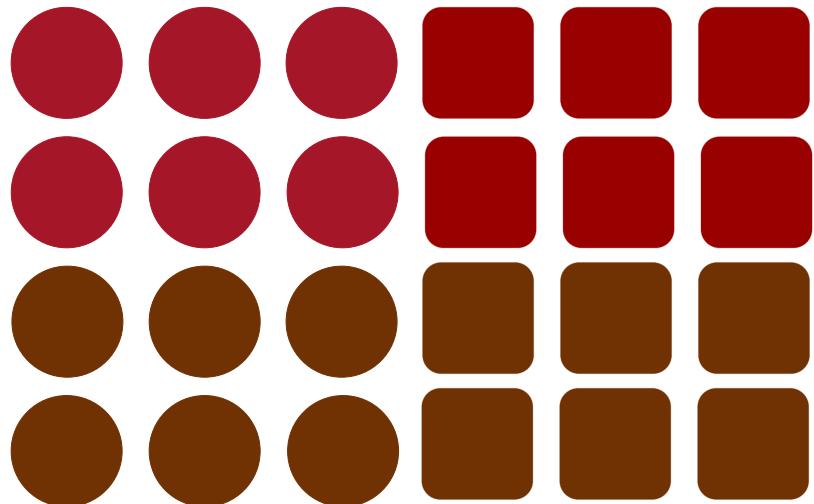


**eco-evolutivo**



# coexistência de estratégias mediada pelo distúrbio

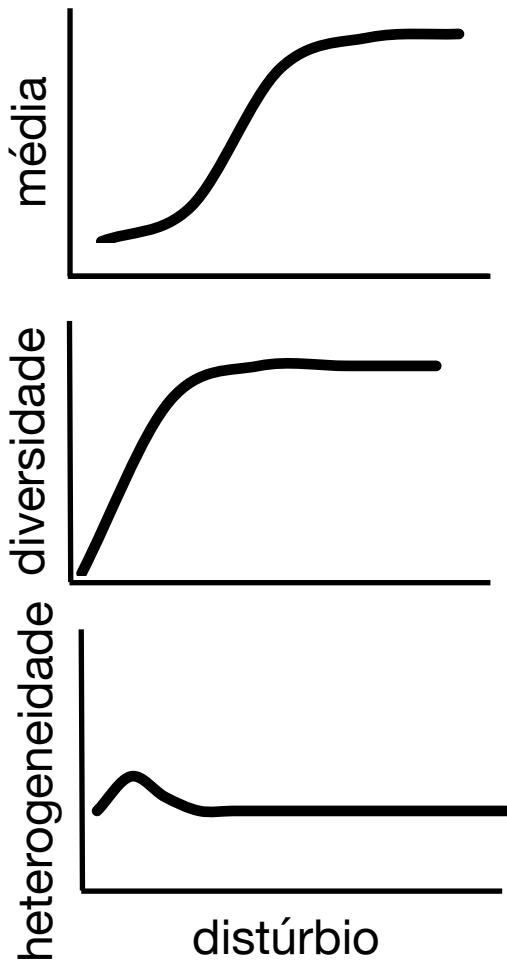
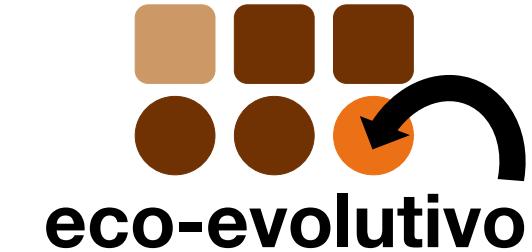
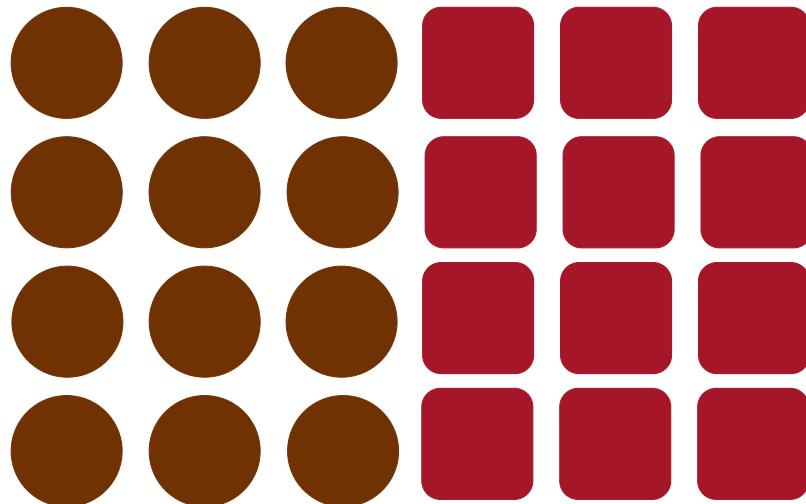
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- x 12
- x 48
- x 12



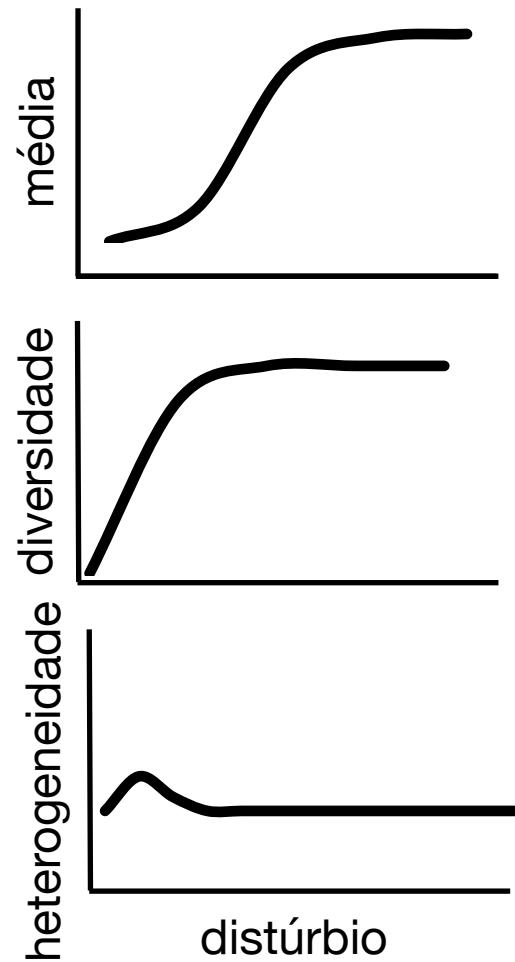
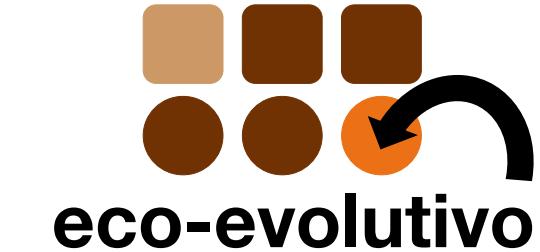
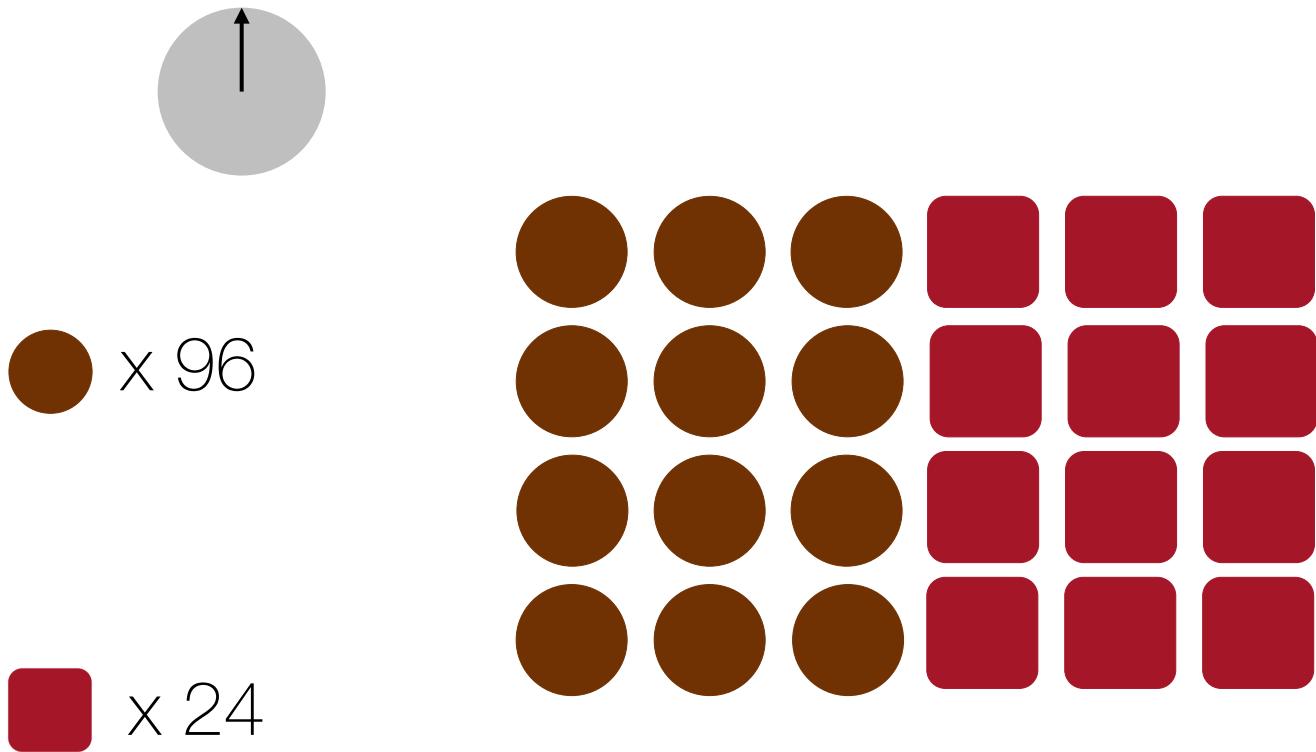
# coexistência de estratégias mediada pelo distúrbio

x 96

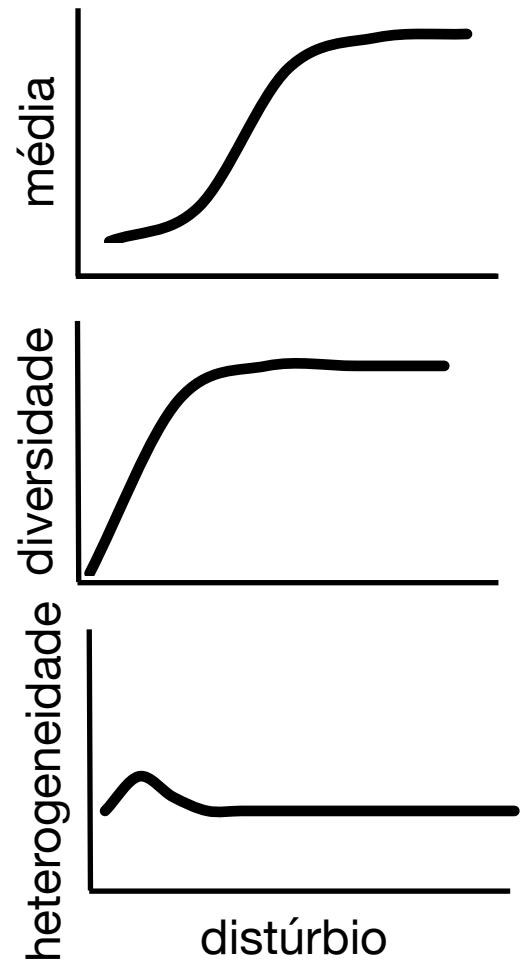
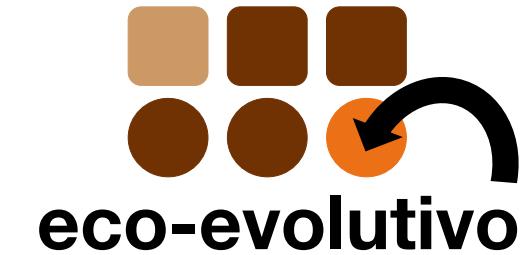
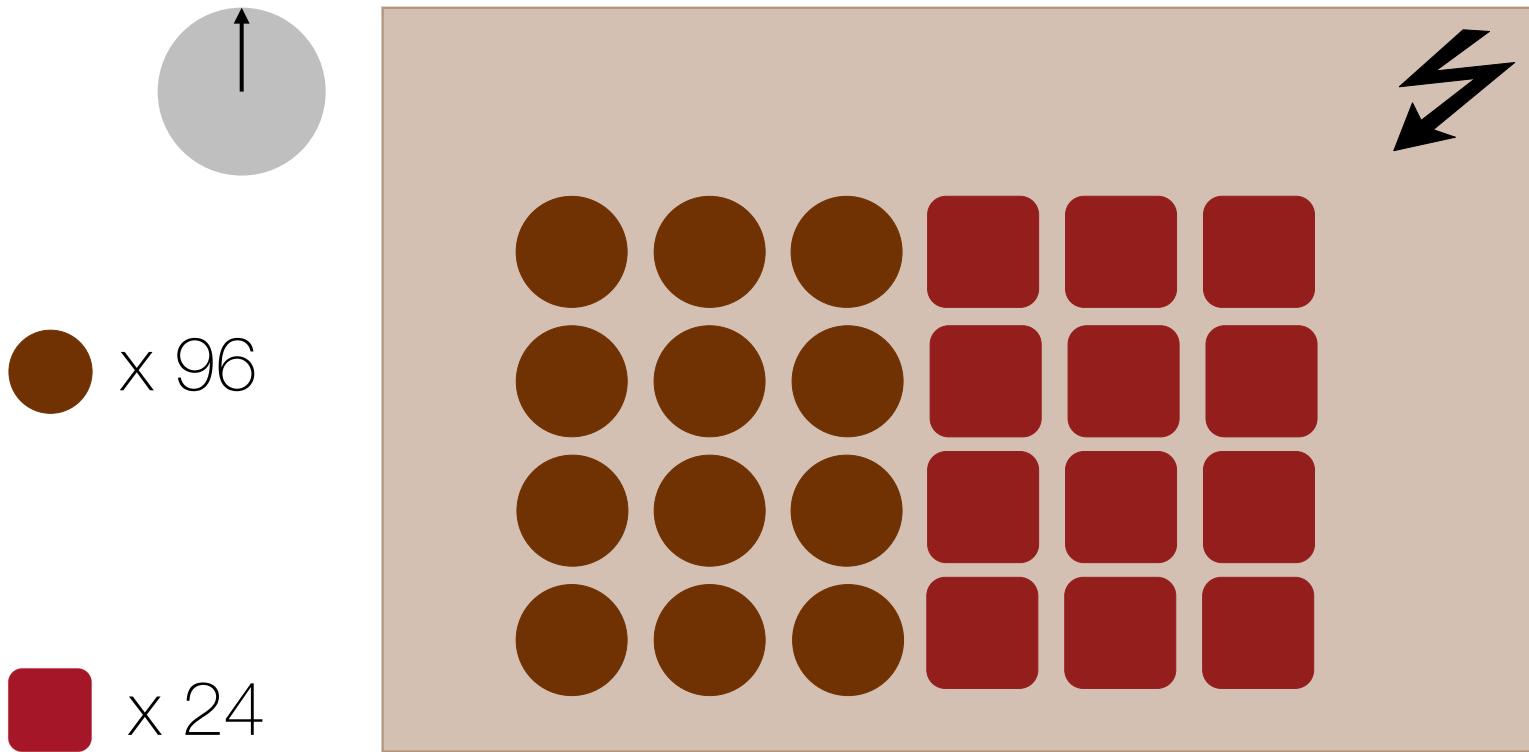
x 24



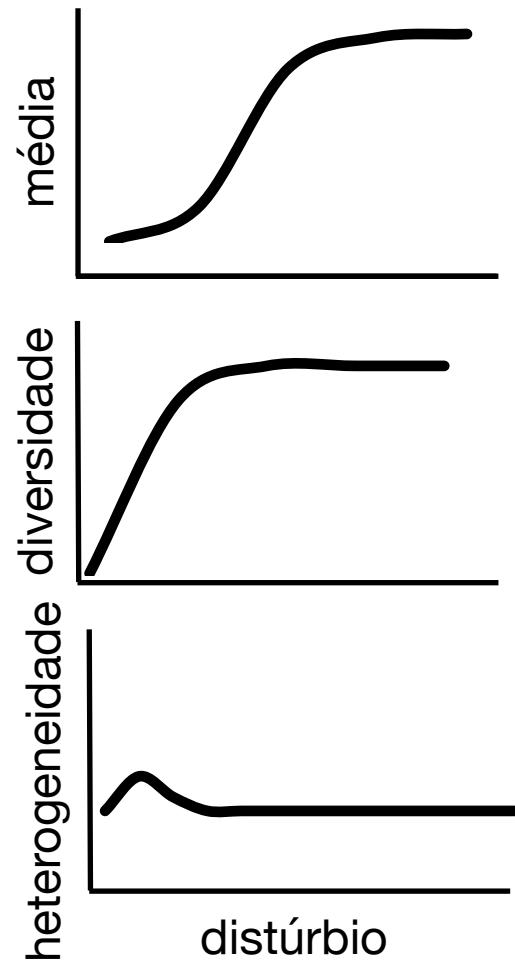
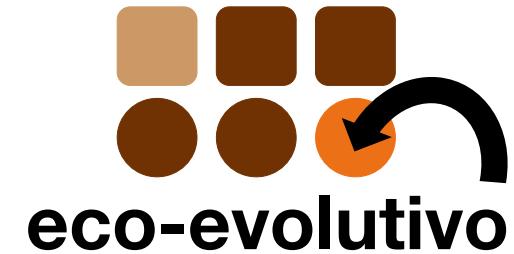
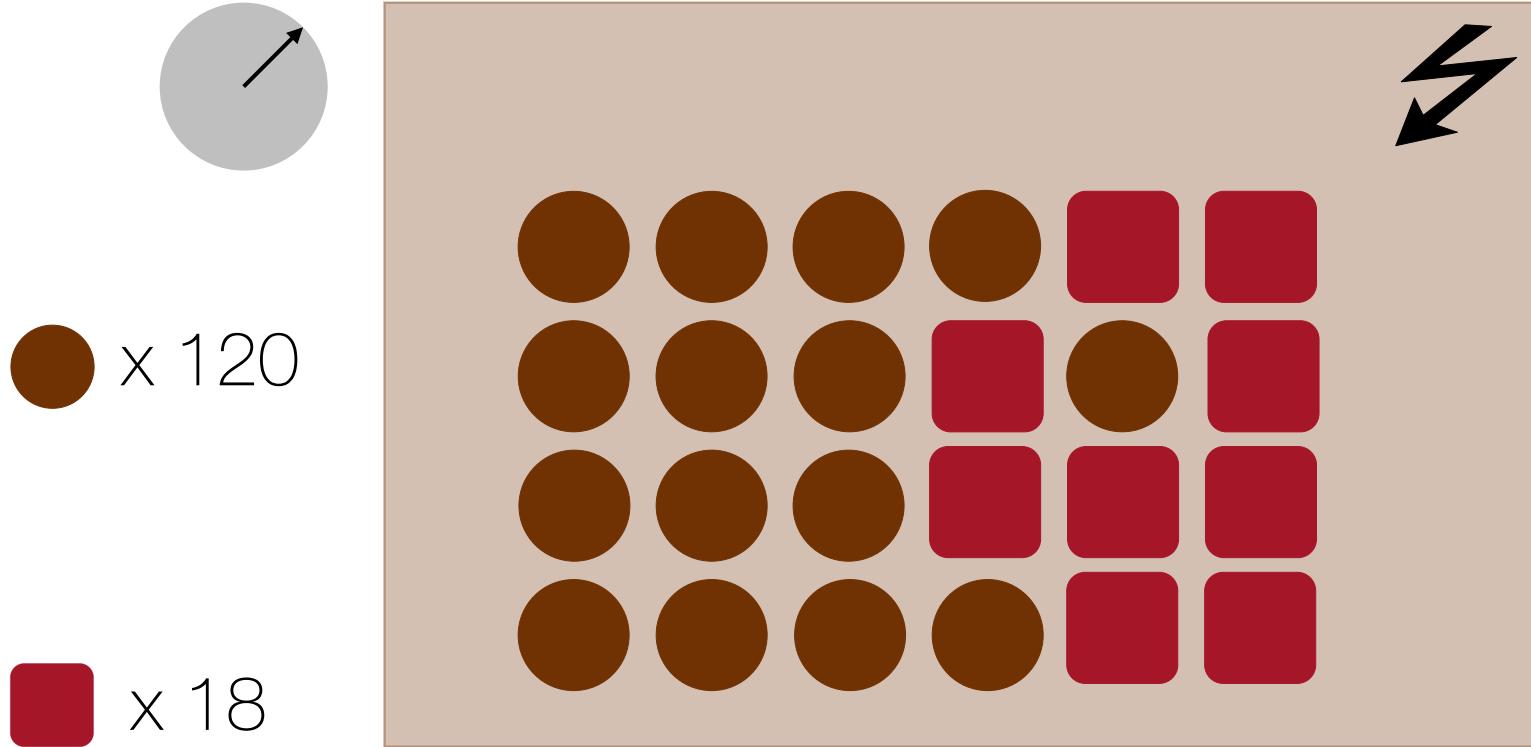
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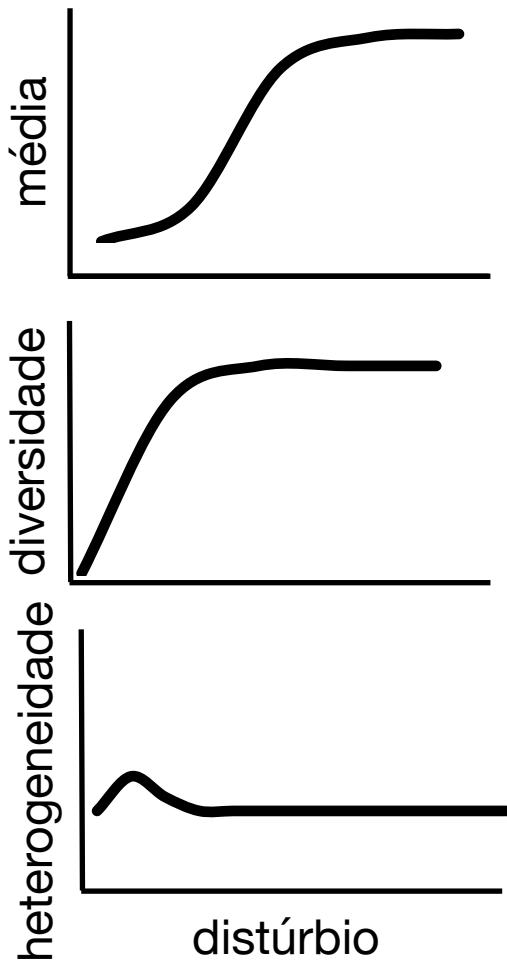
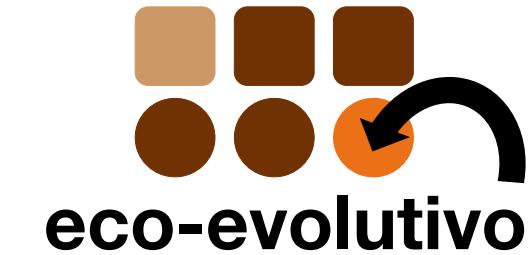
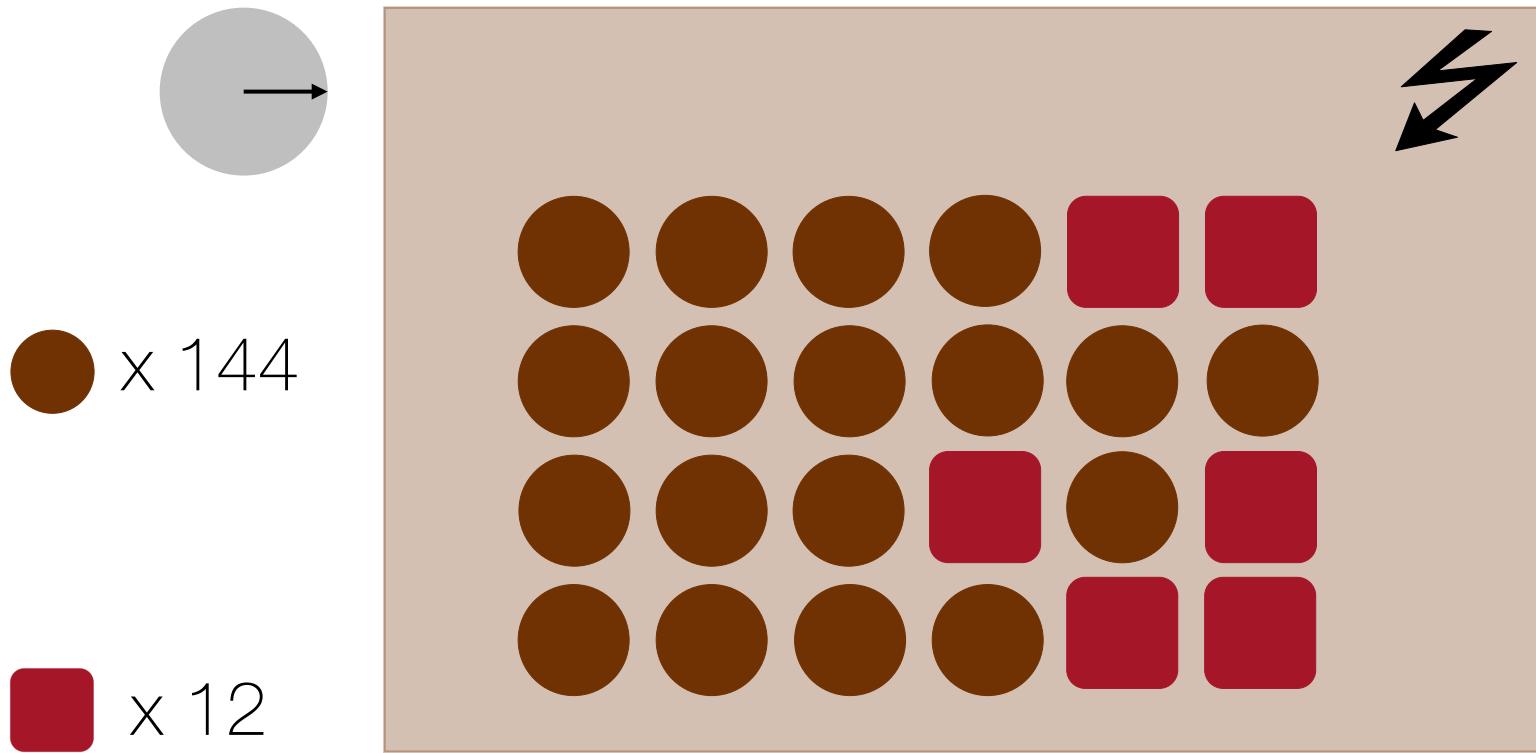
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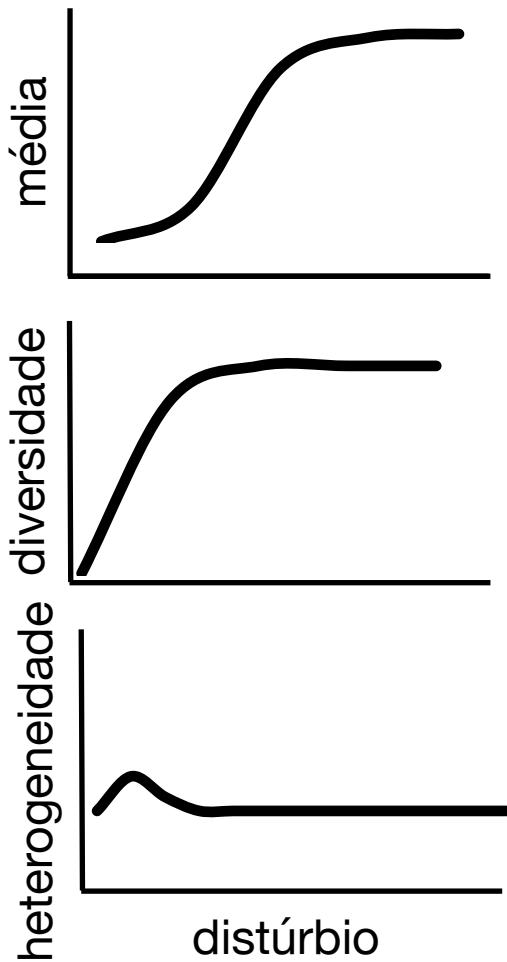
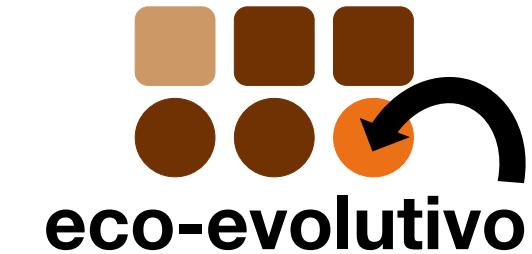
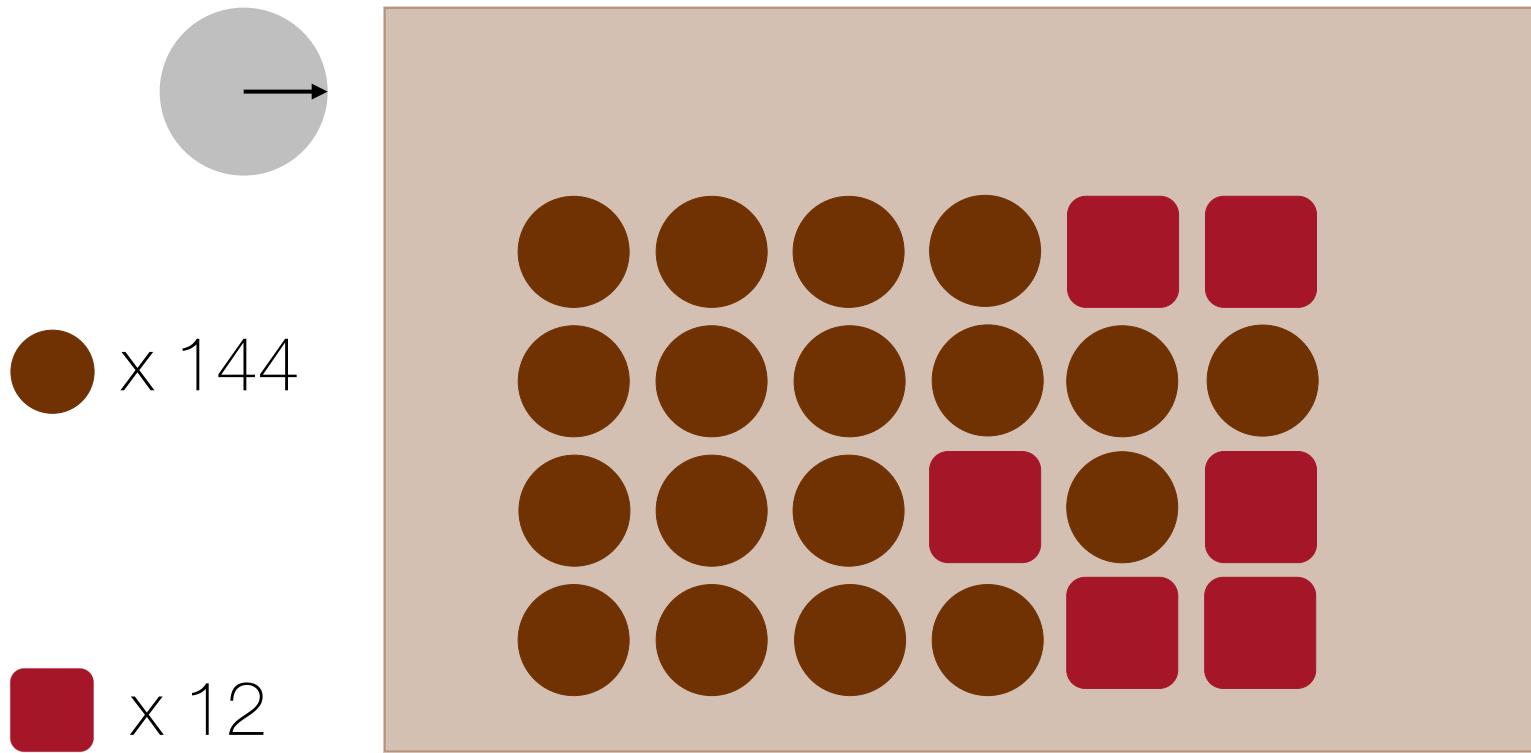
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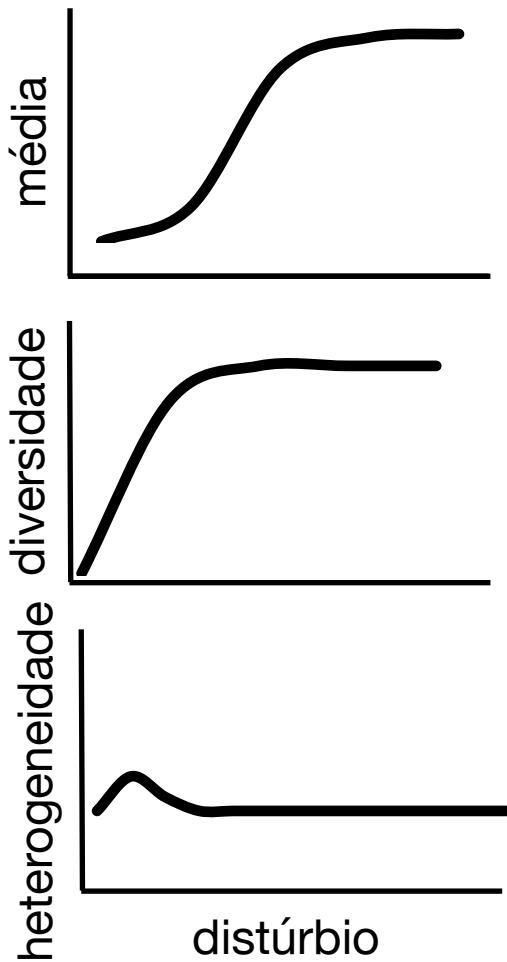
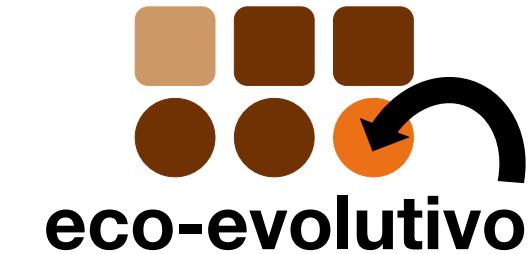
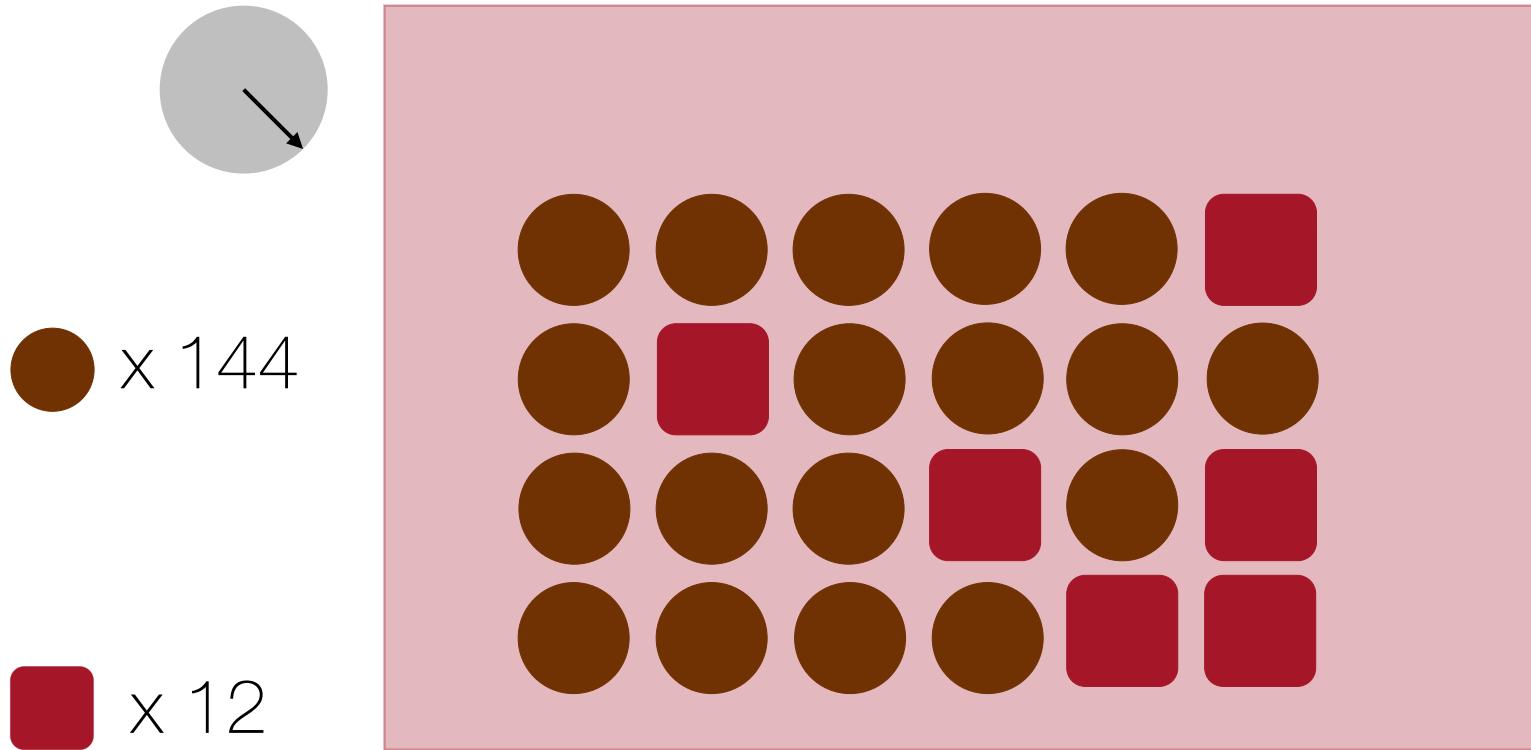
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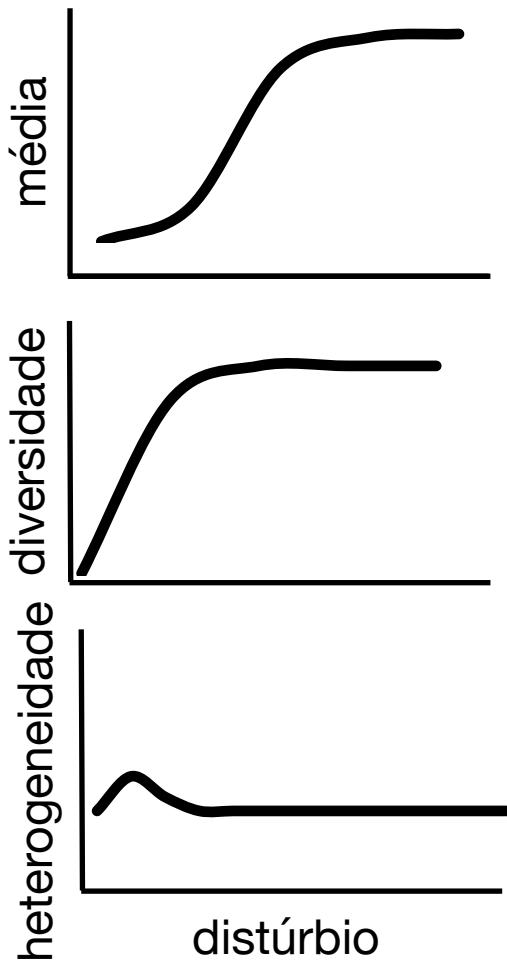
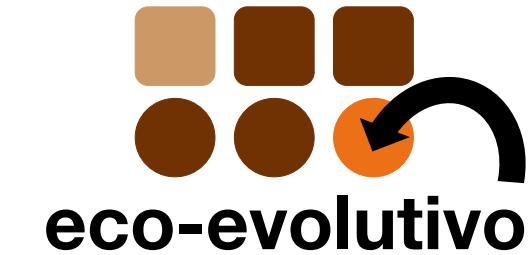
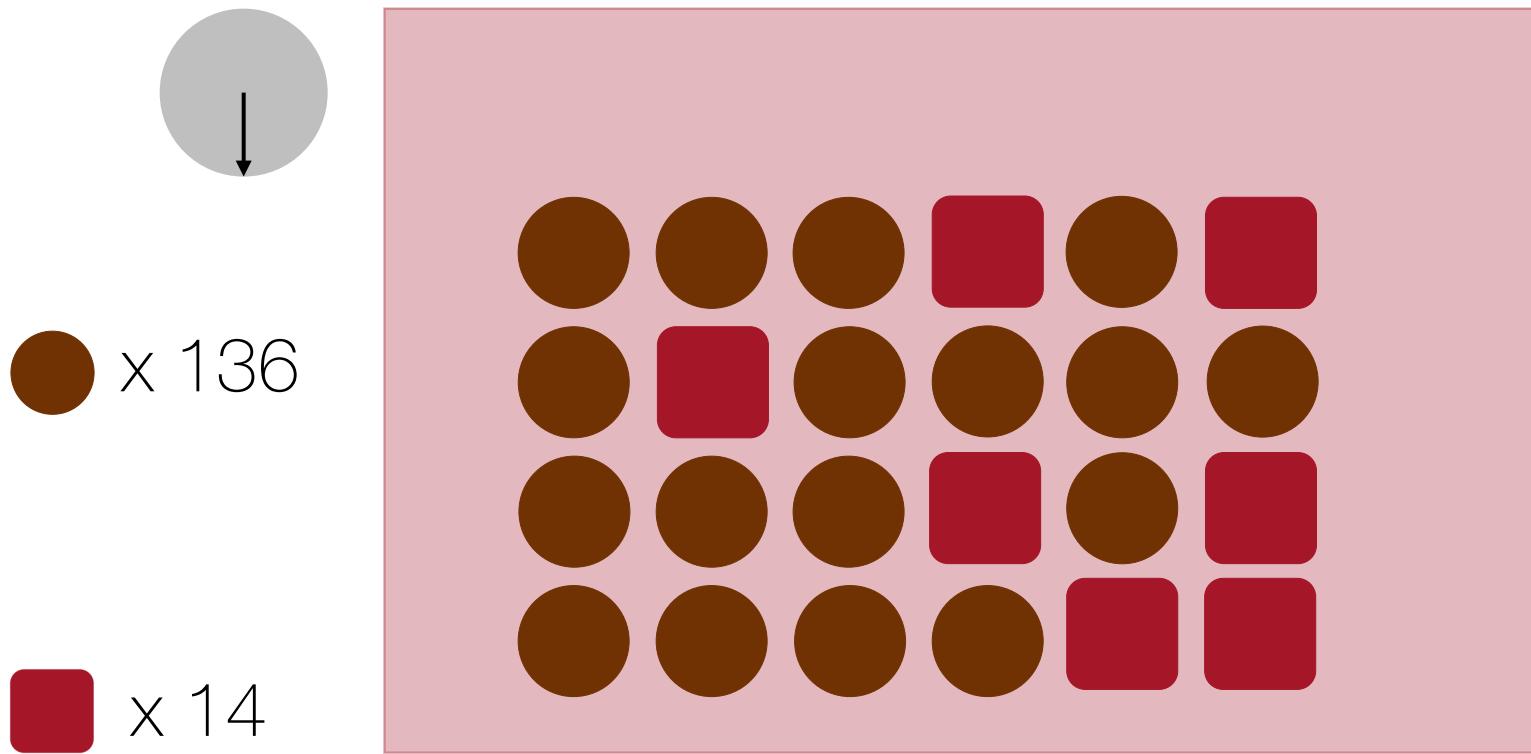
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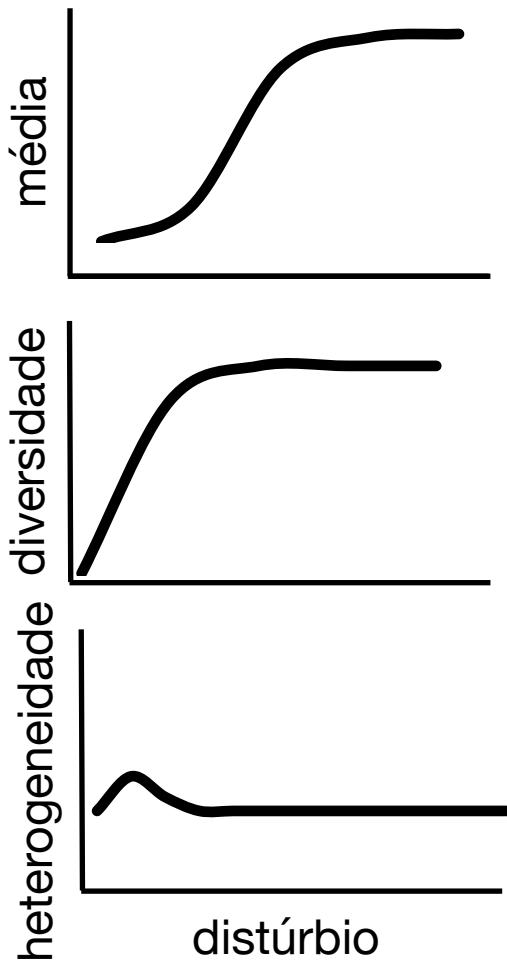
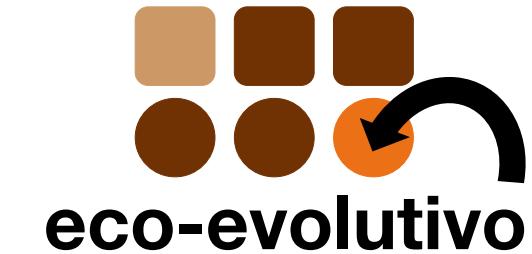
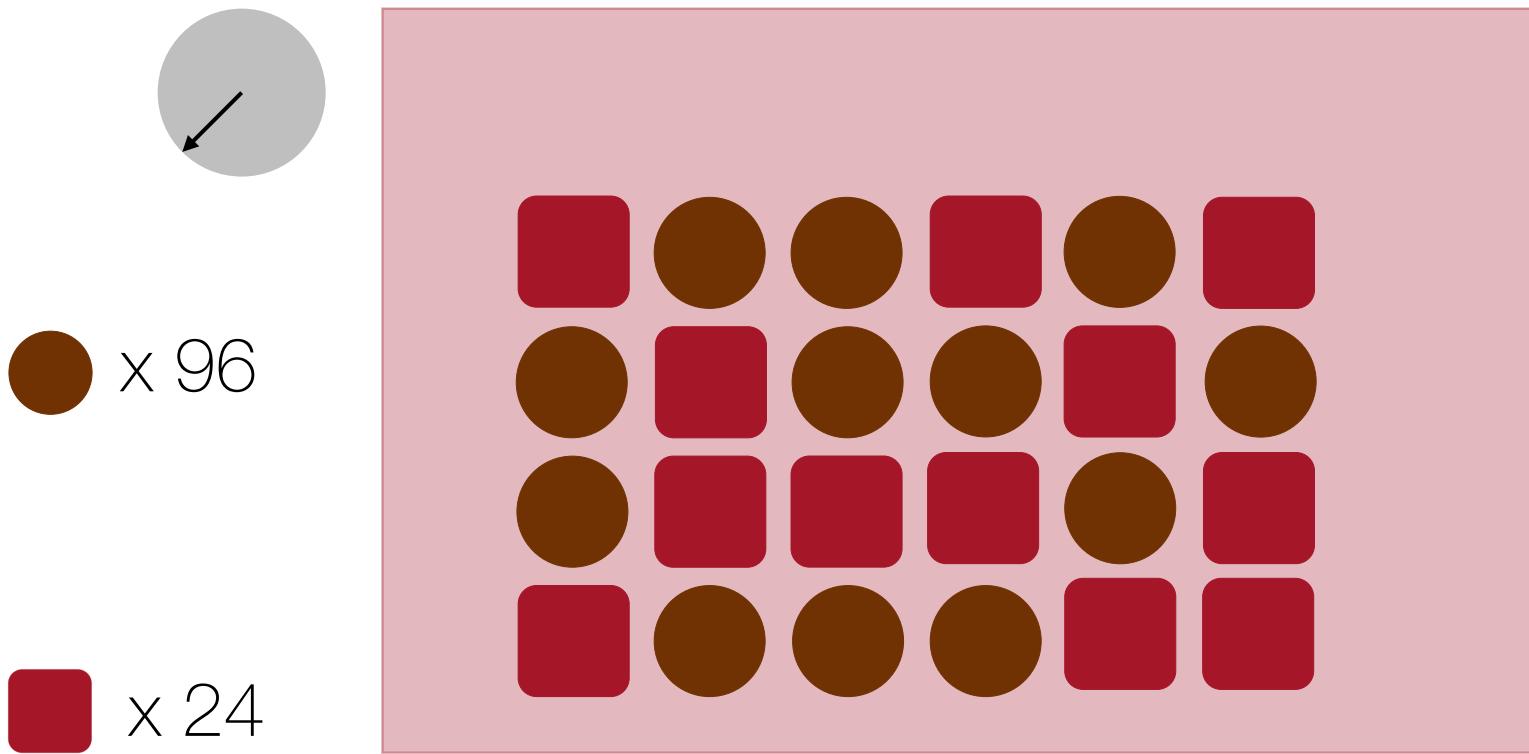
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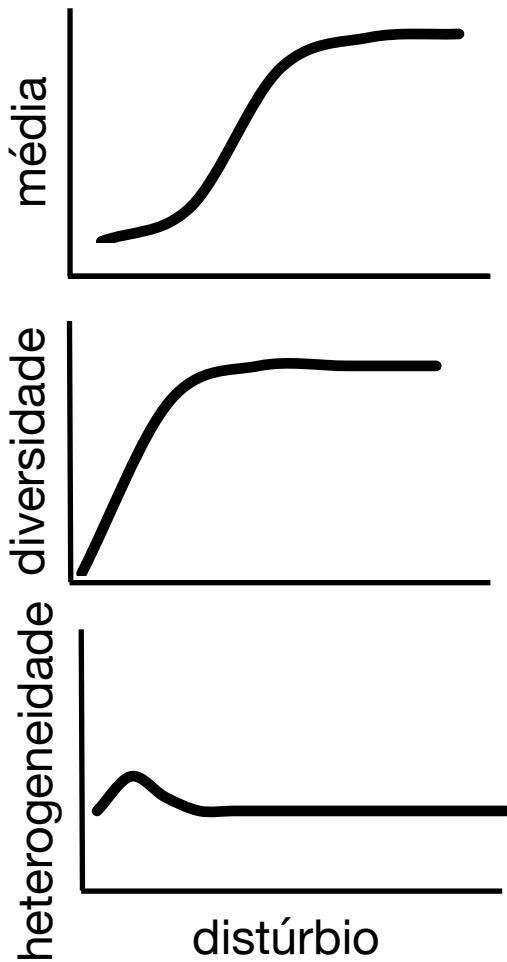
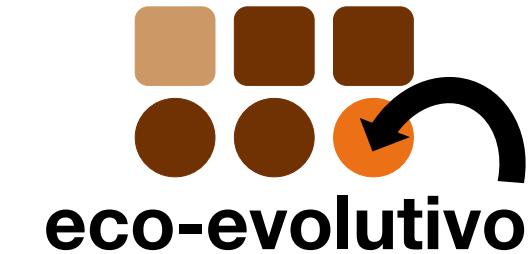
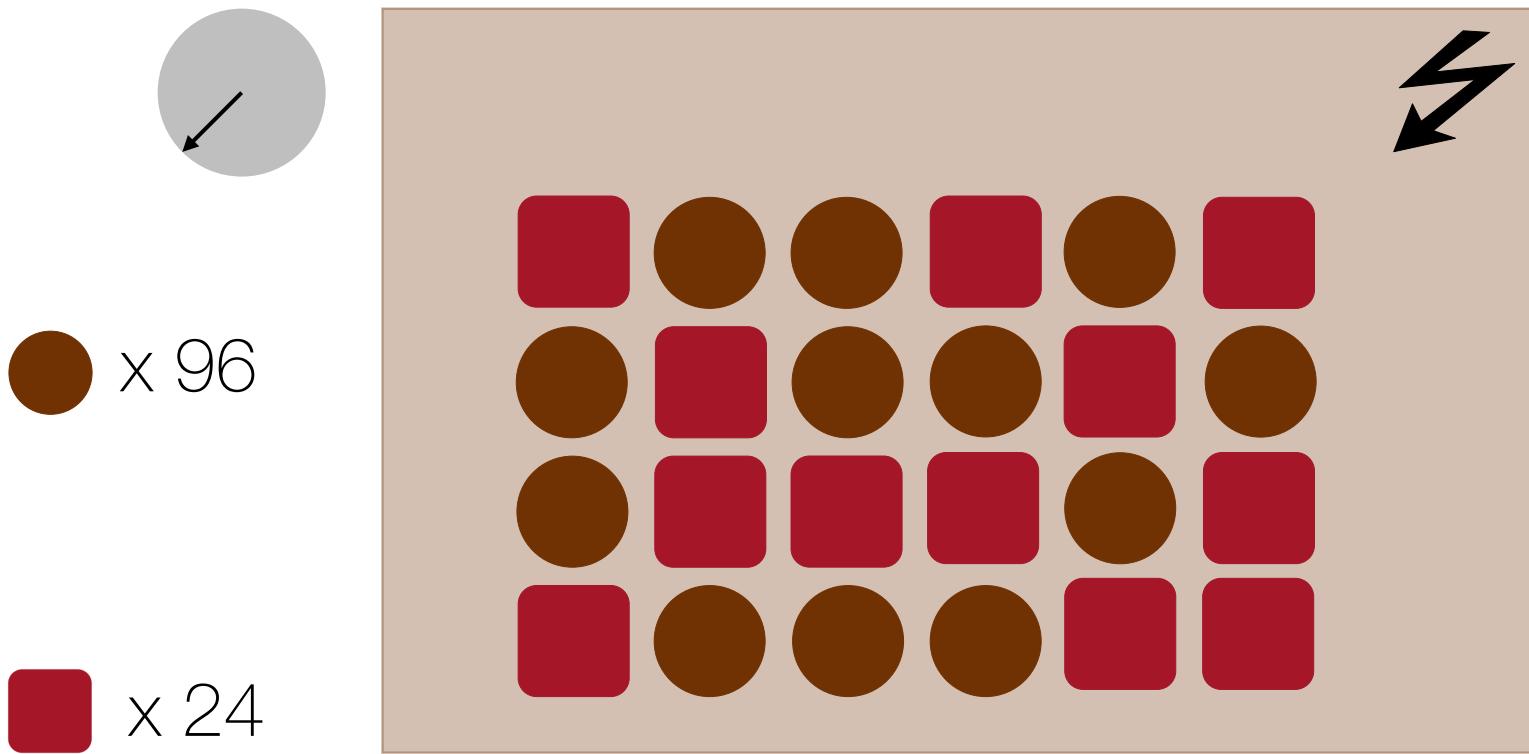
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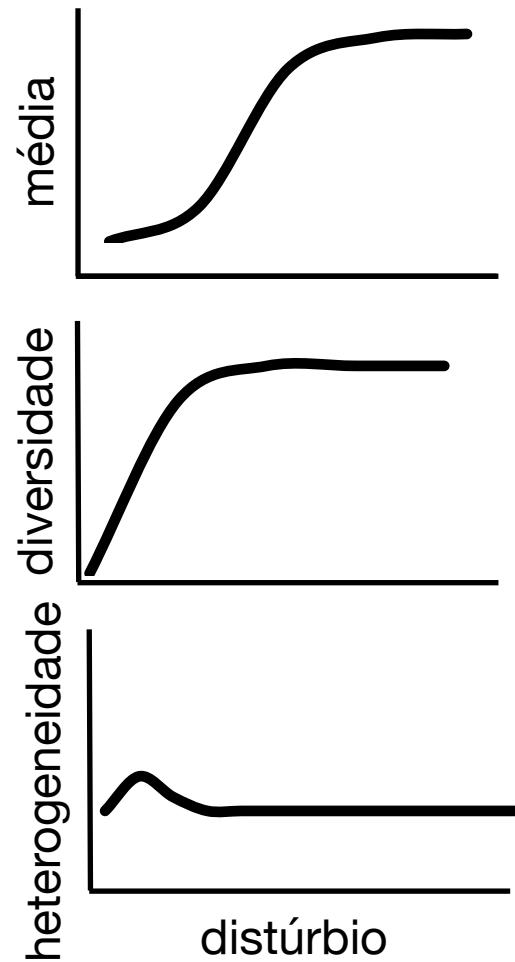
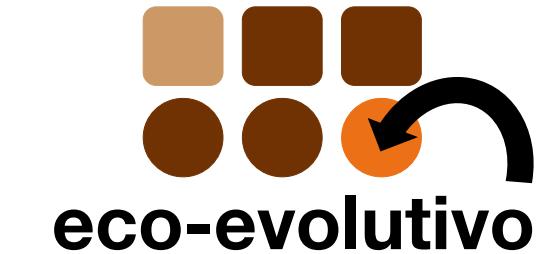
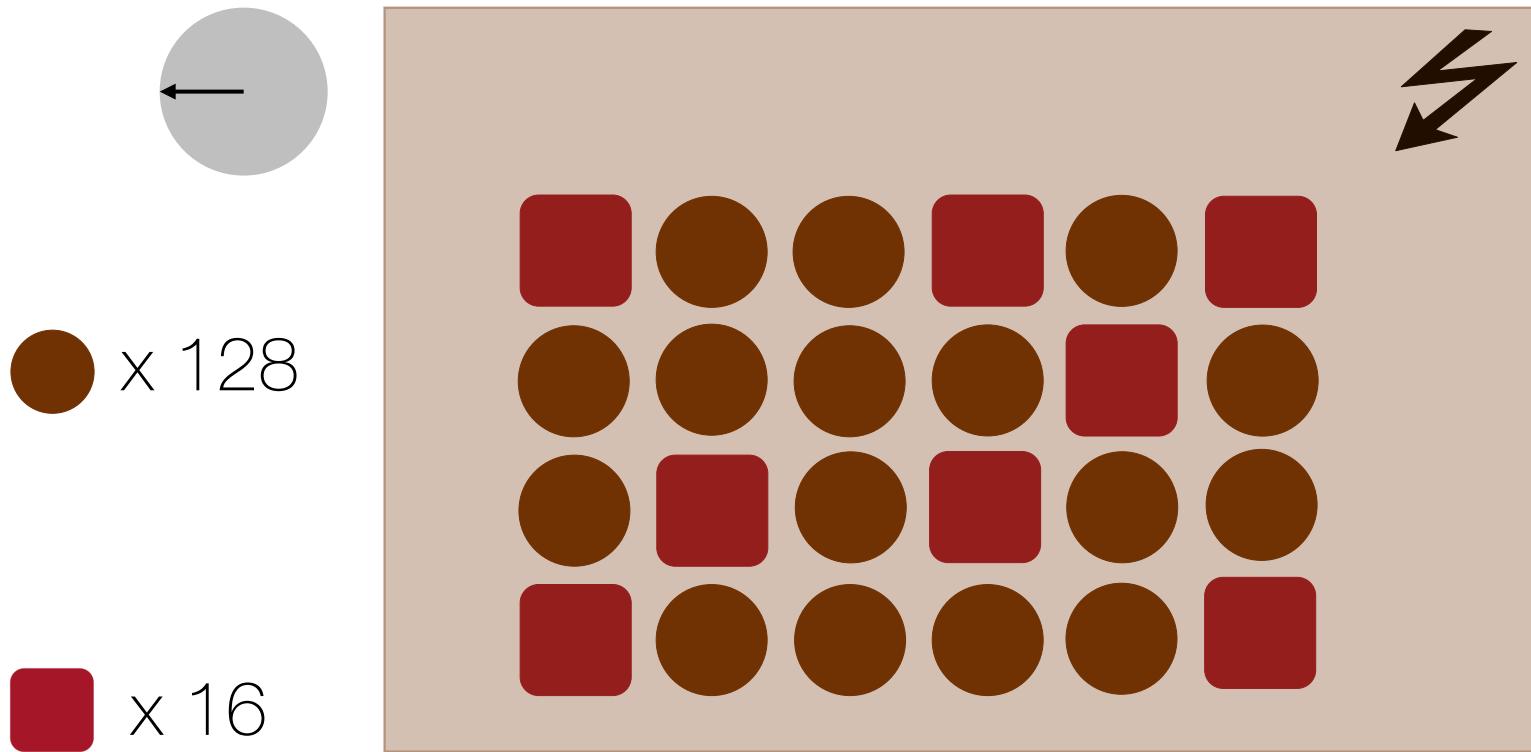
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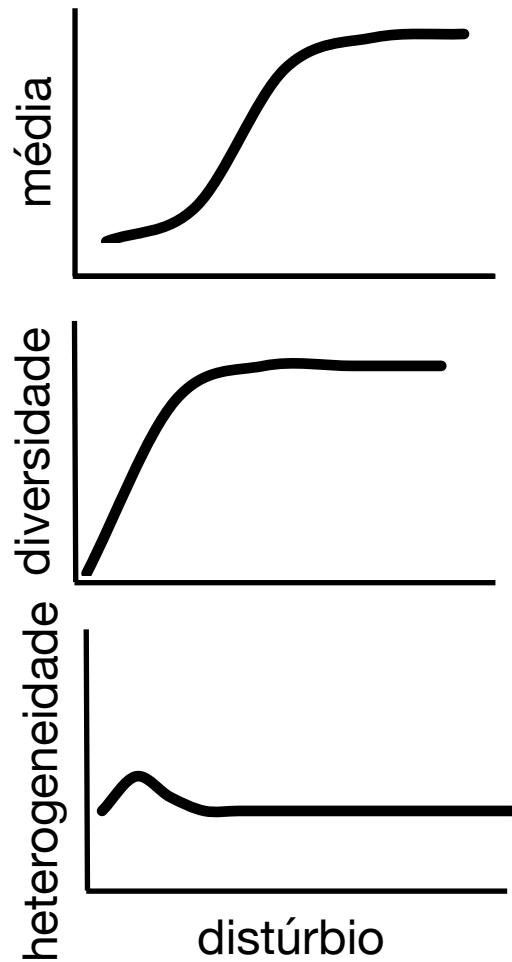
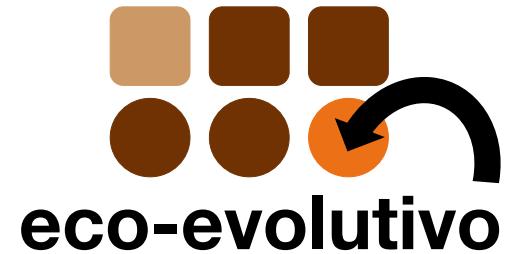
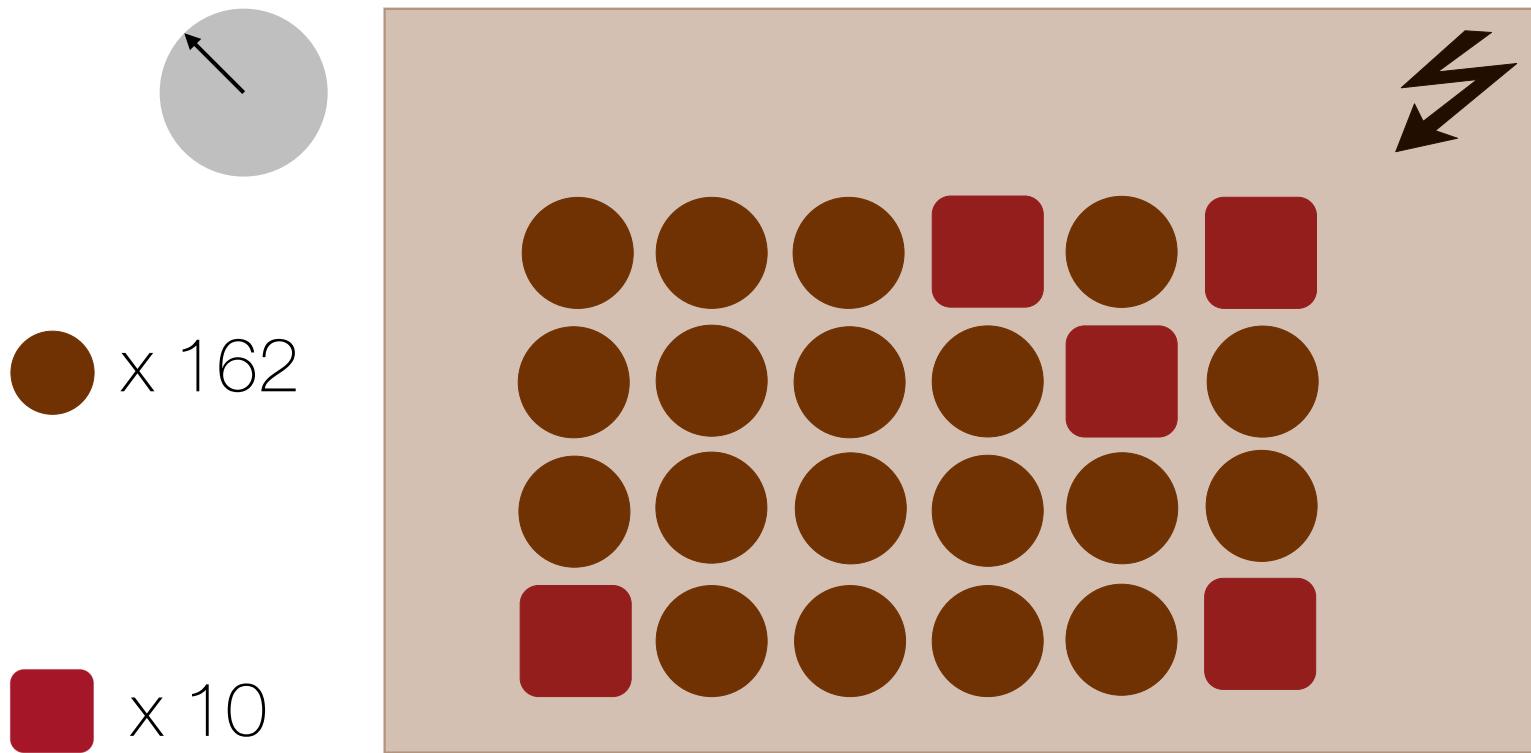
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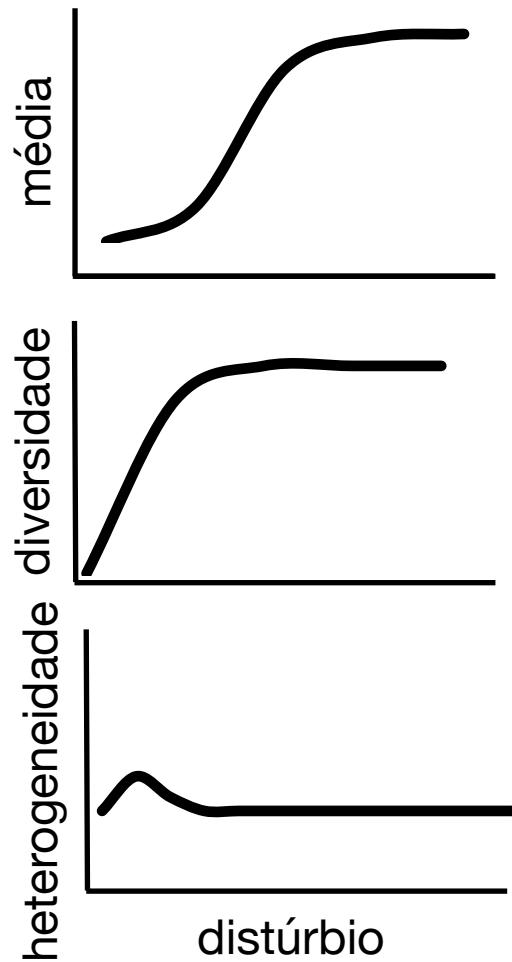
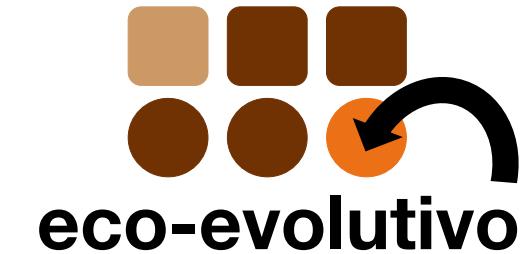
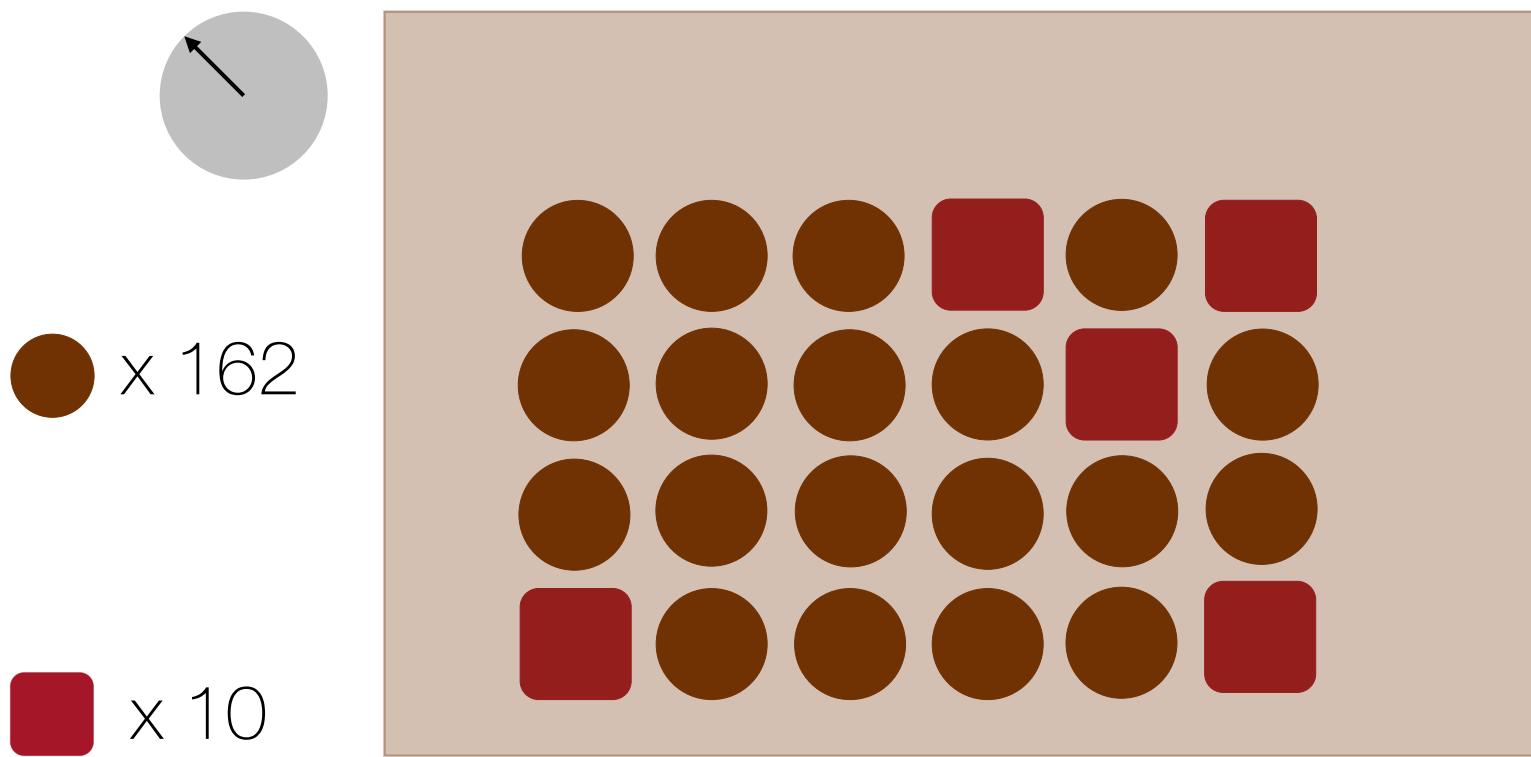
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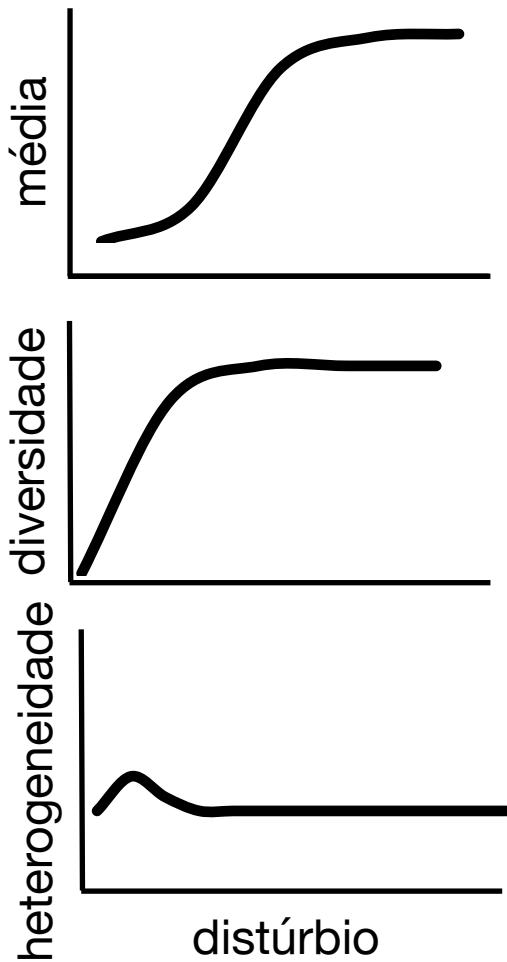
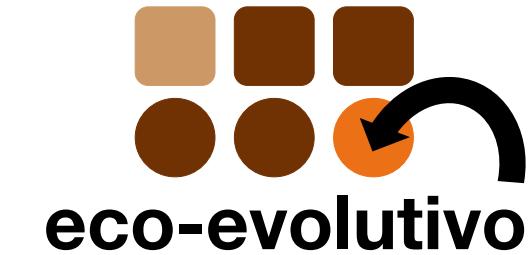
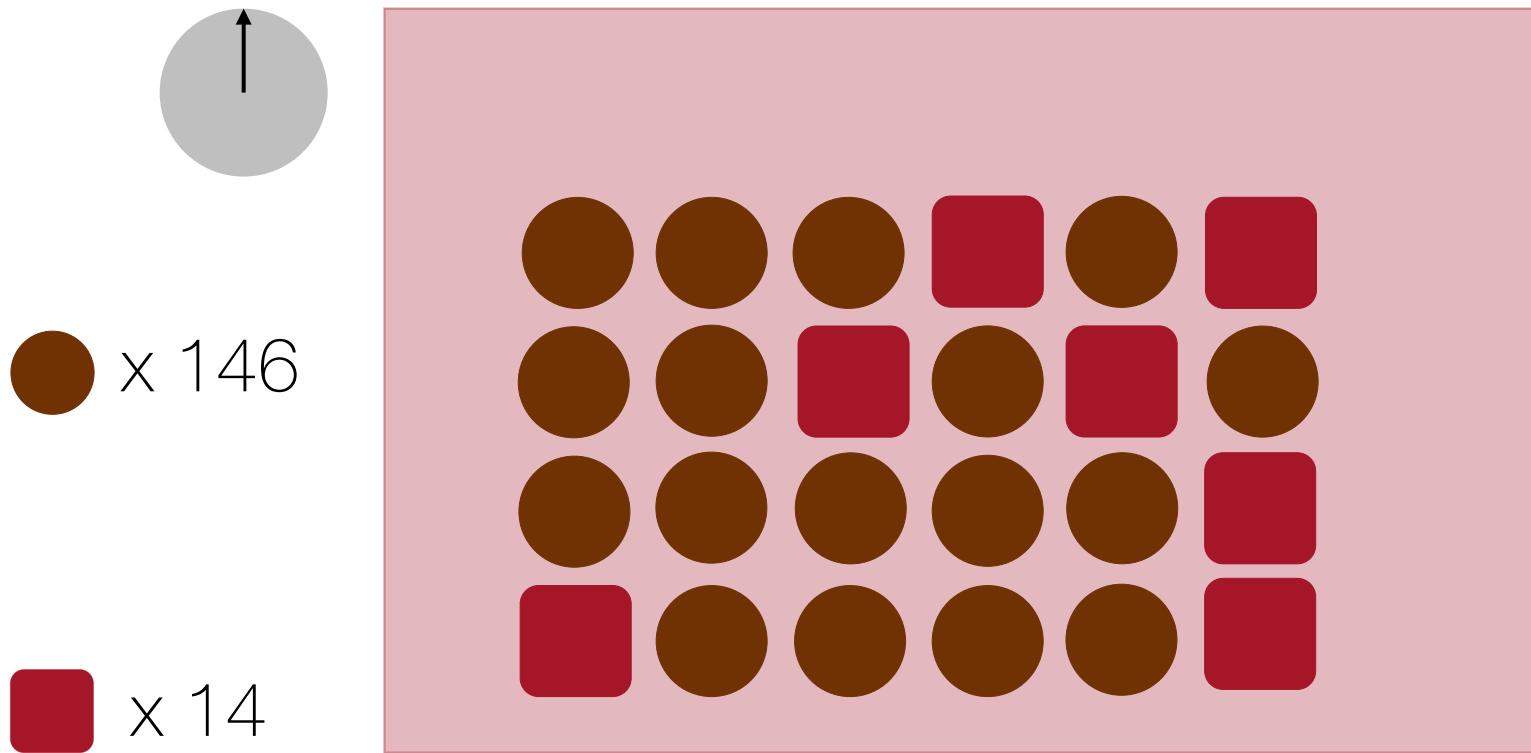
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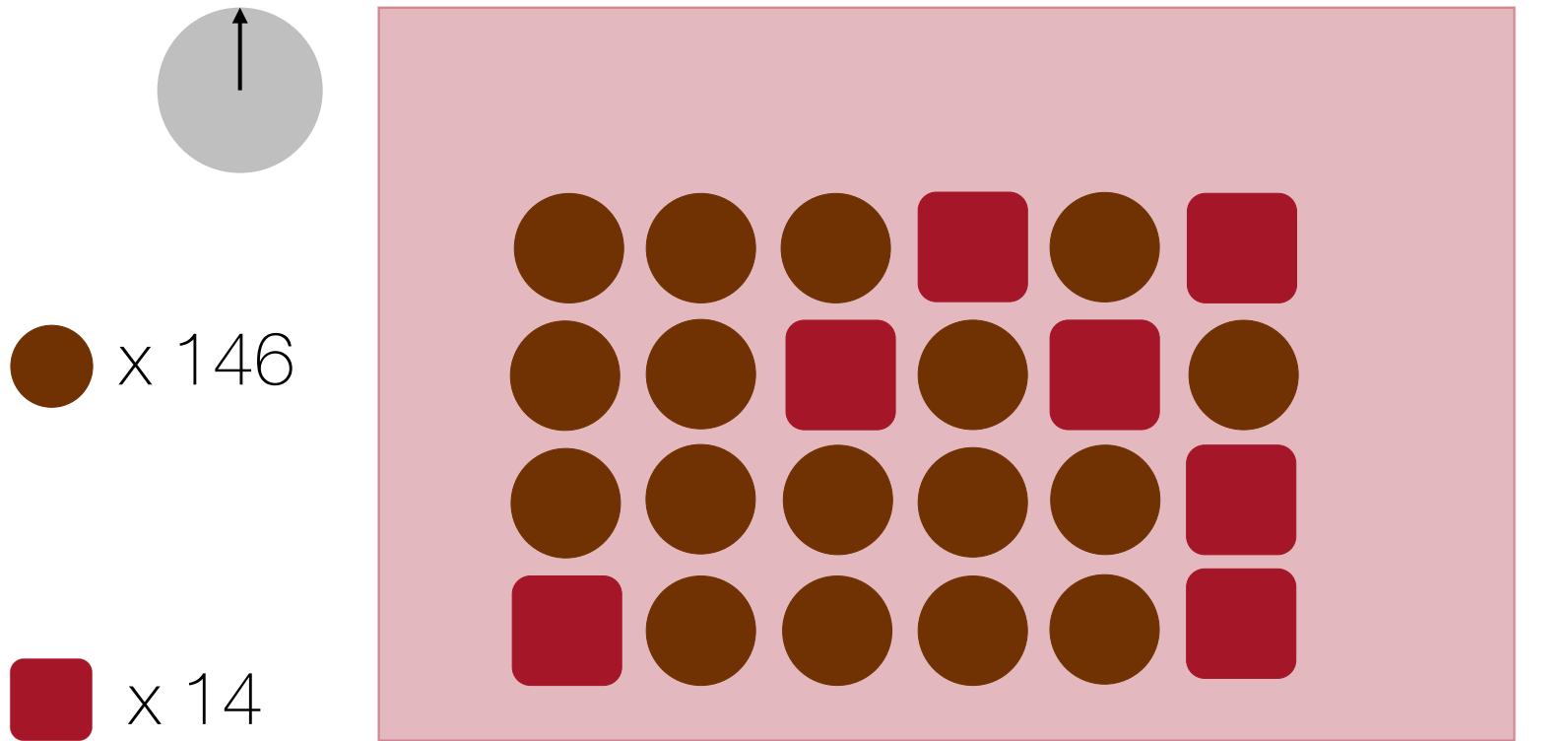
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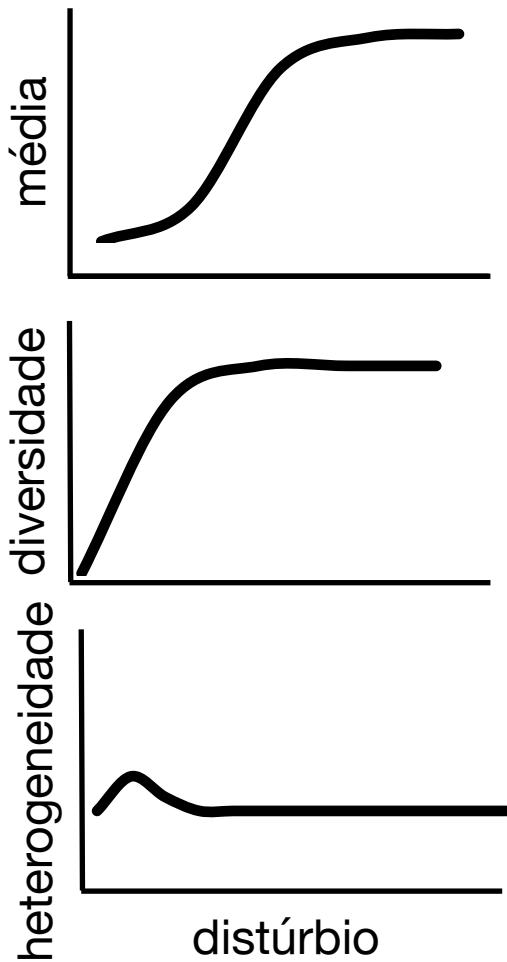
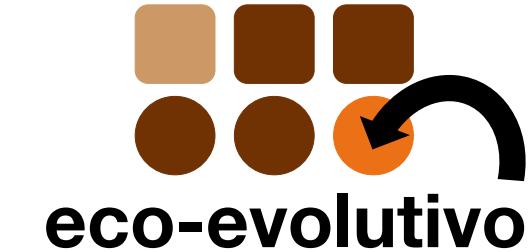
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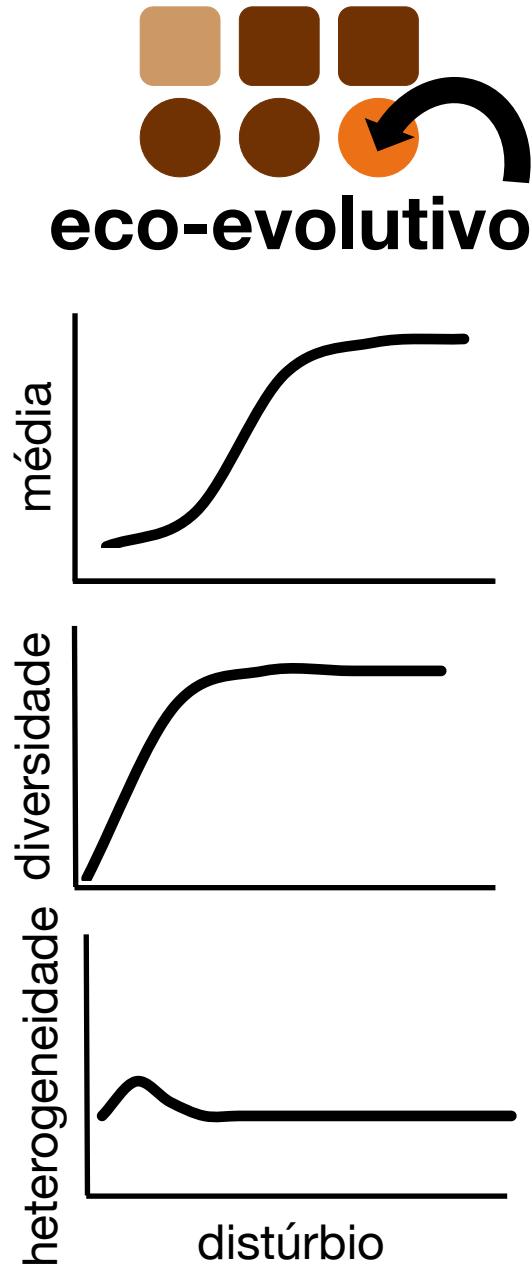
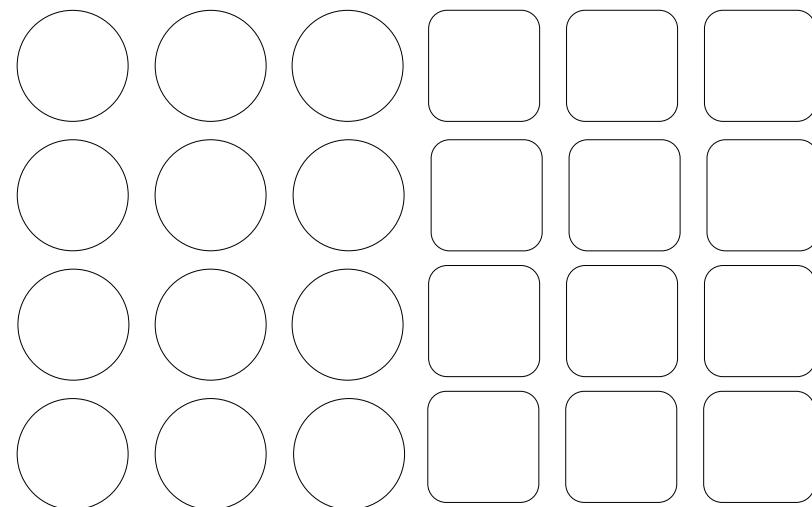


coexistência de especialistas



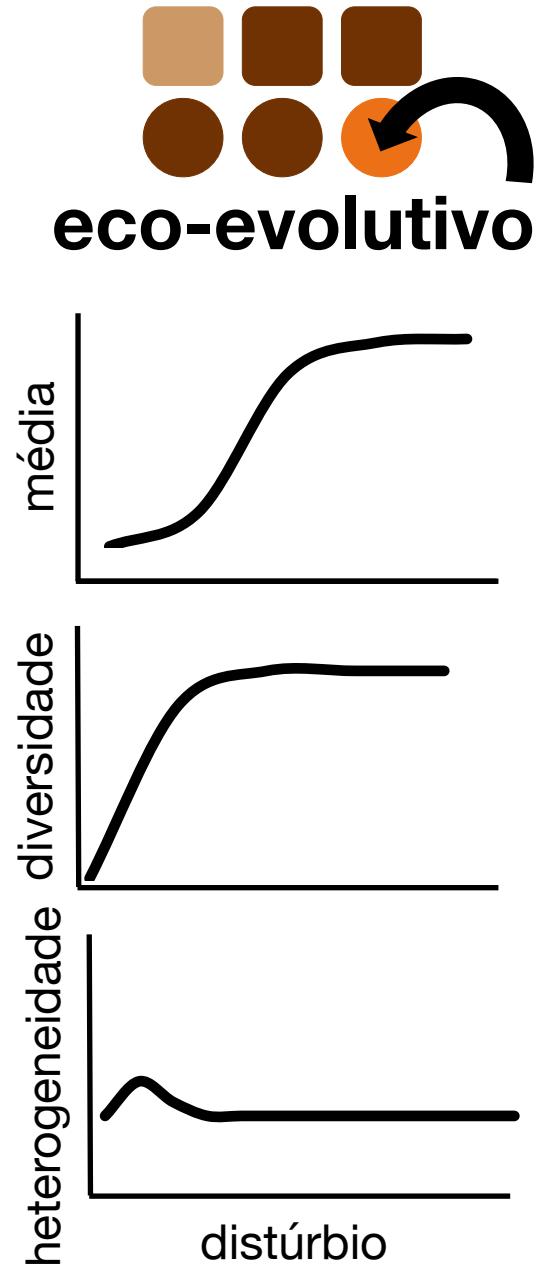
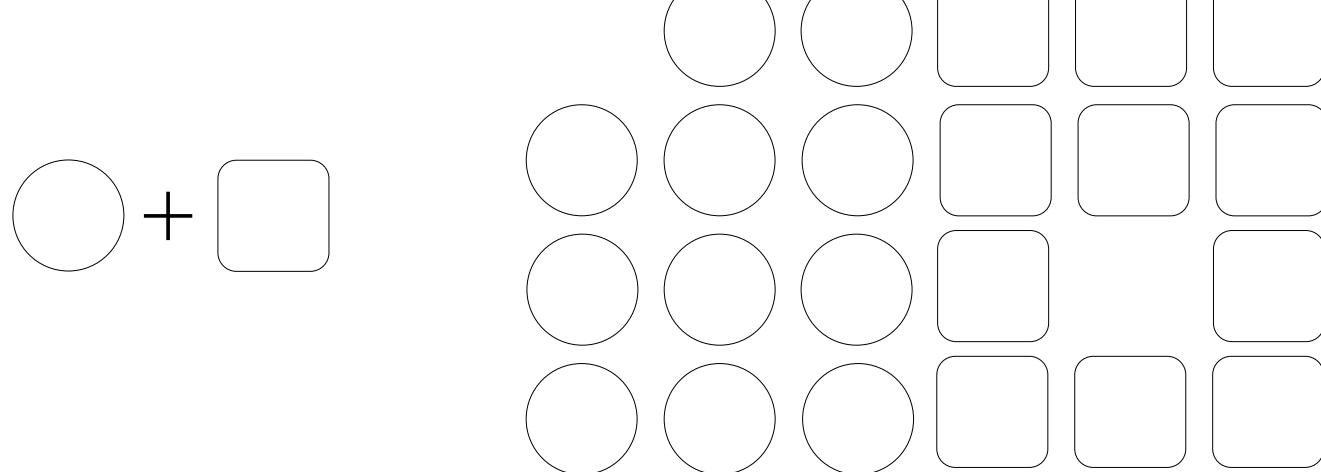
# coexistência de estratégias mediada pelo distúrbio

cenário eco-evolutivo = isolamento reprodutivo



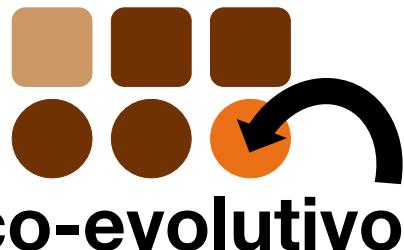
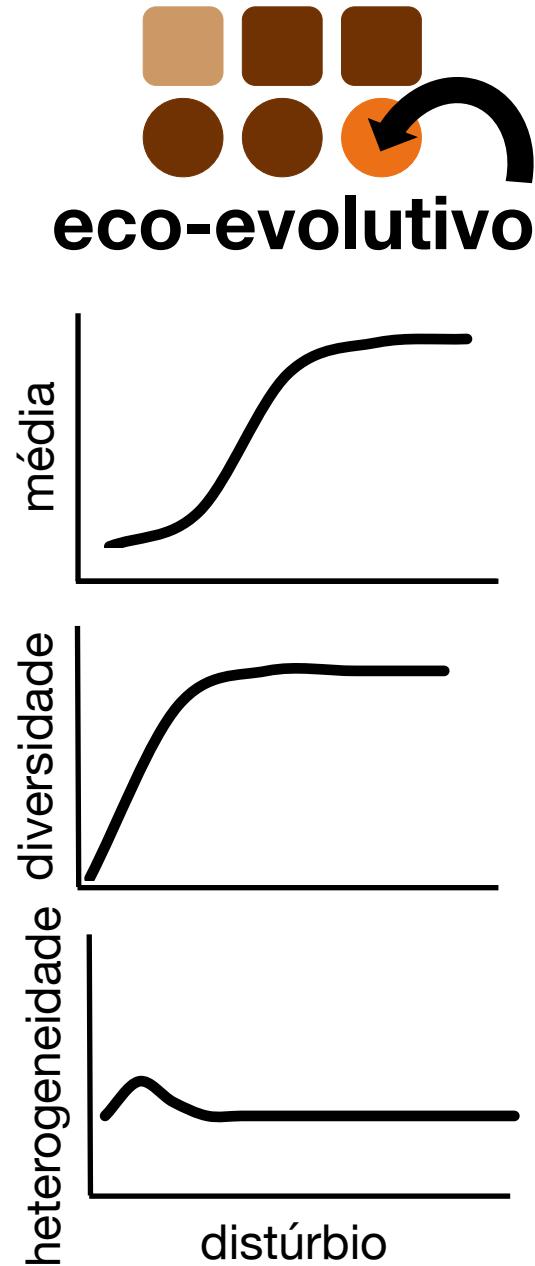
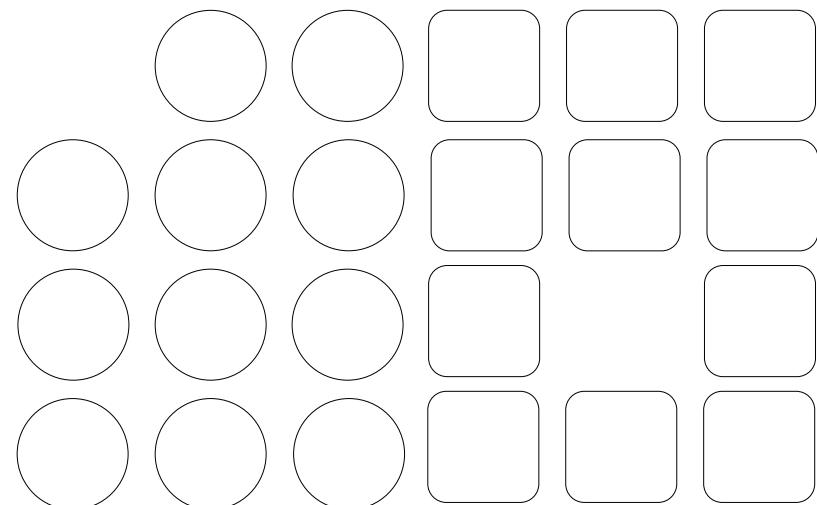
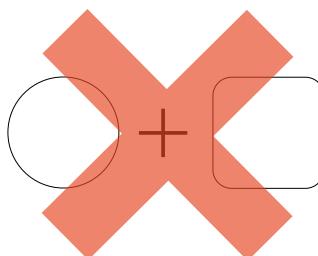
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cenário eco-evolutivo = isolamento reprodutivo



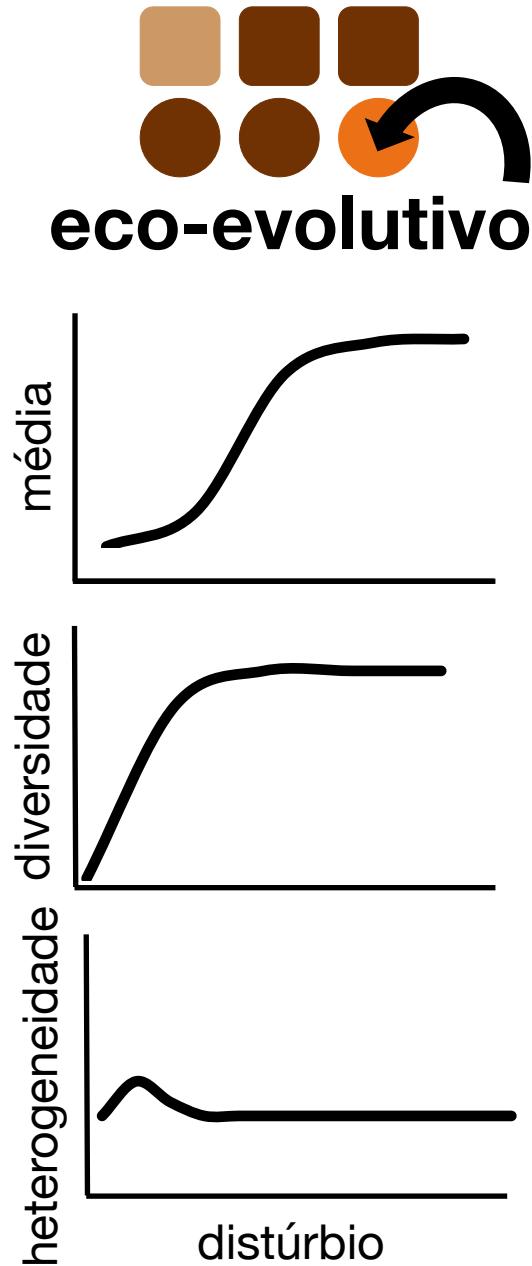
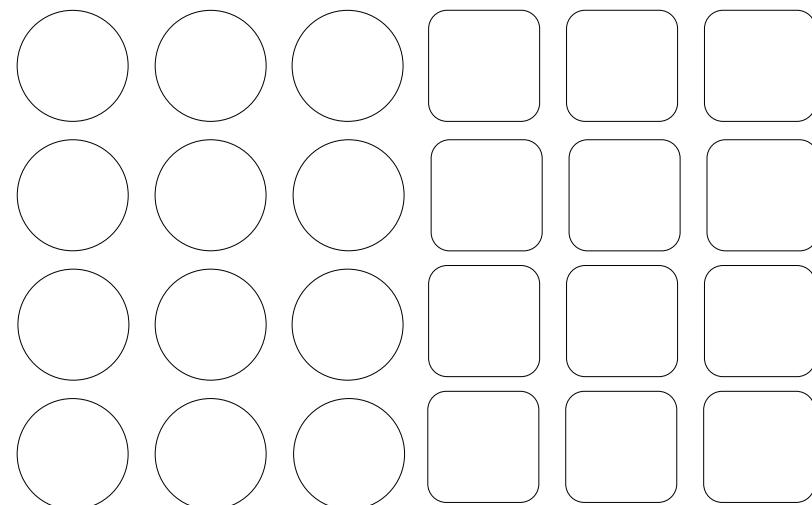
# coexistência de estratégias mediada pelo distúrbio

cenário eco-evolutivo = isolamento reprodutivo



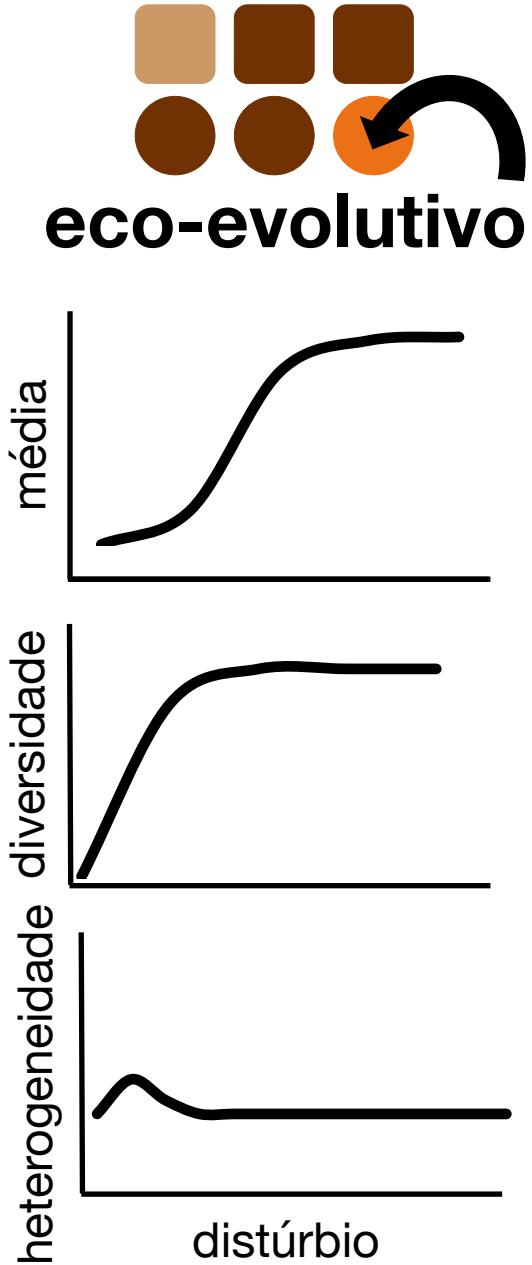
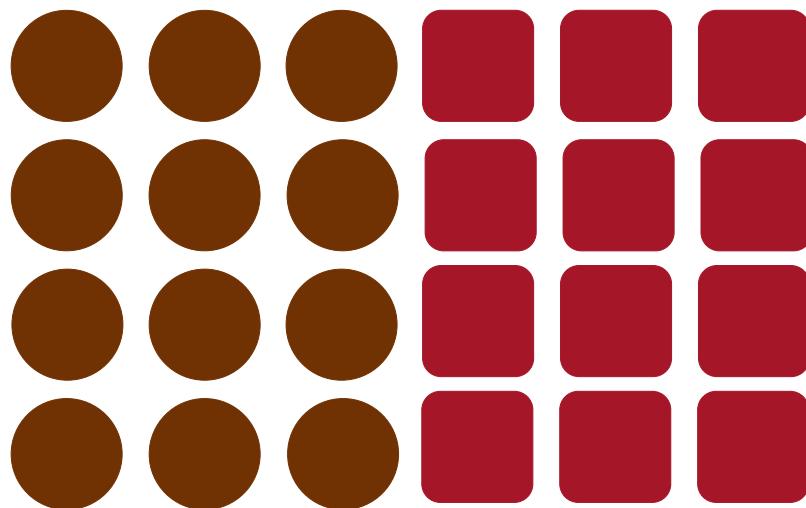
# coexistência de estratégias mediada pelo distúrbio

cenário eco-evolutivo = isolamento reprodutivo



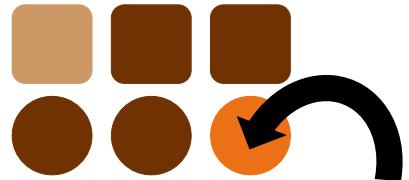
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cenário eco-evolutivo = isolamento reprodutivo

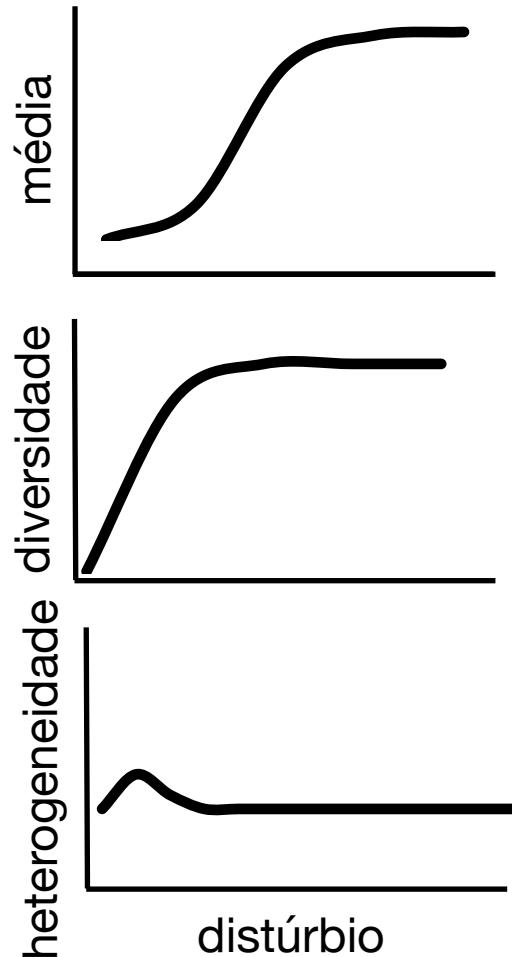


# coexistência de estratégias mediada pelo distúrbio

cenário eco-evolutivo = mutação

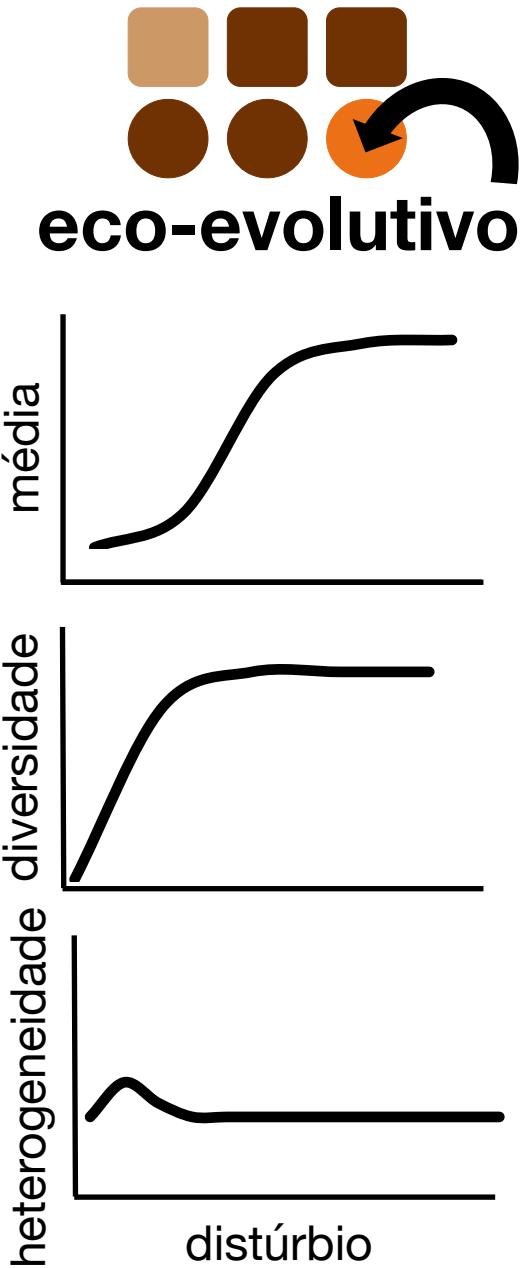
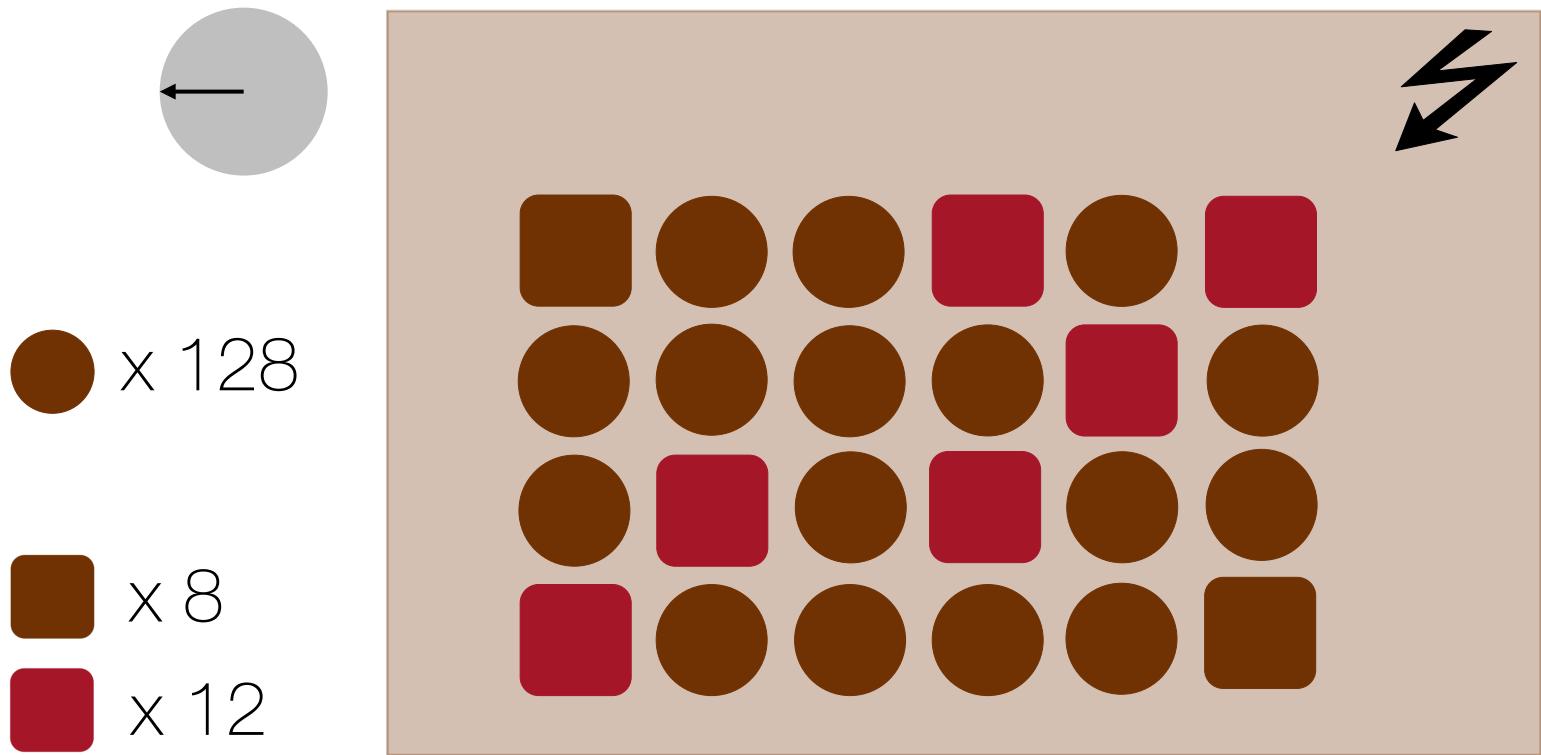


**eco-evolutivo**



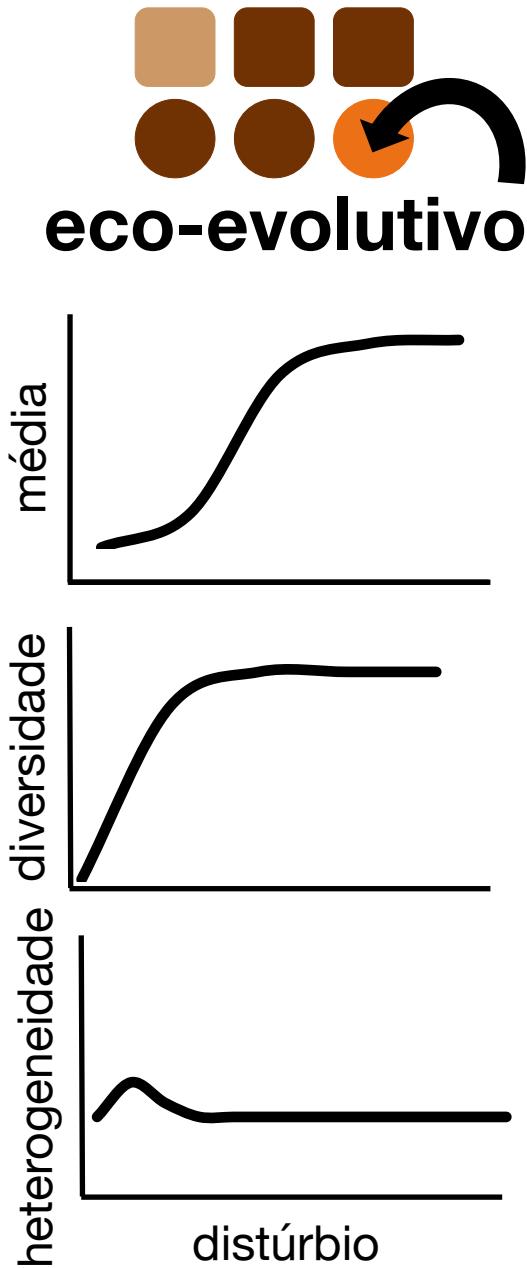
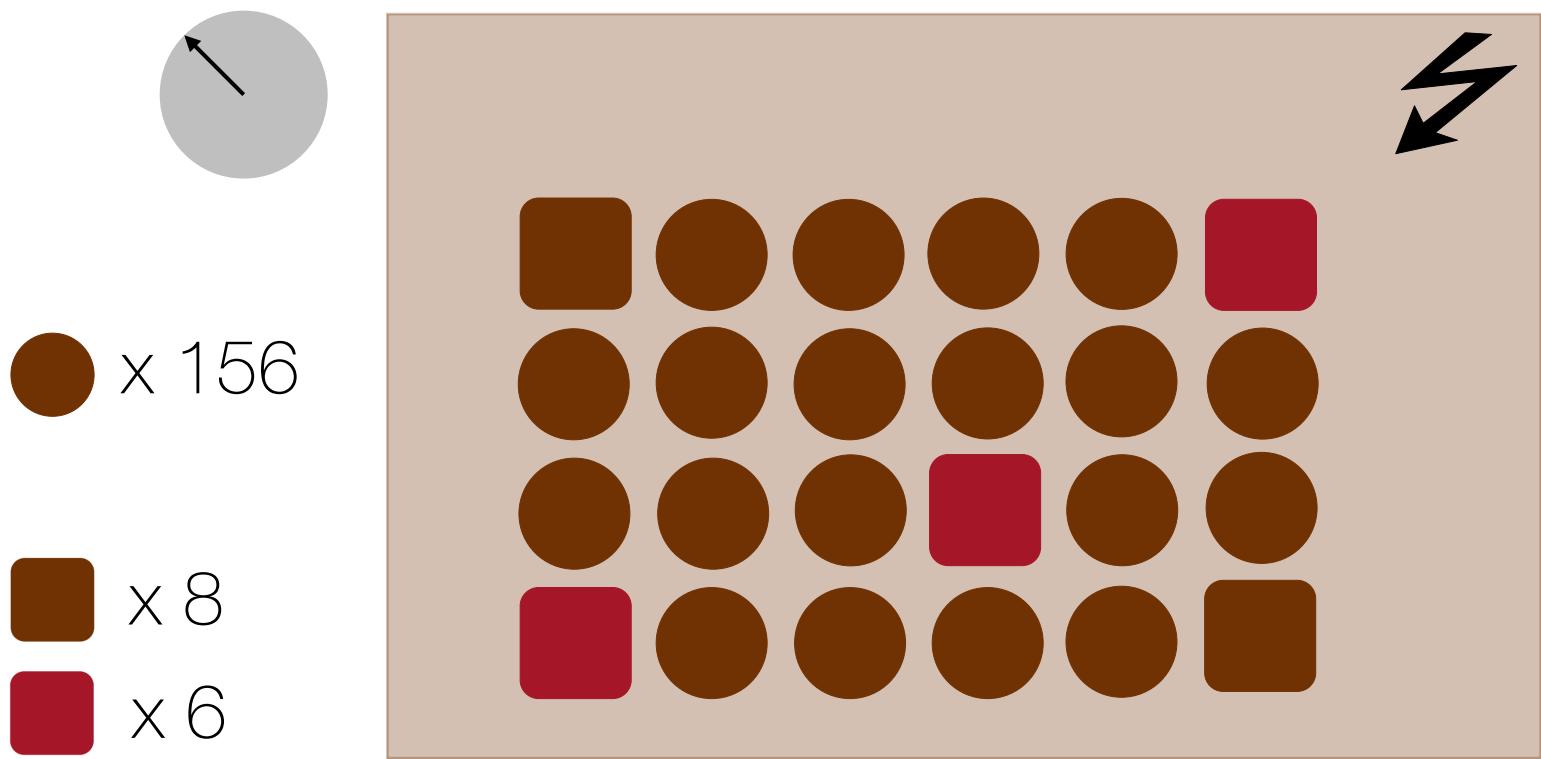
# coexistência de estratégias mediada pelo distúrbio

cenário eco-evolutivo = mutação



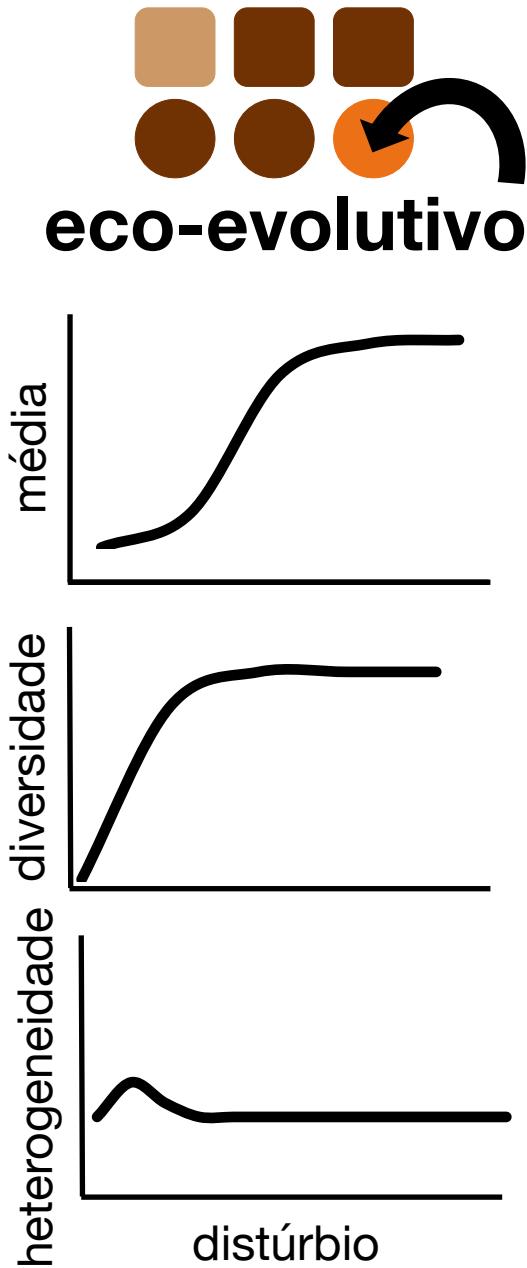
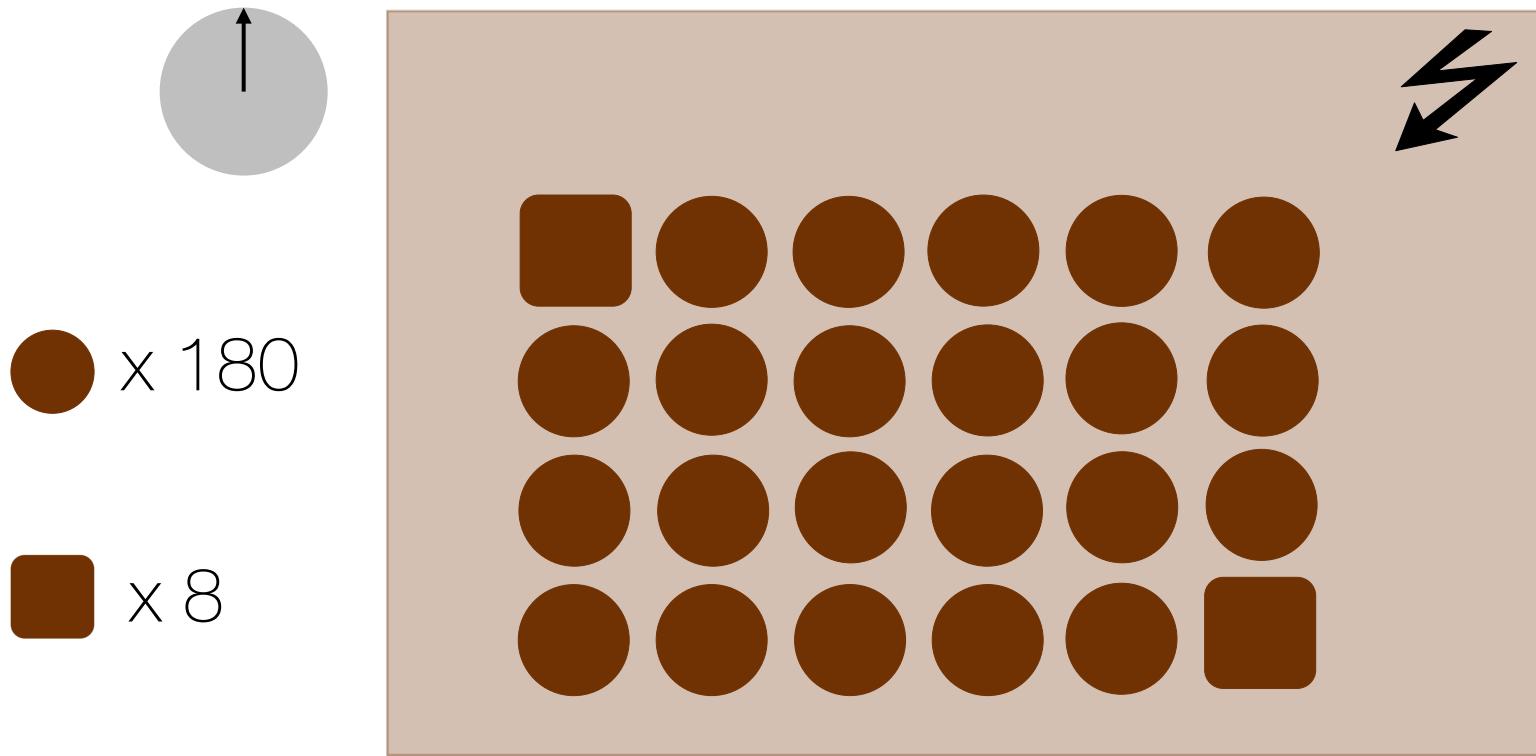
# coexistência de estratégias mediada pelo distúrbio

cenário eco-evolutivo = mutação



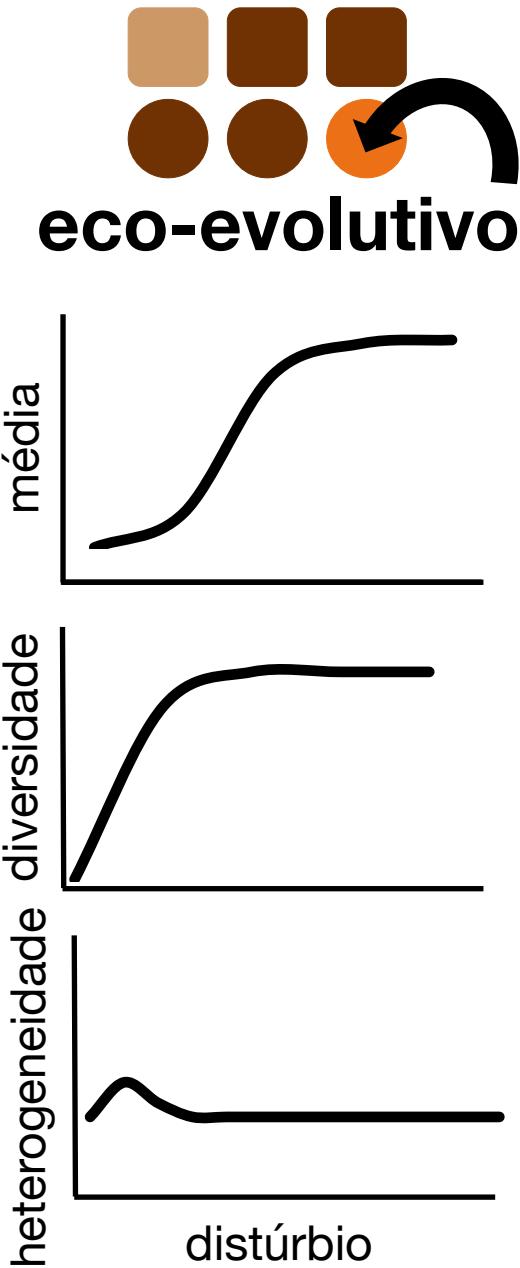
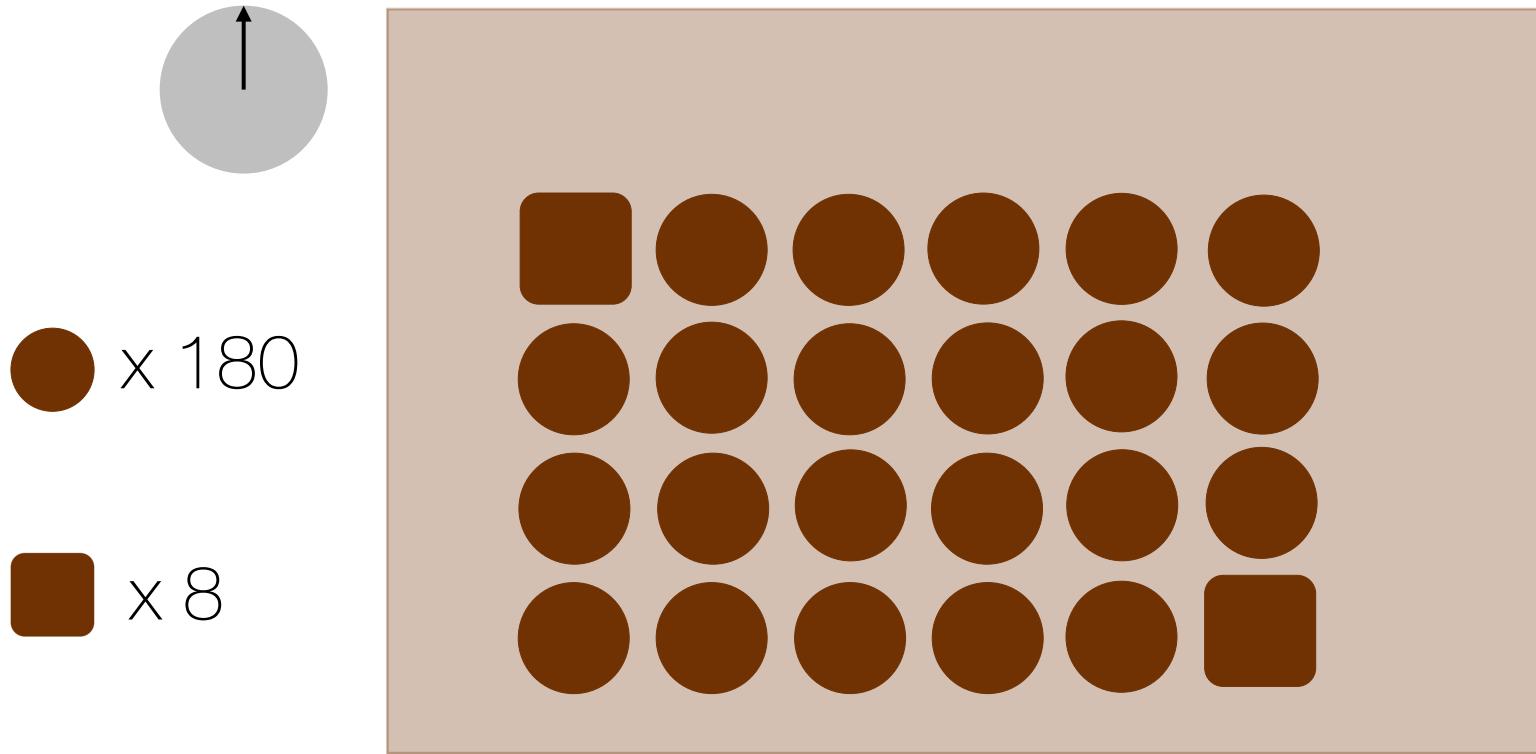
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cenário eco-evolutivo = mutação



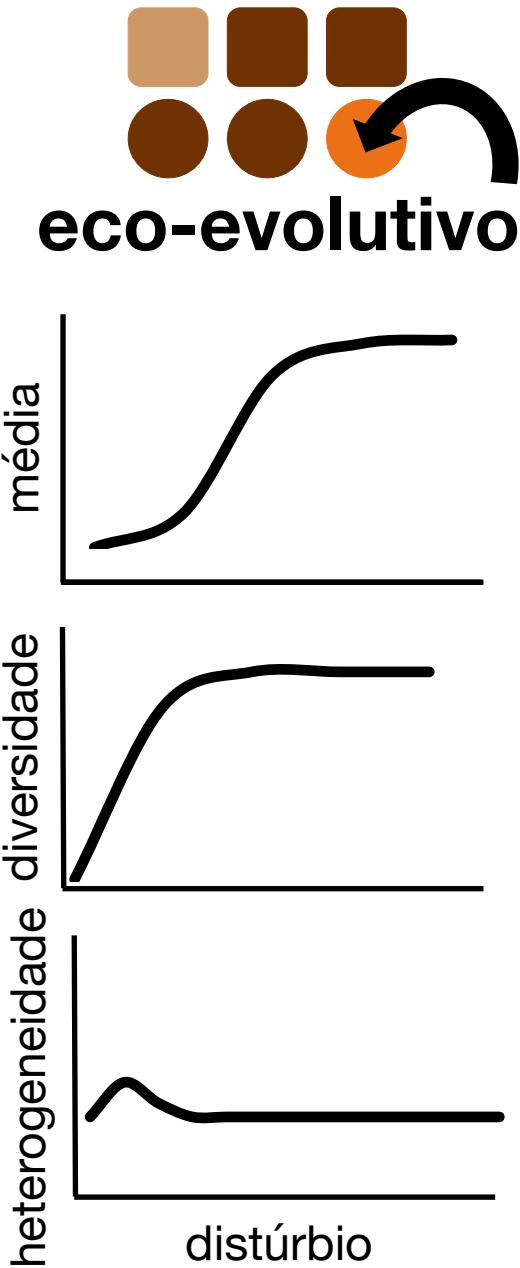
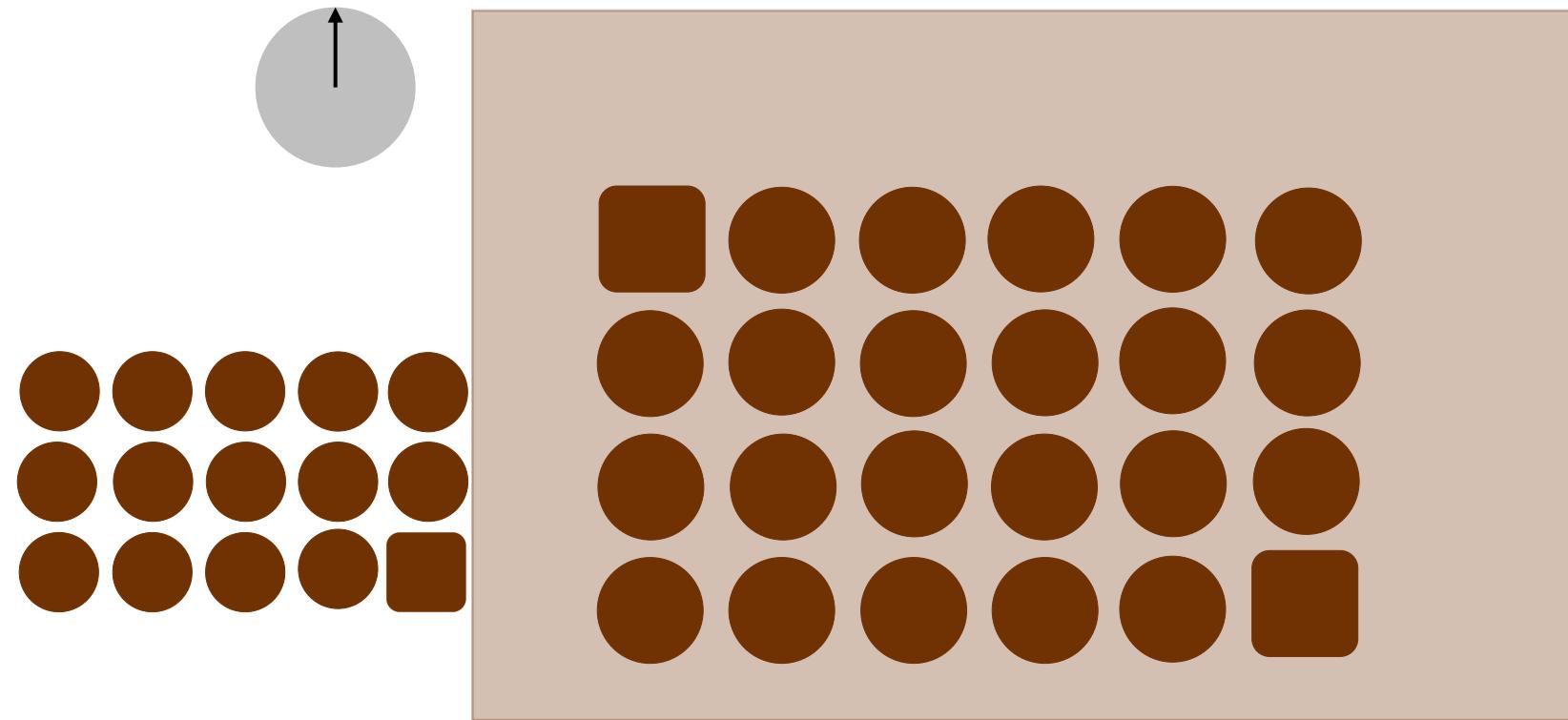
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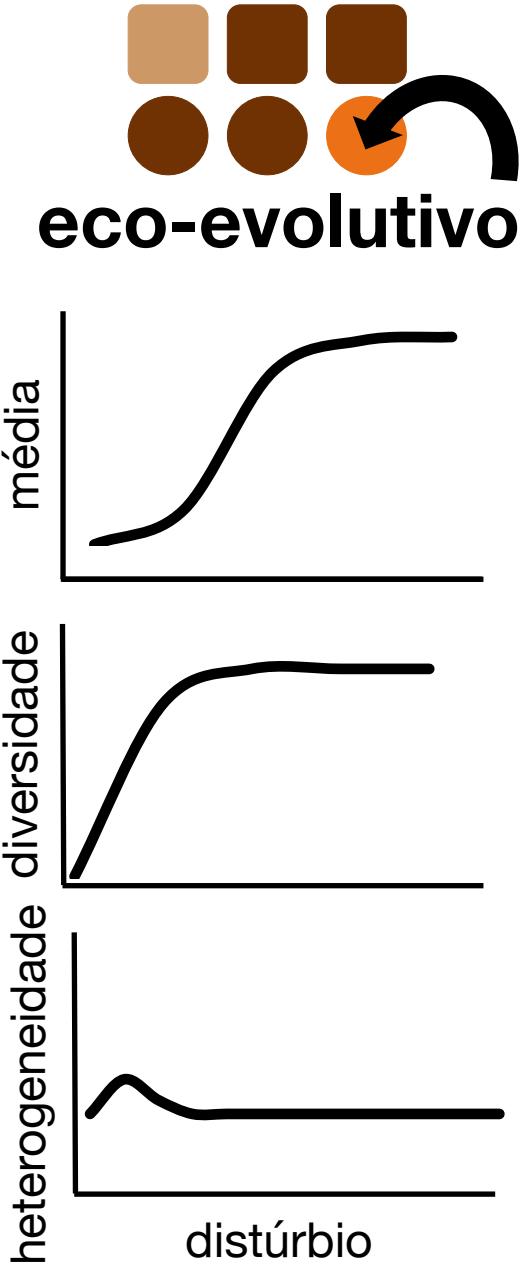
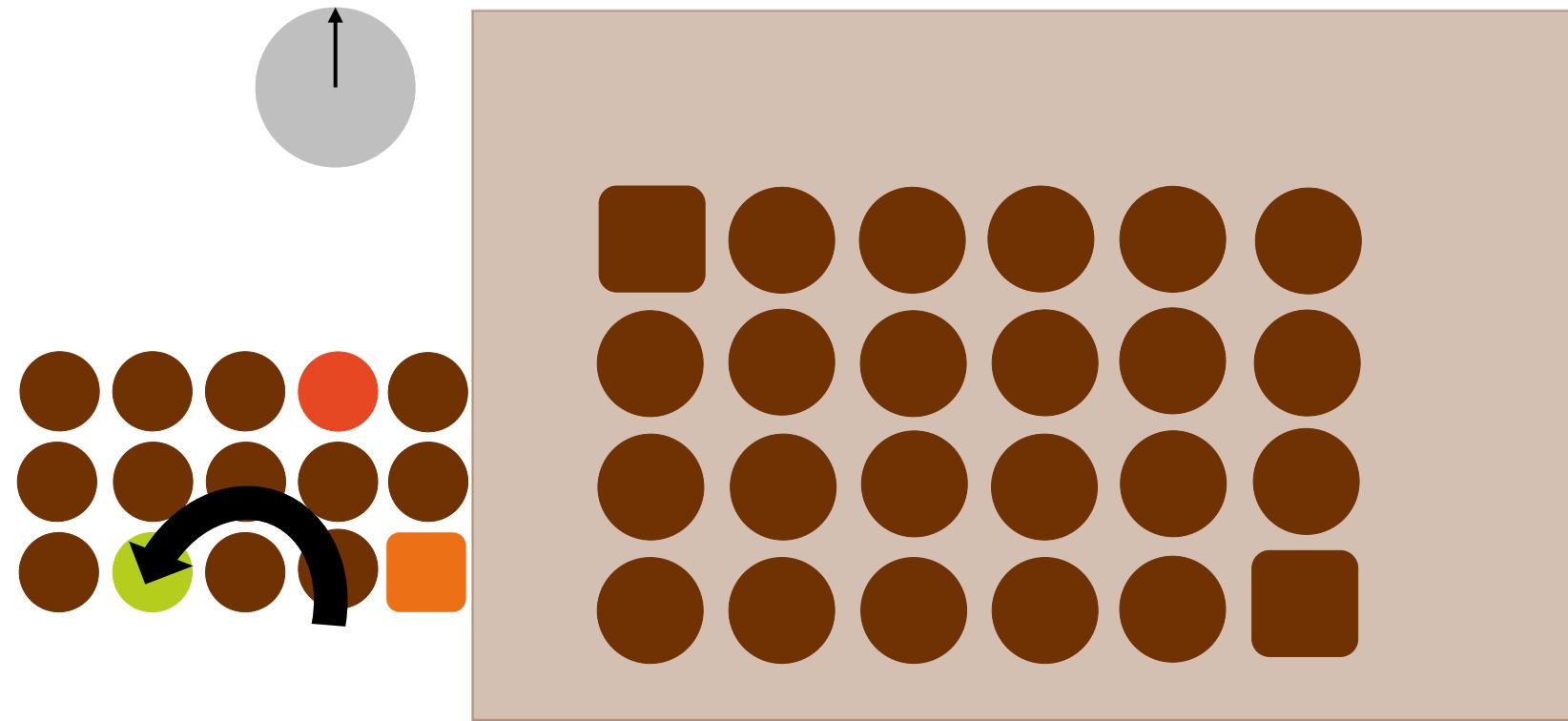
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cenário eco-evolutivo = mutação



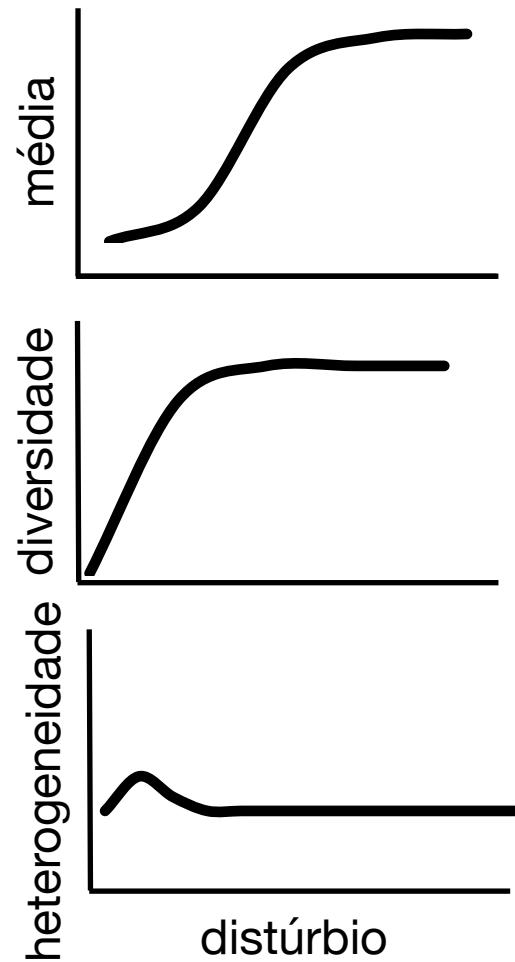
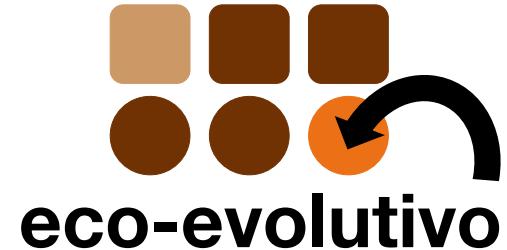
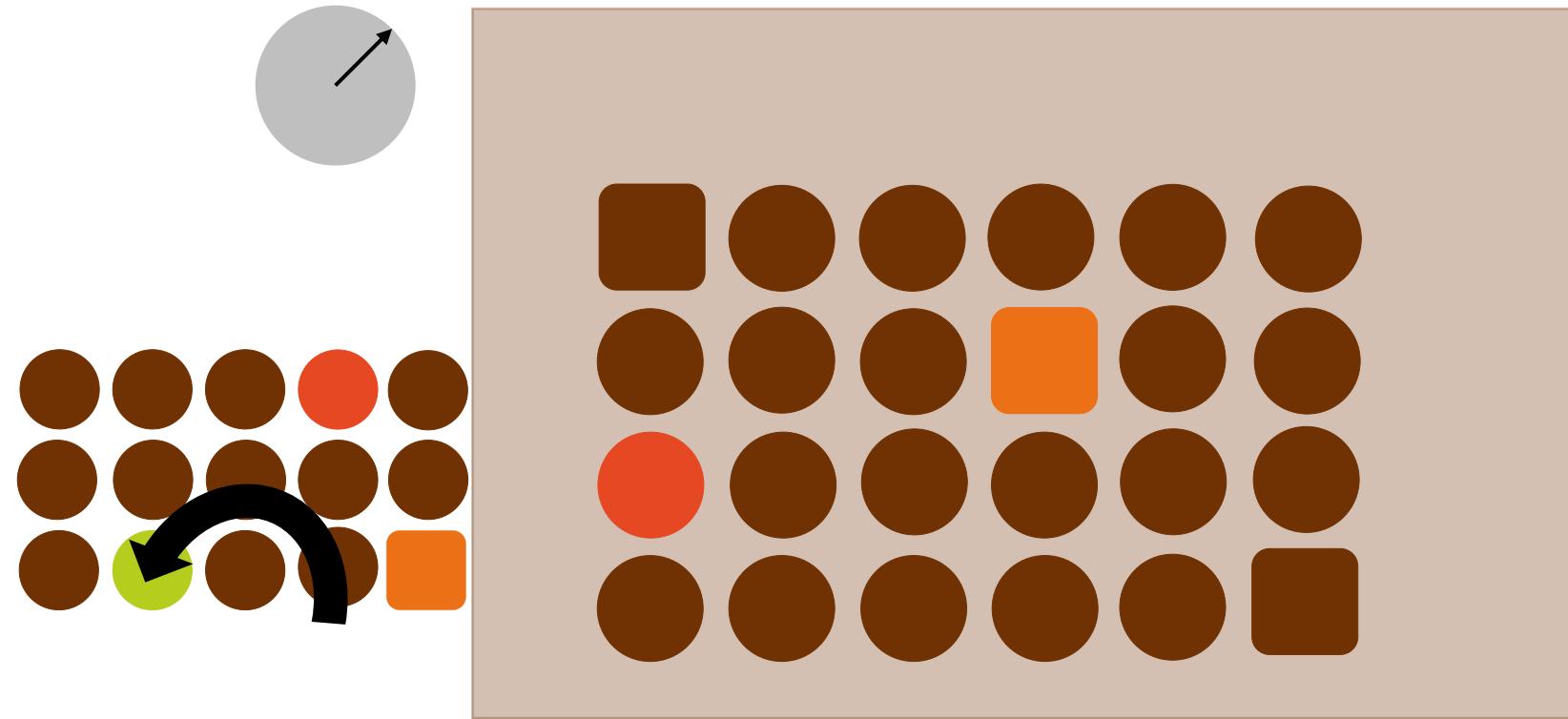
# coexistência de estratégias mediada pelo distúrbio

cenário eco-evolutivo = mutação



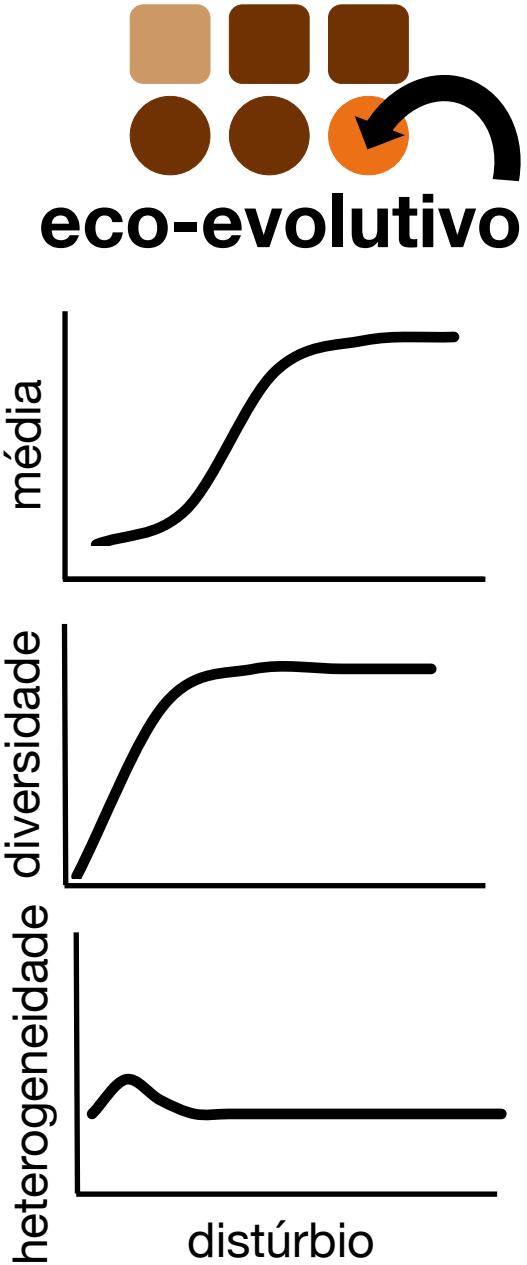
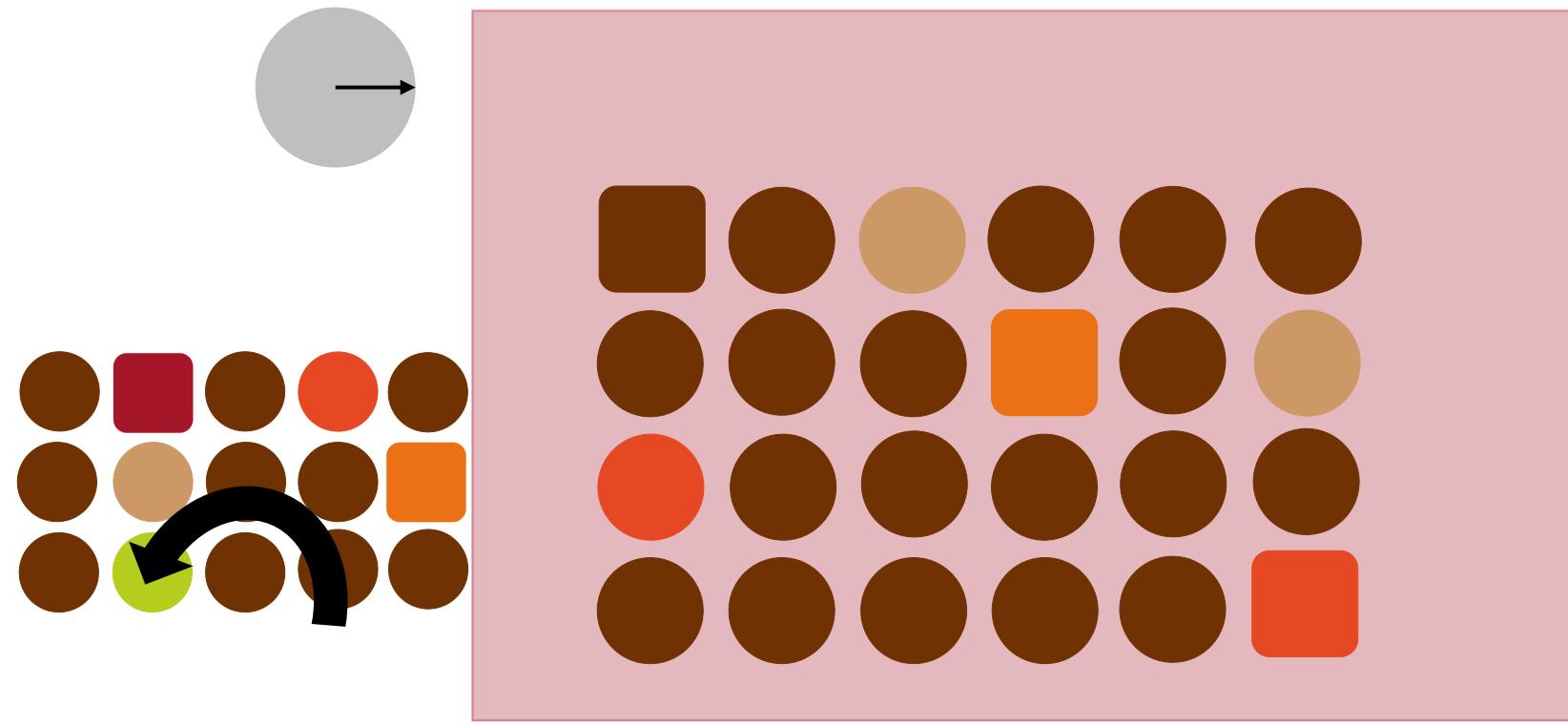
# coexistência de estratégias mediada pelo distúrbio

cenário eco-evolutivo = mutação



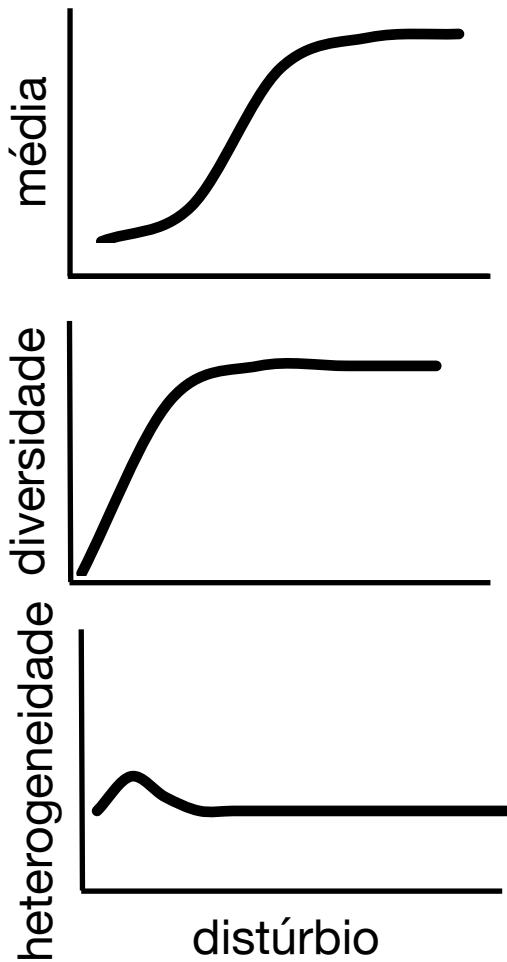
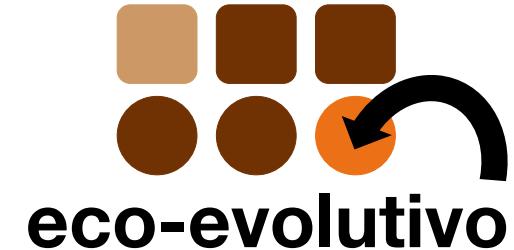
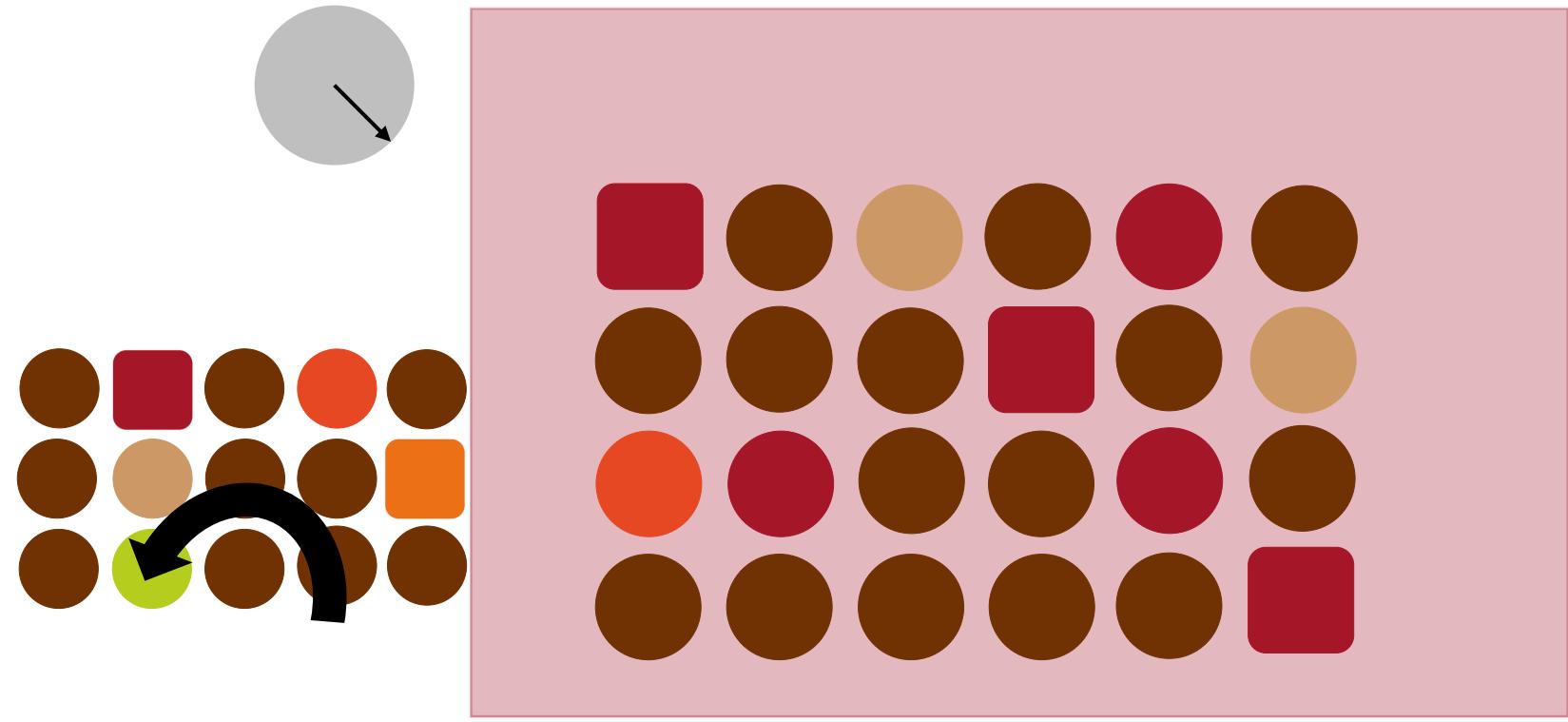
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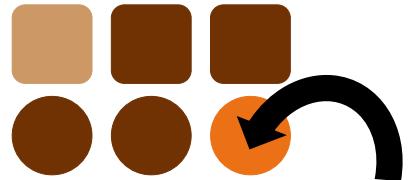
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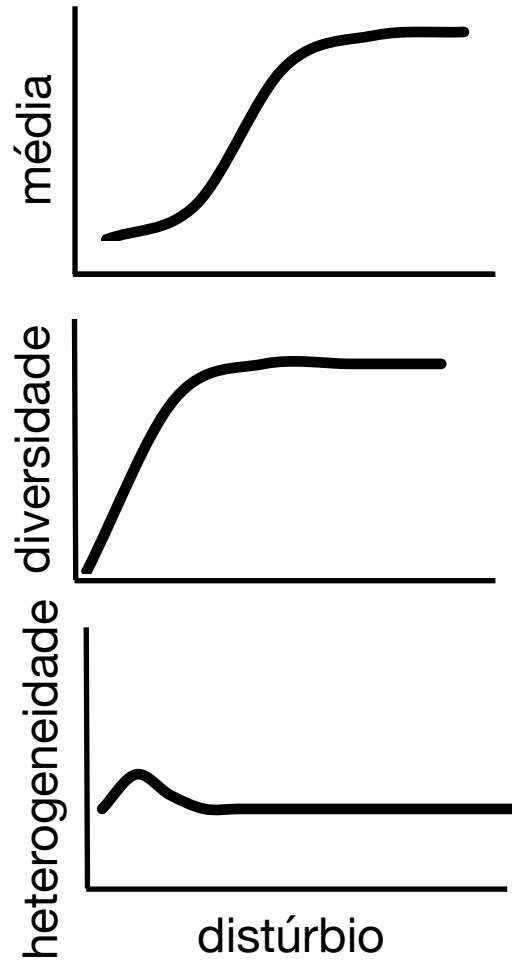


# coexistência de estratégias mediada pelo distúrbio

*storage effect:*



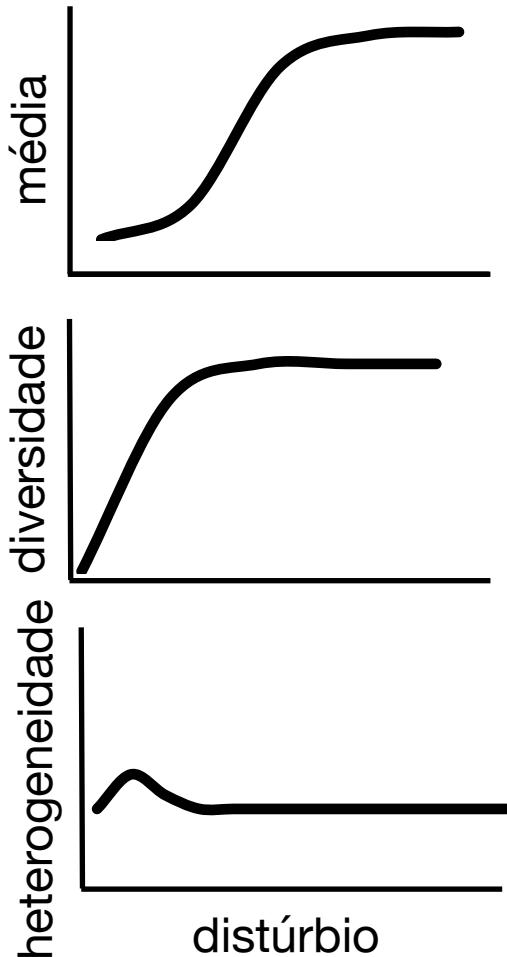
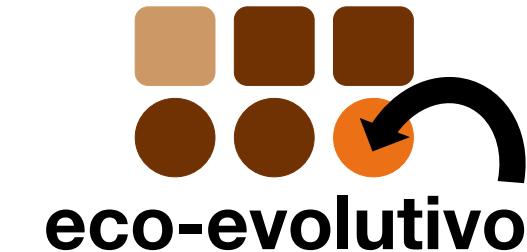
**eco-evolutivo**



# coexistência de estratégias mediada pelo distúrbio

*storage effect:*

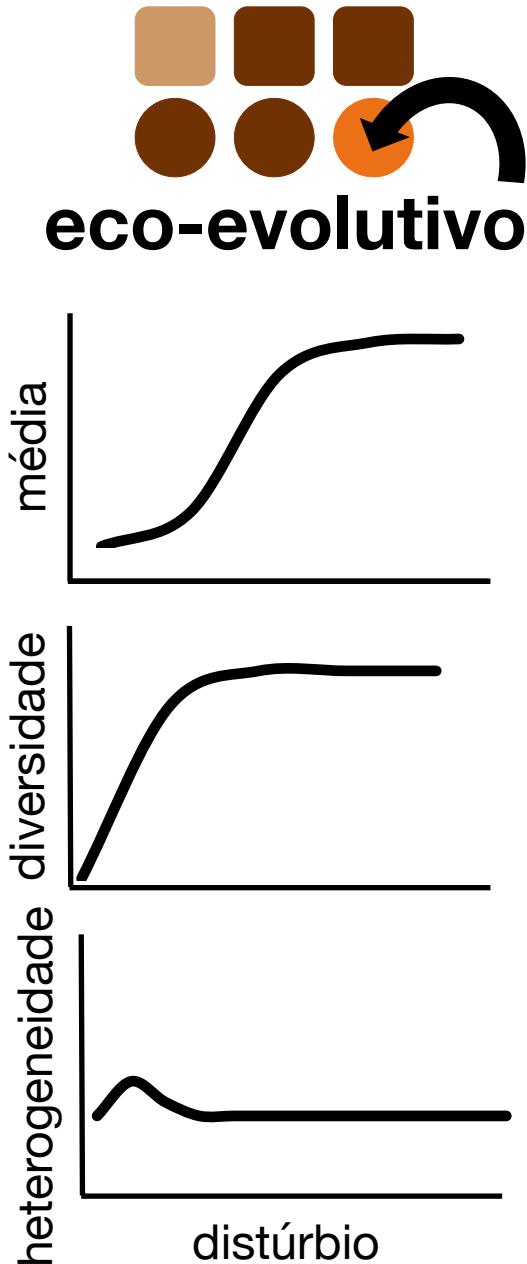
- diferença na resposta ao ambiente



# coexistência de estratégias mediada pelo distúrbio

*storage effect:*

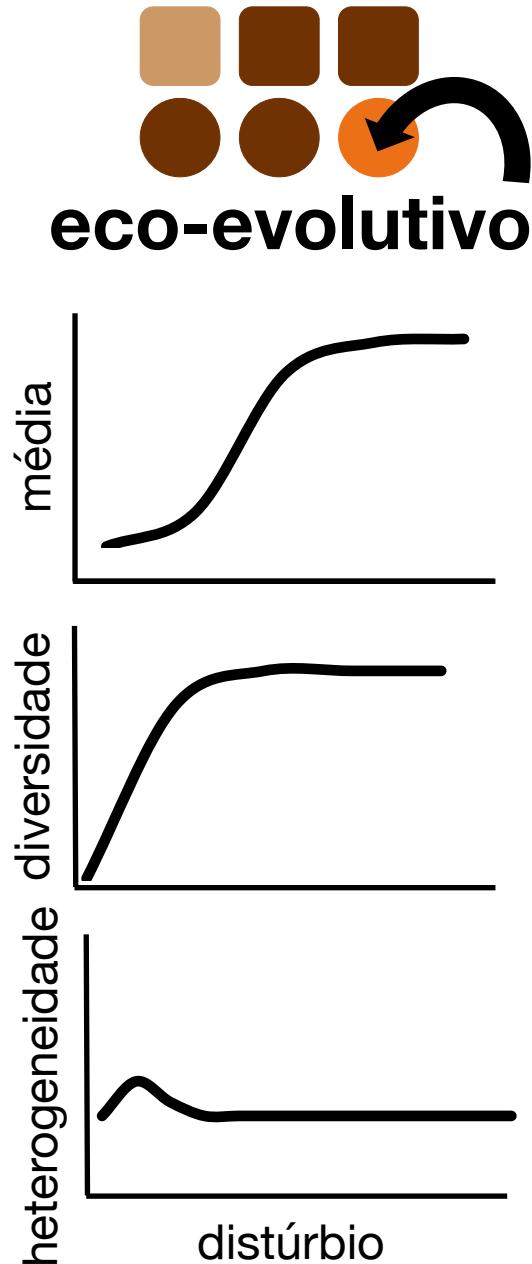
- diferença na reposita ao ambiente
- crescimento populacional tamponado



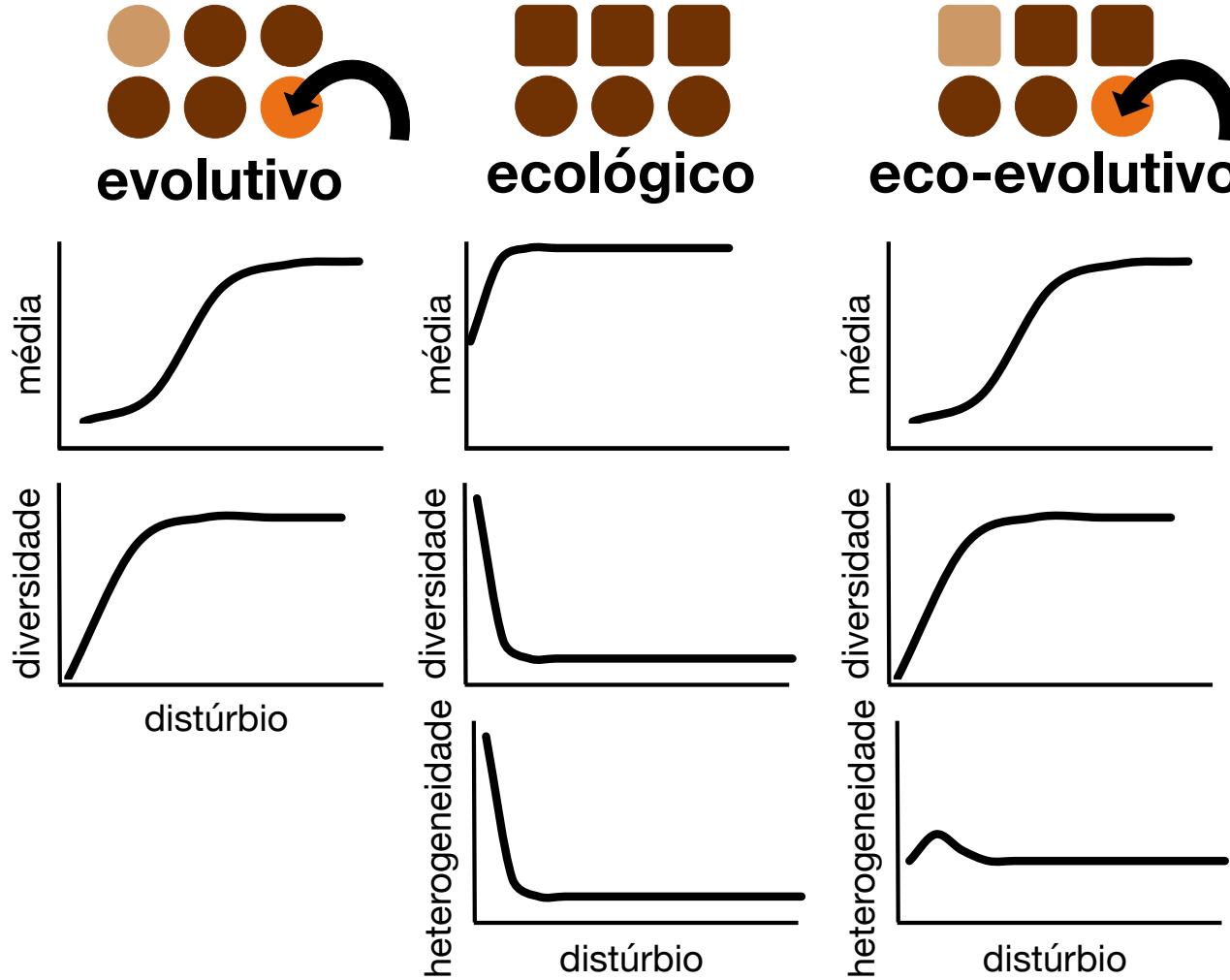
# coexistência de estratégias mediada pelo distúrbio

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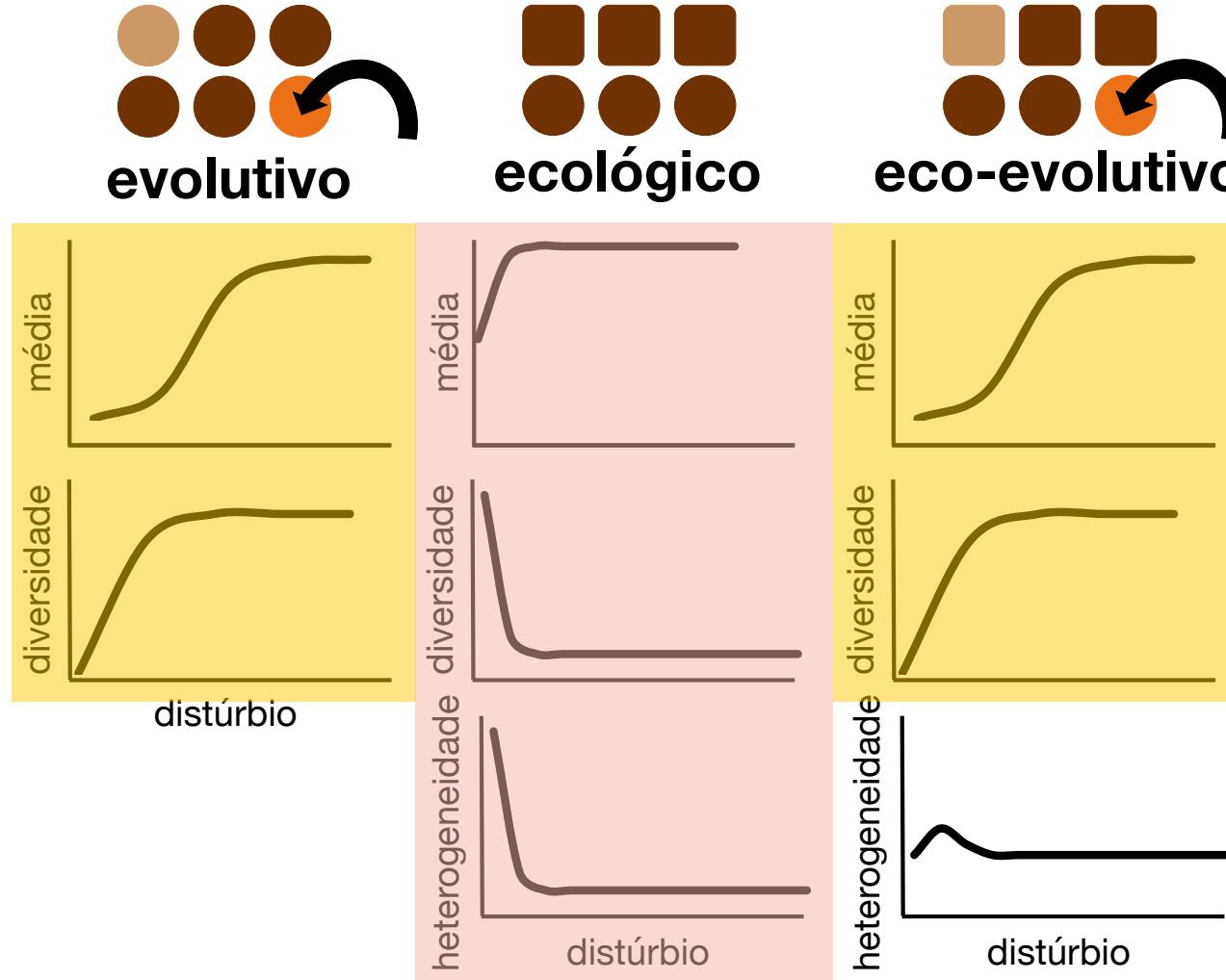
- diferença na resposta ao ambiente  
(isolamento reprodutivo das espécies)
- crescimento populacional tamponado  
(mutação)



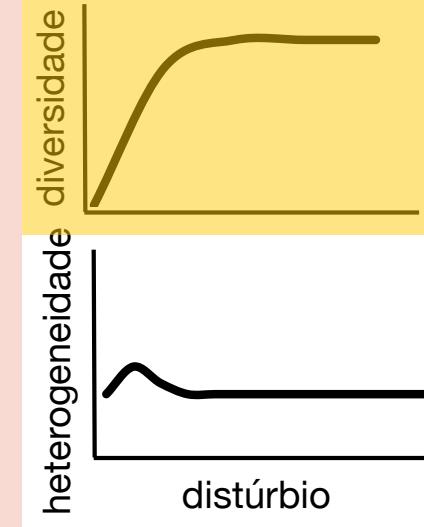
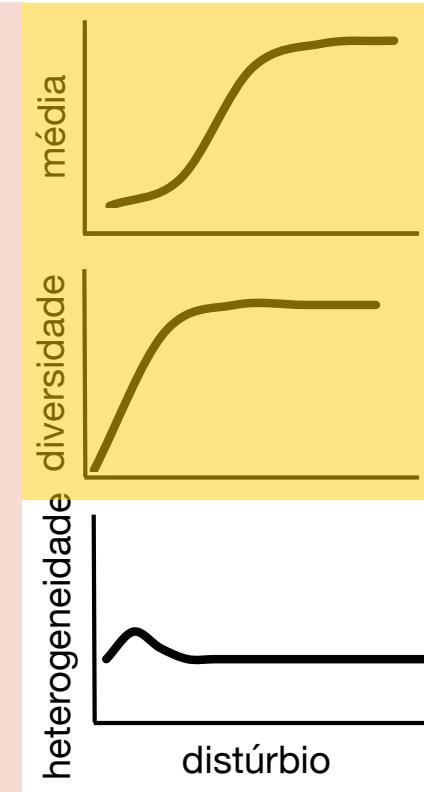
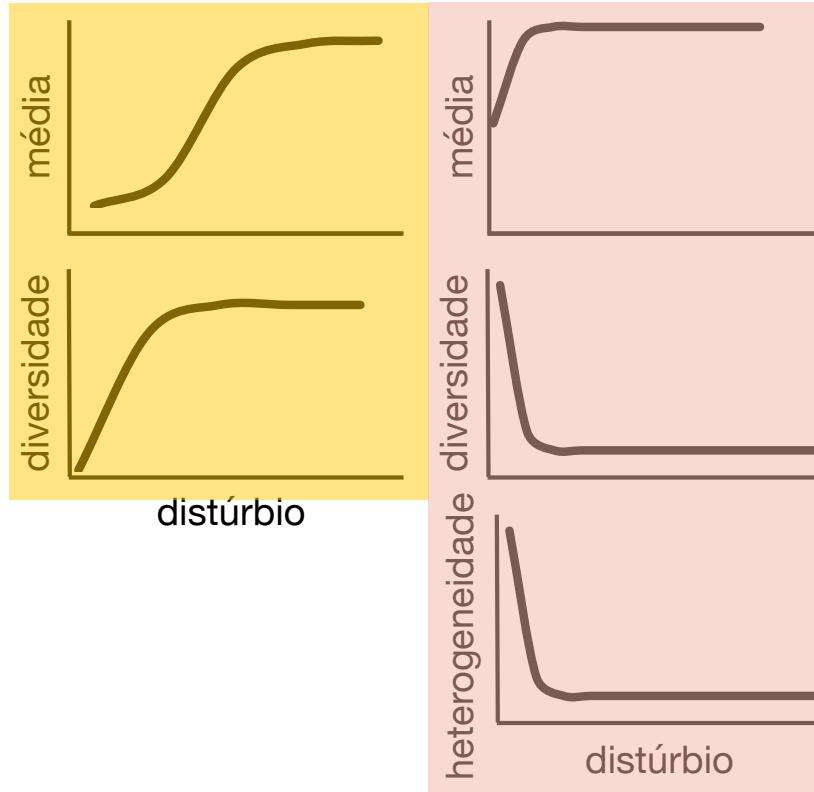
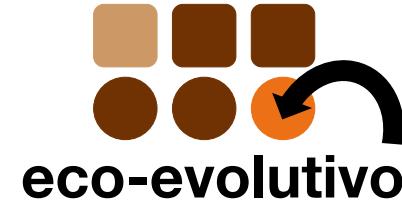
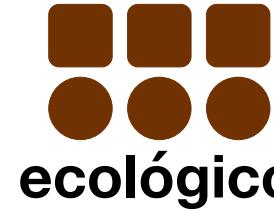
# cenários



# cenários

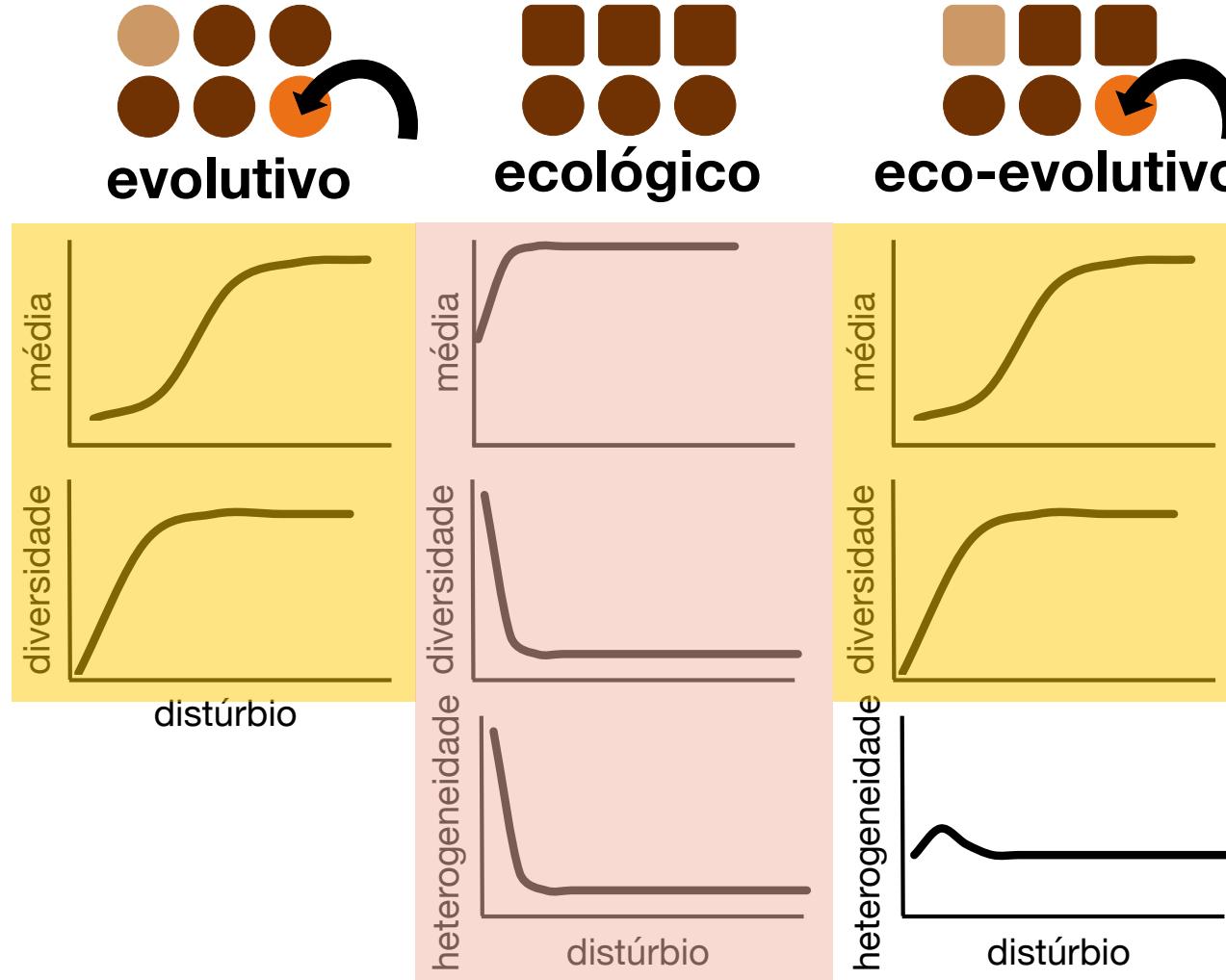


# cenários



# mutação

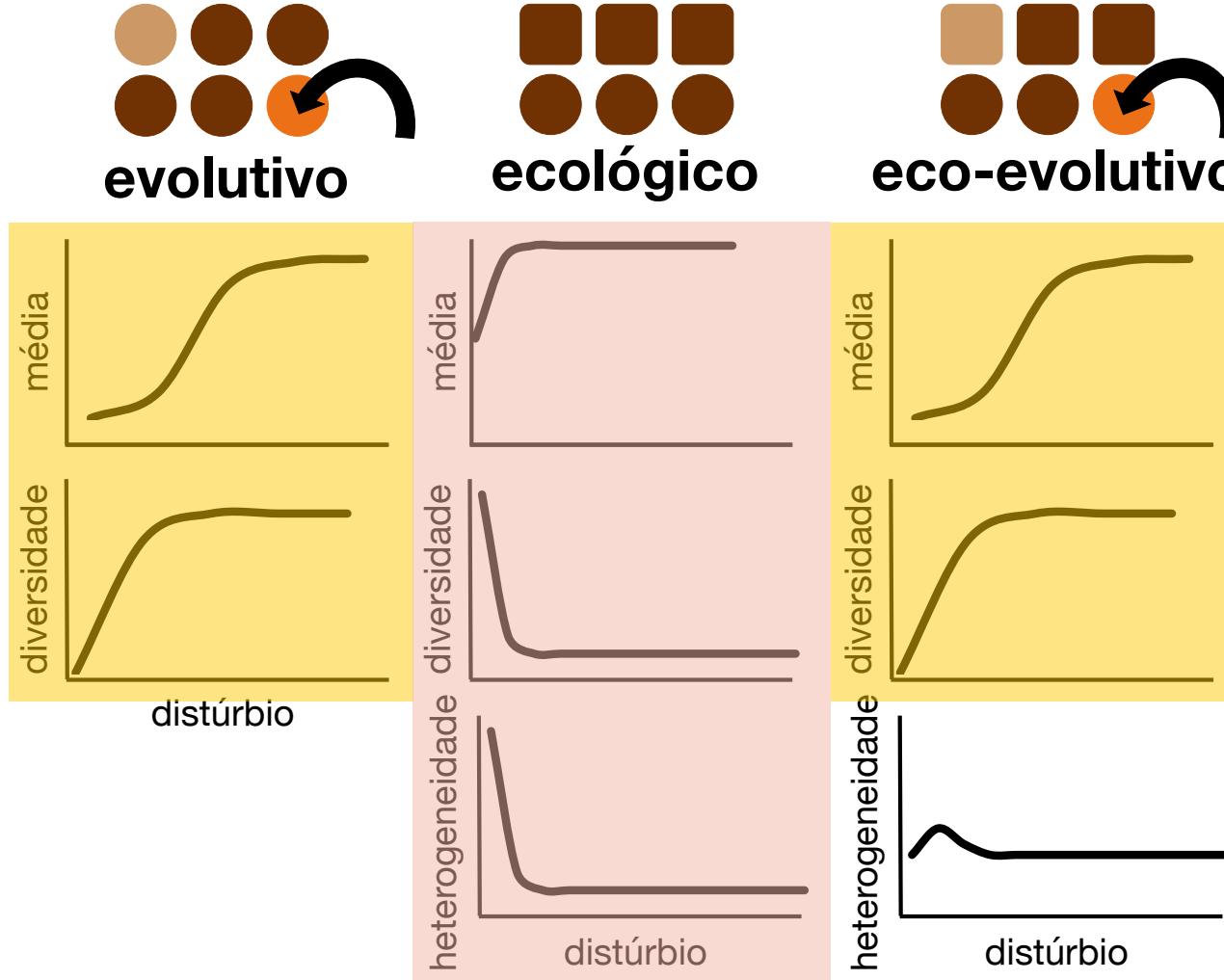
# cenários



# mutação

- é o único processo de entrada de variação (vs. exclusão competitiva e seleção e vs. deriva)

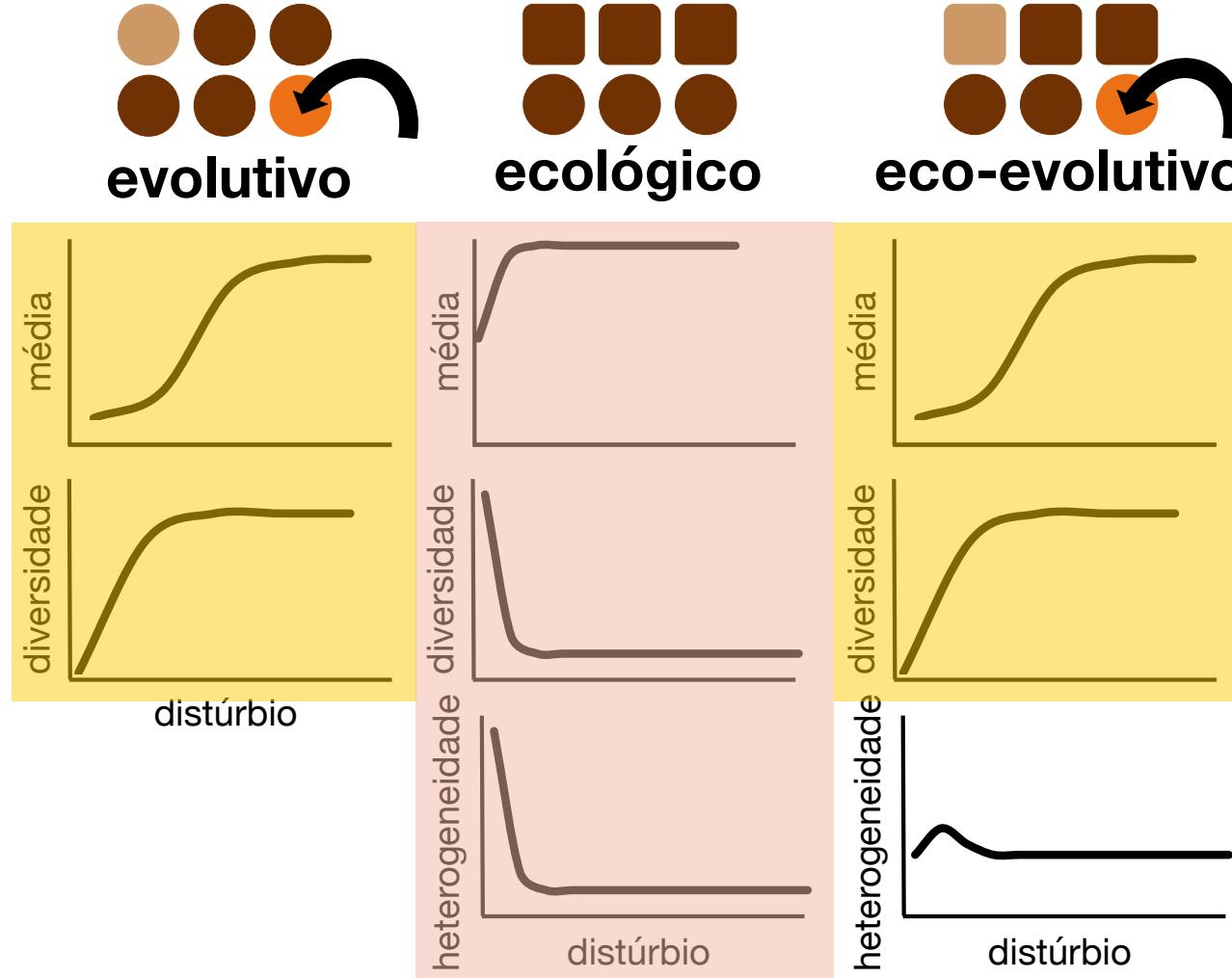
# cenários



# mutação

- é o único processo de entrada de variação (vs. exclusão competitiva e seleção e vs. deriva)
- cria novas estratégias e pode resgatar estratégias extintas ou quase extintas

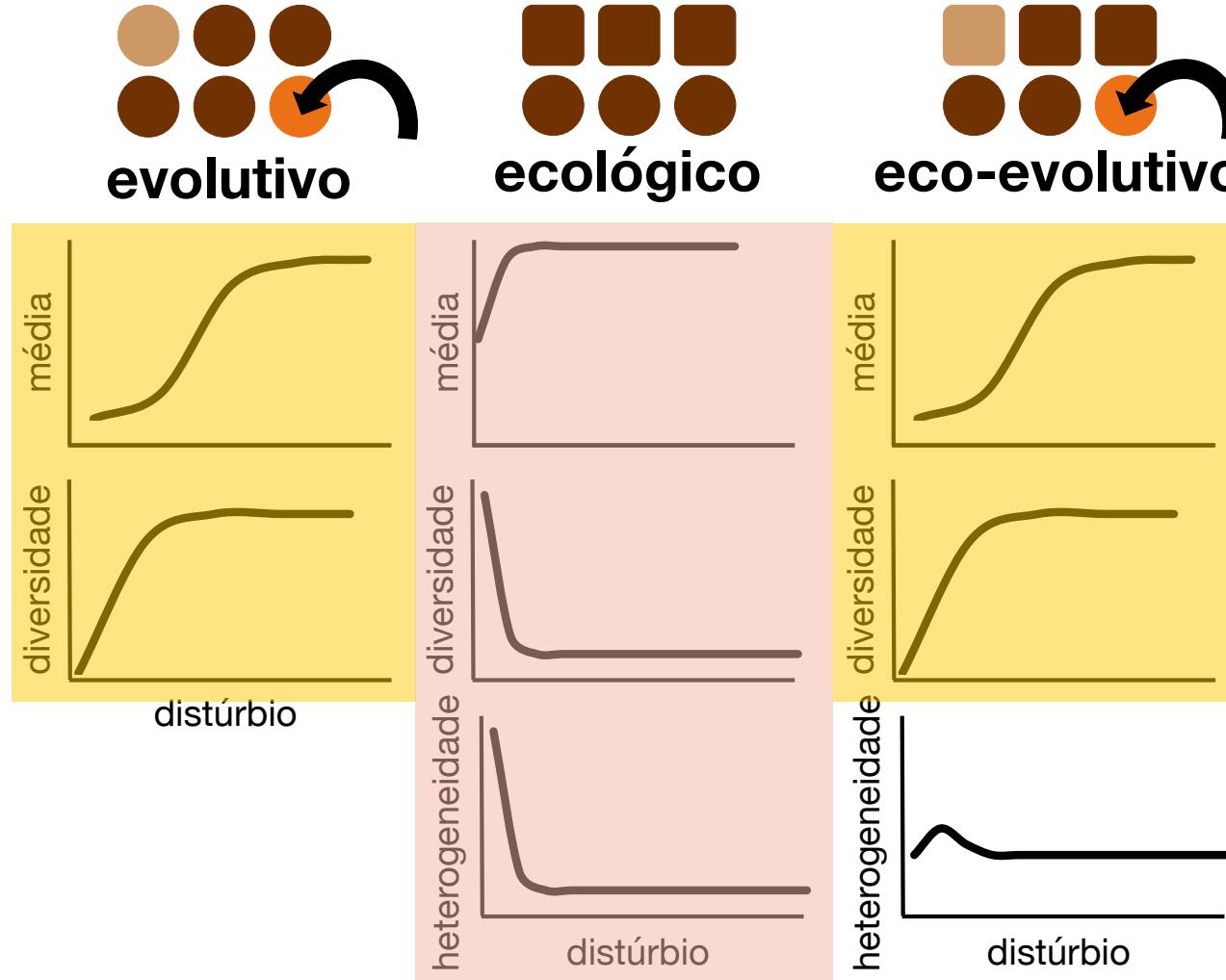
# cenários



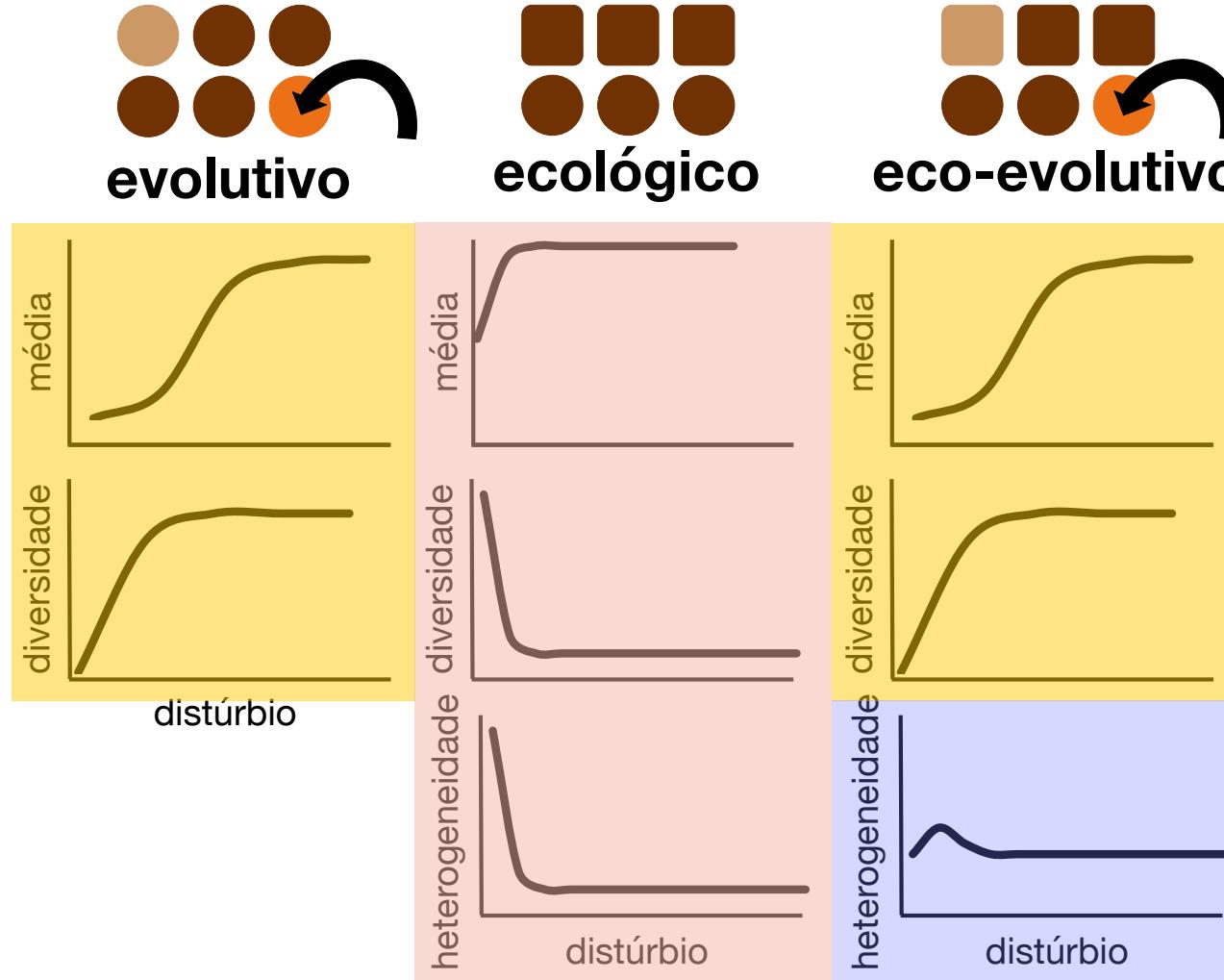
# mutação

- é o único processo de entrada de variação (vs. exclusão competitiva e seleção e vs. deriva)
- cria novas estratégias e pode resgatar estratégias extintas ou quase extintas
- permite resposta contínua às pressões variadas ao longo do tempo

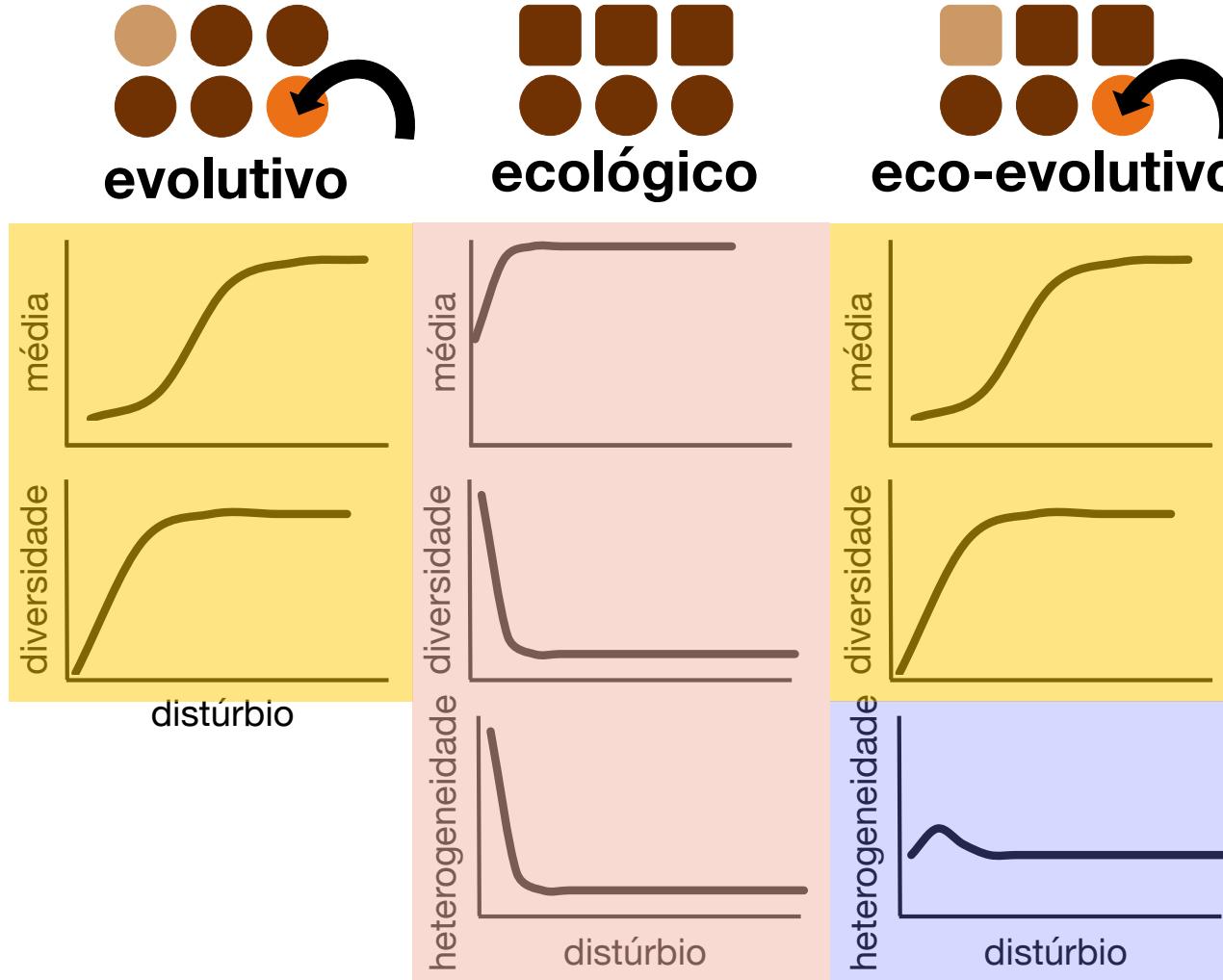
# cenários



# cenários

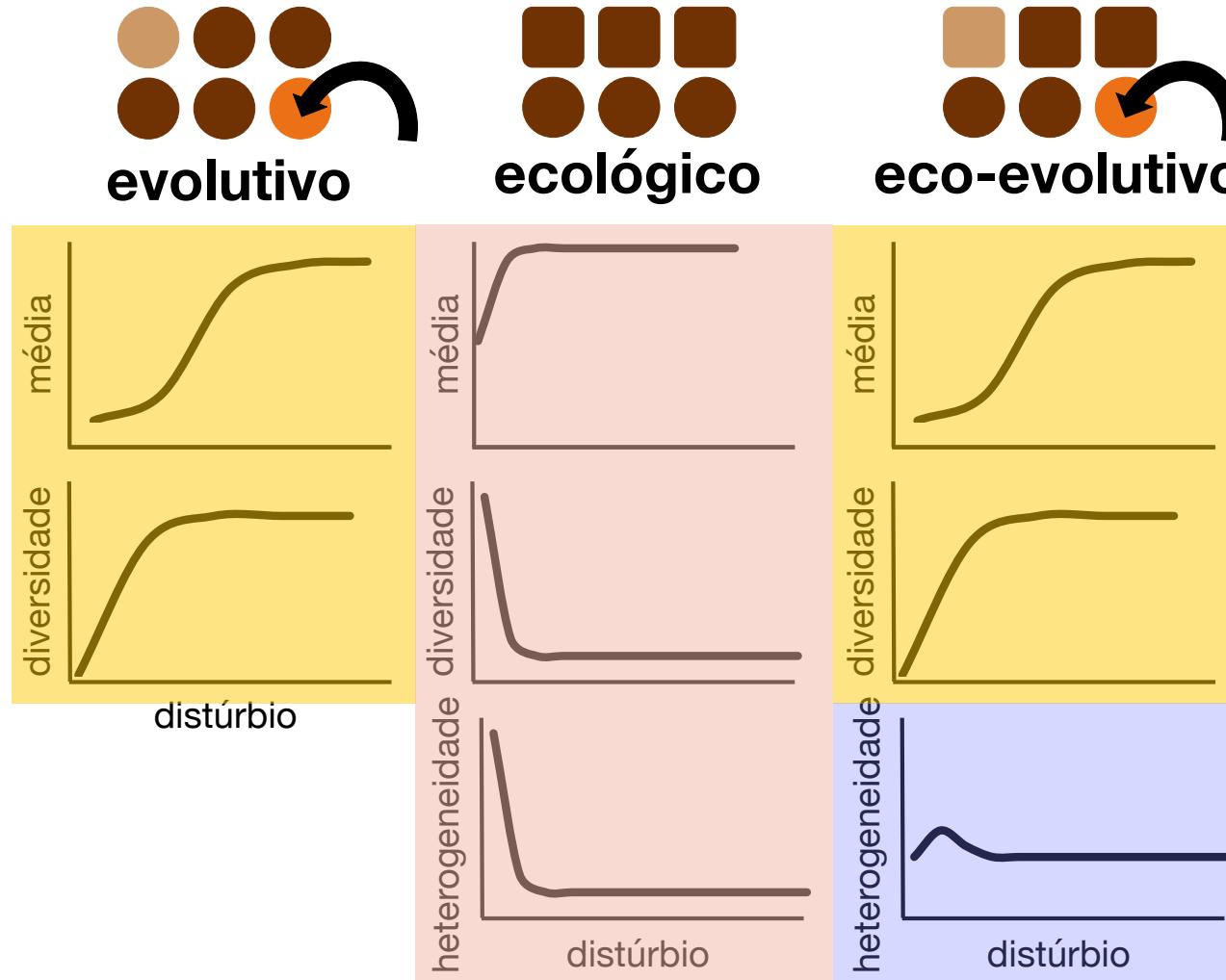


# cenários



# interação eco-evo

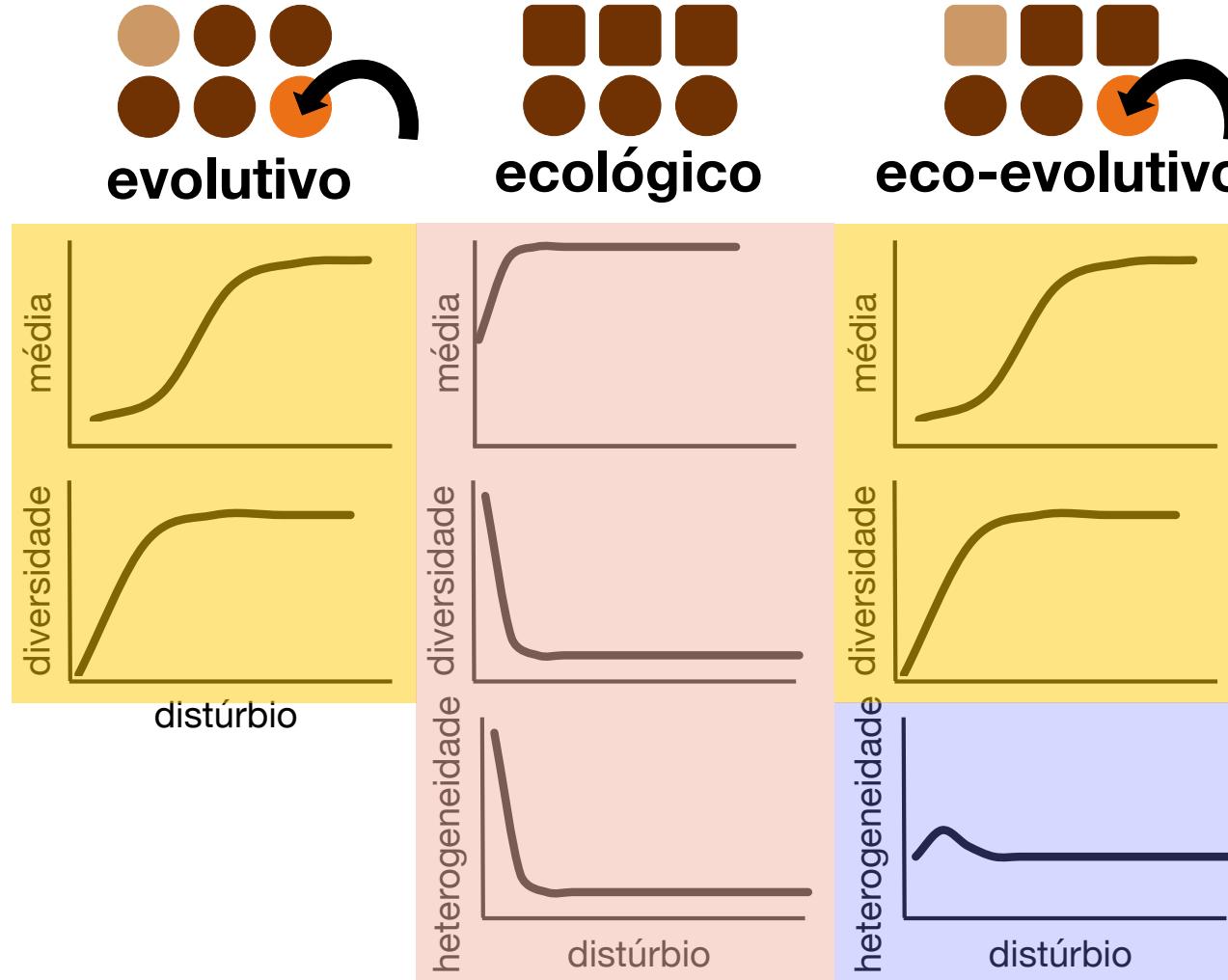
# cenários



# interação eco-evo

- entrada de variação por mutação
- competição entre linhagens isoladas (espécies diferentes)

# cenários



# interação eco-evo

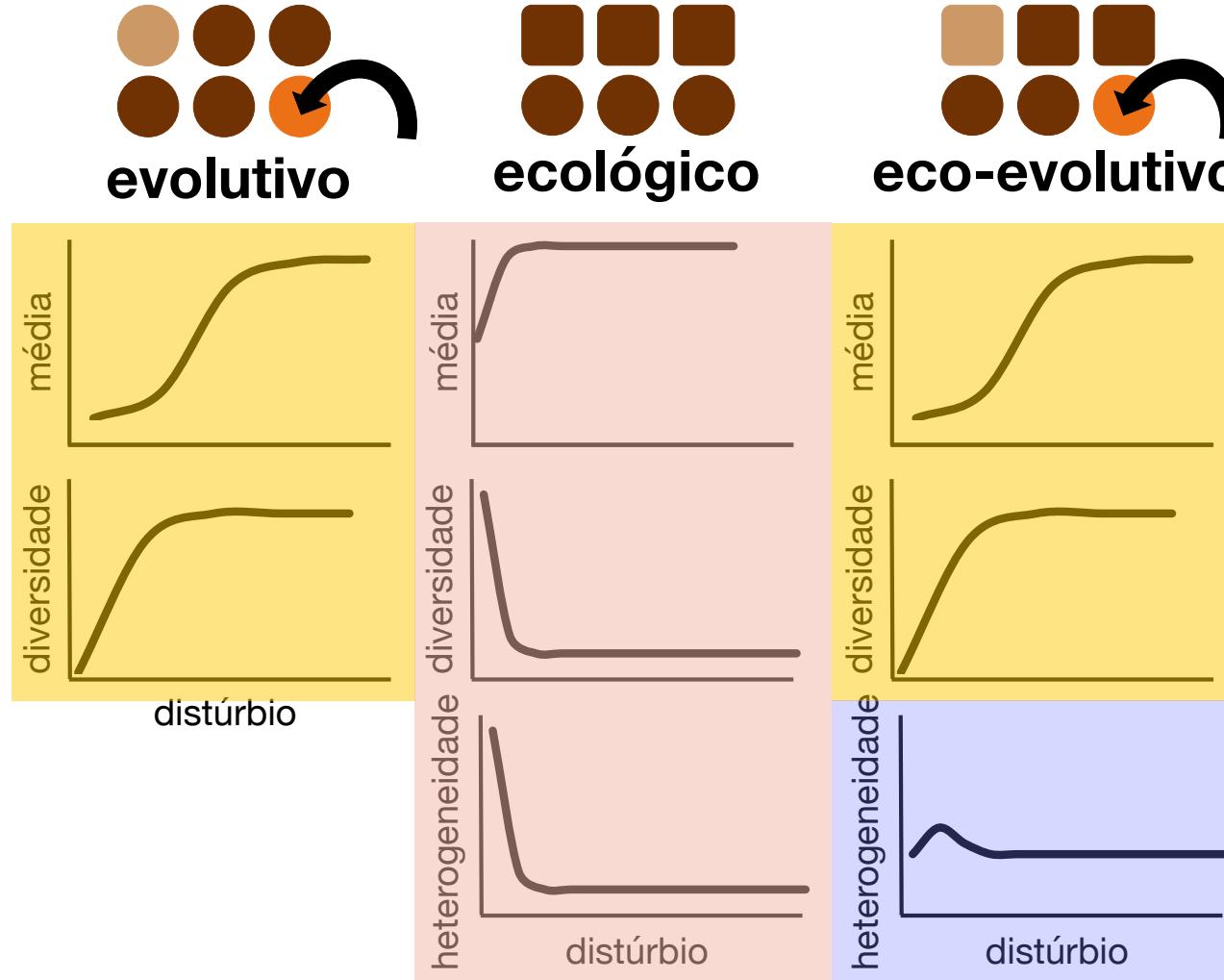
- entrada de variação por mutação
- competição entre linhagens isoladas (espécies diferentes)
- coexistência de estratégias distintas mediadas por distúrbio



## Ecologia

- desconsidera adaptação
- possíveis consequências:
  - gerar previsões erradas
  - relacionar padrões a processos equivocados

# cenários



ainda assim...



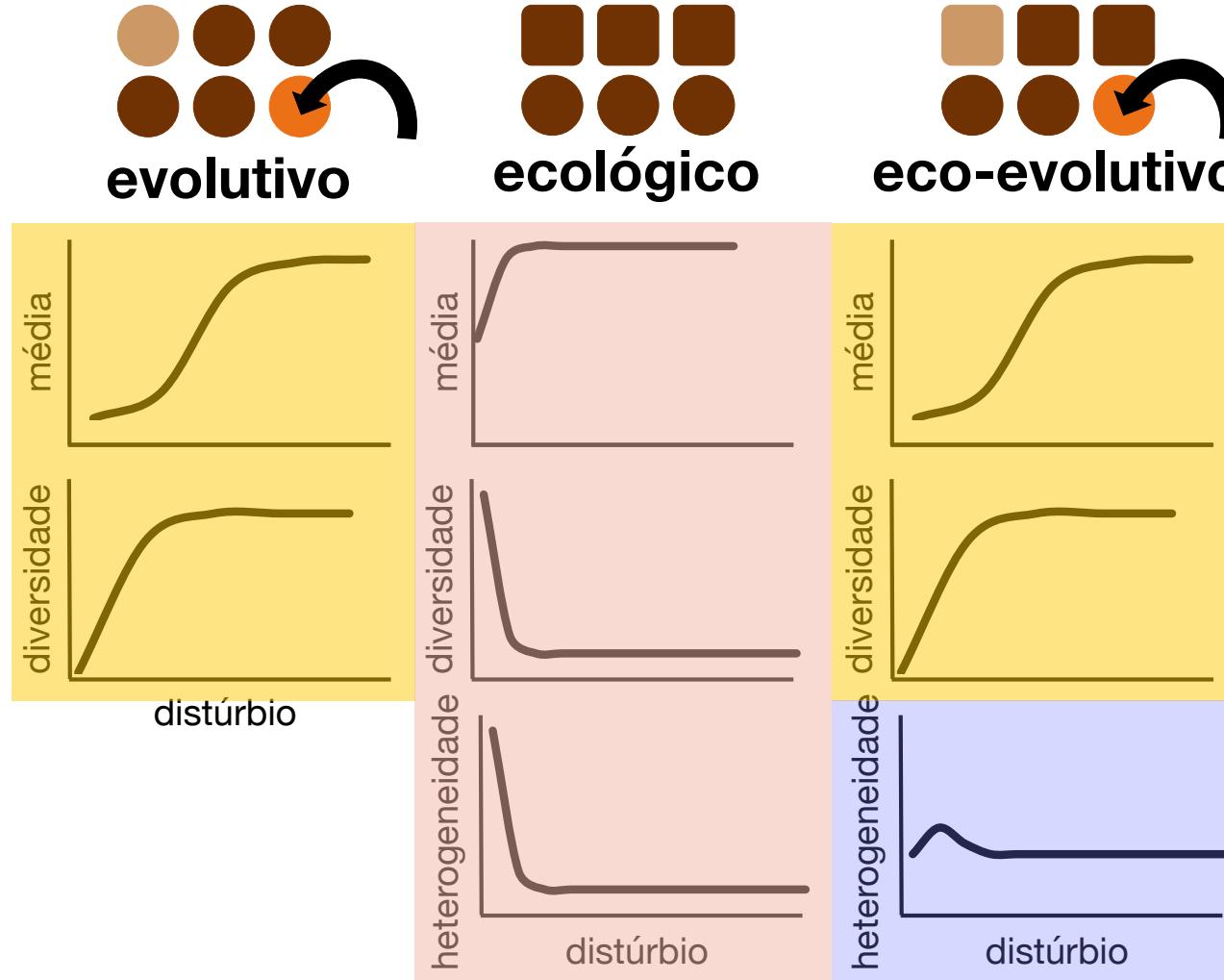
## Ecologia

- desconsidera adaptação
- possíveis consequências:
  - gerar previsões erradas
  - relacionar padrões a processos equivocados

## Biologia Evolutiva

- desconsidera contexto multiespecífico
- possíveis consequências:
  - não acessar padrões que emergem em escalas maiores
  - limitar-se a escalas que não explicam a maior parte da diversidade

# cenários



# conclusões

- 
- 
-

# conclusões

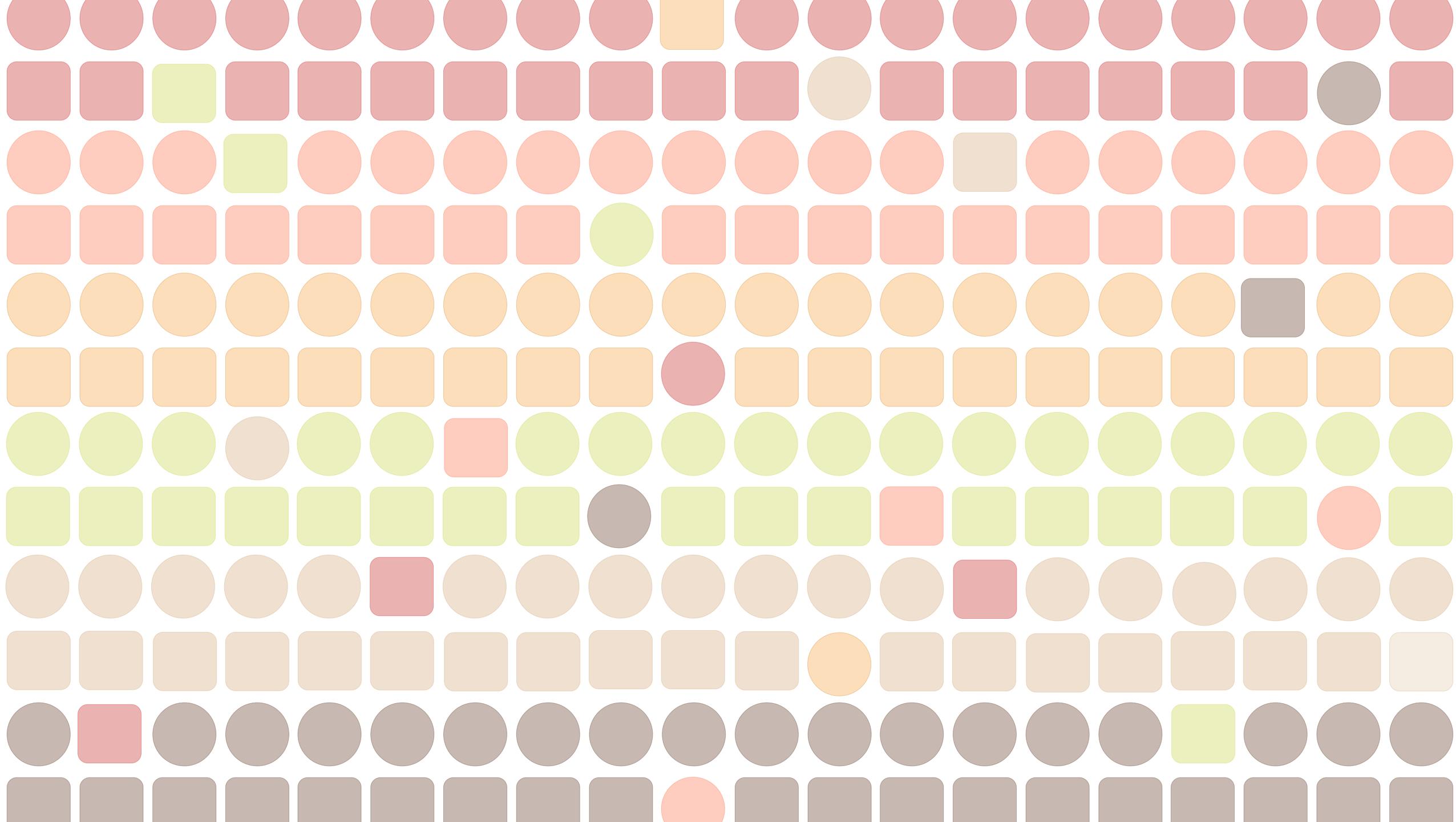
- efeito do distúrbio nas estratégias de vida é diferente comparando dinâmicas ecológicas e evolutivas
- 
-

# conclusões

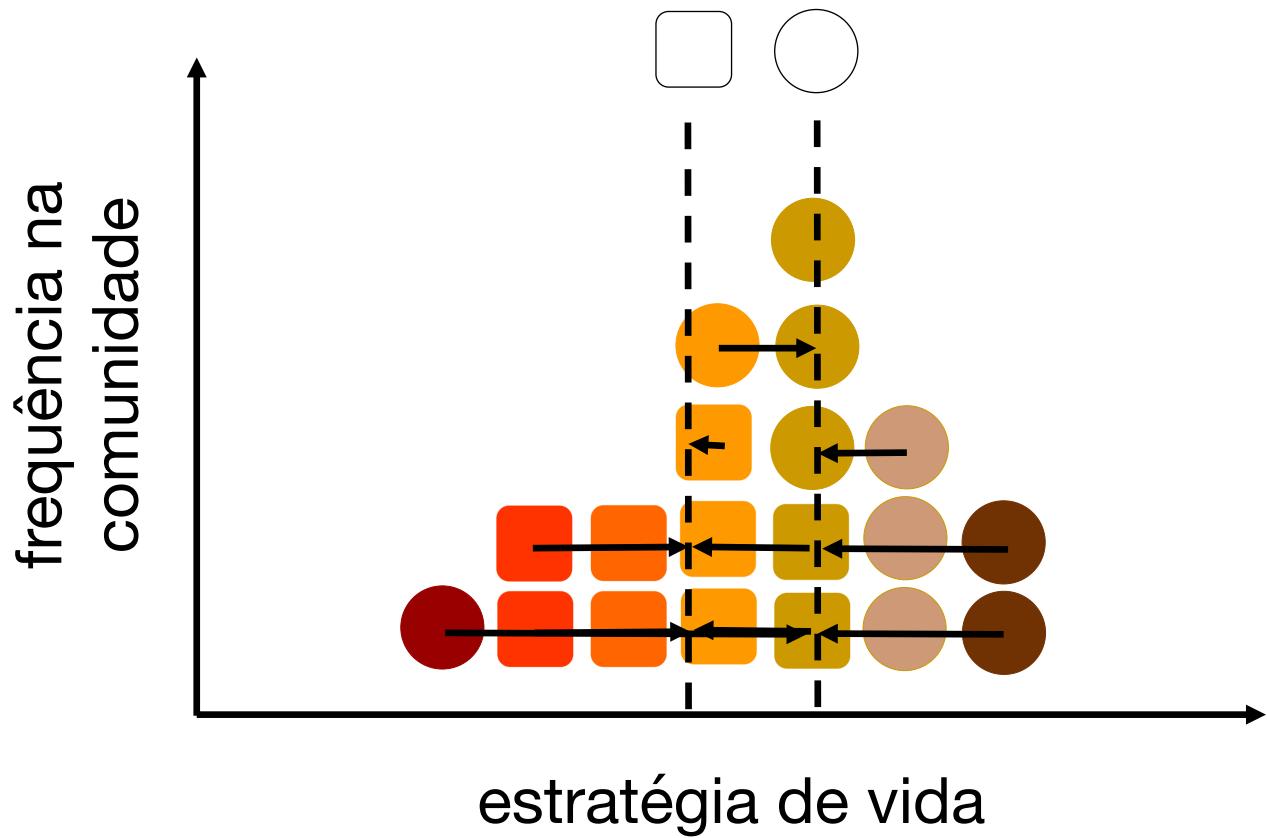
- efeito do distúrbio nas estratégias de vida é diferente comparando dinâmicas ecológicas e evolutivas
- há padrões que emergem apenas em dinâmicas eco-evolutivas
-

# conclusões

- efeito do distúrbio nas estratégias de vida é diferente comparando dinâmicas ecológicas e evolutivas
- há padrões que emergem apenas em dinâmicas eco-evolutivas
- o distúrbio deve ser estudado em dinâmicas eco-evolutivas, na interface entre Biologia Evolutiva e Ecologia



# variáveis de interesse



média da  
estratégia

variância total  
da estratégia

variância  
interespecífica  
da estratégia

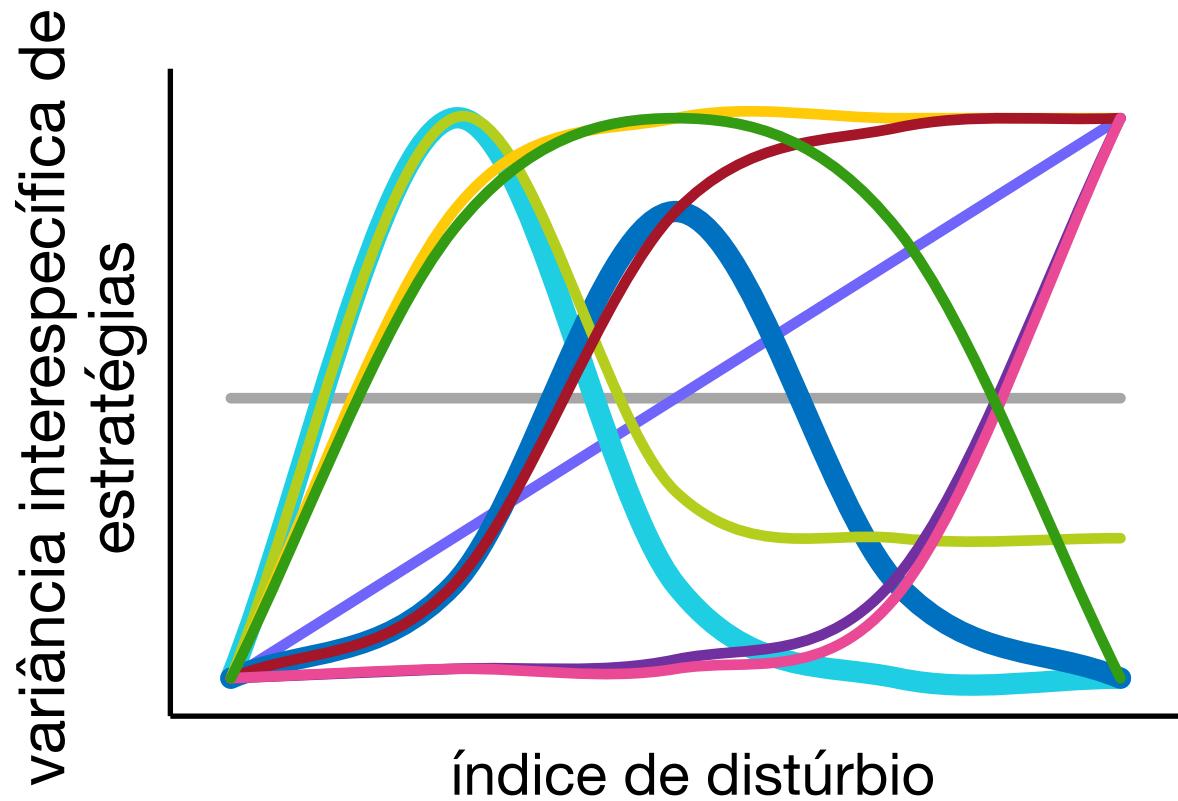
**estratégia  
média**

**diversidade  
de estratégias**

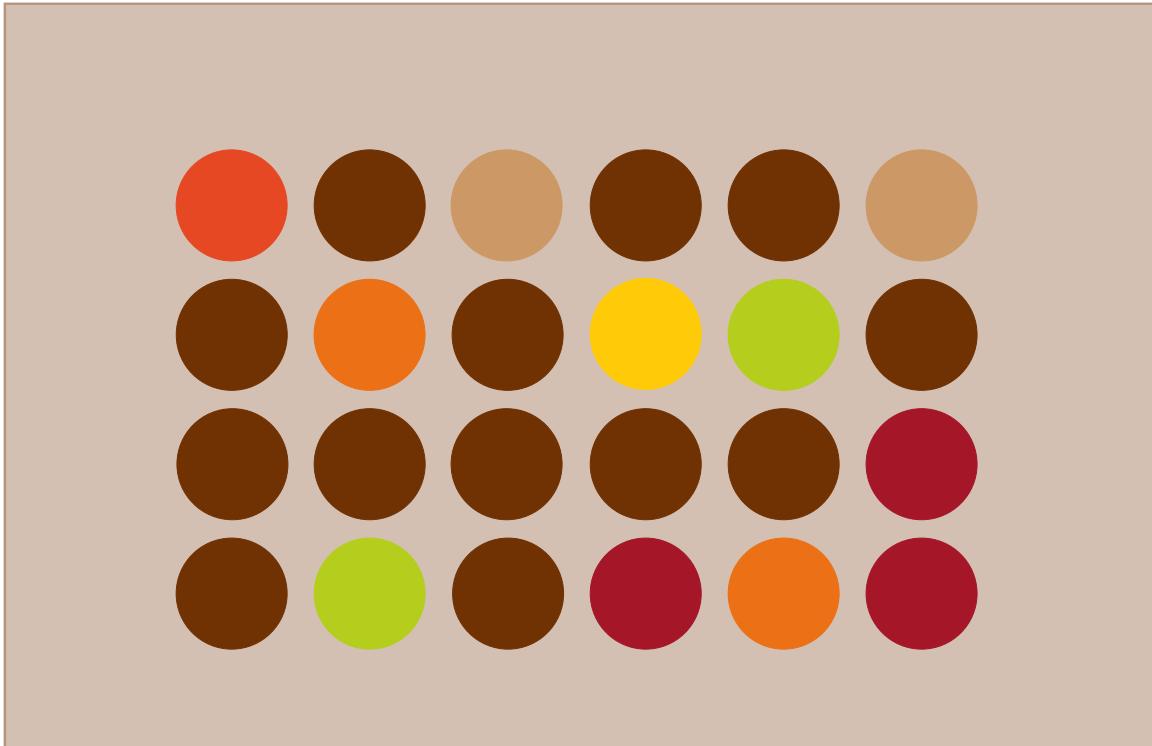
**heterogeneidade  
interespecífica  
de estratégias**

variância

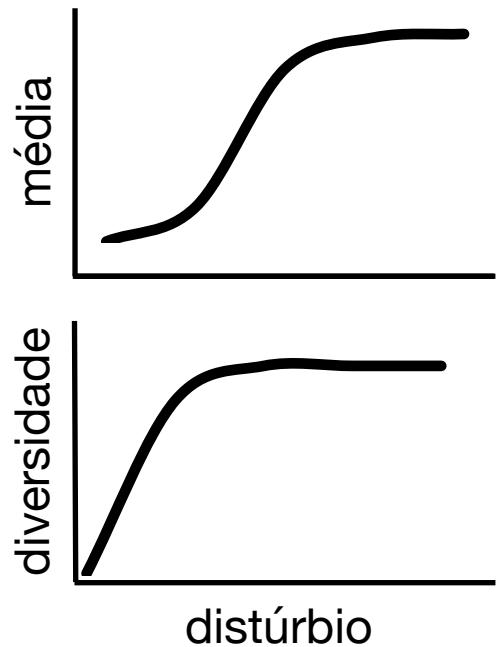
( heterogeneidade interespecífica de ) ~ estratéгias distúrbio



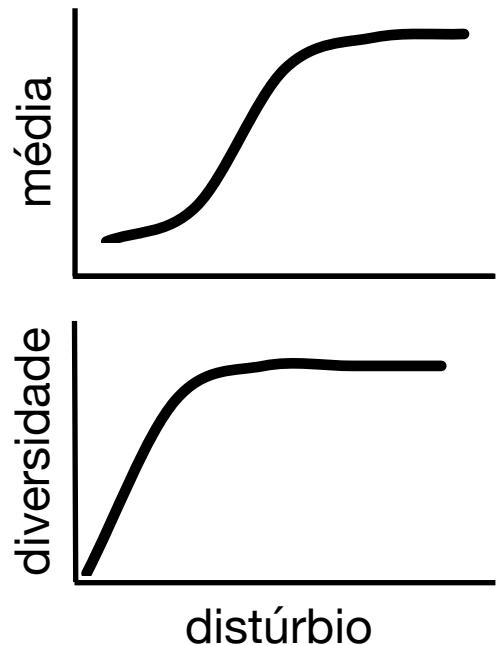
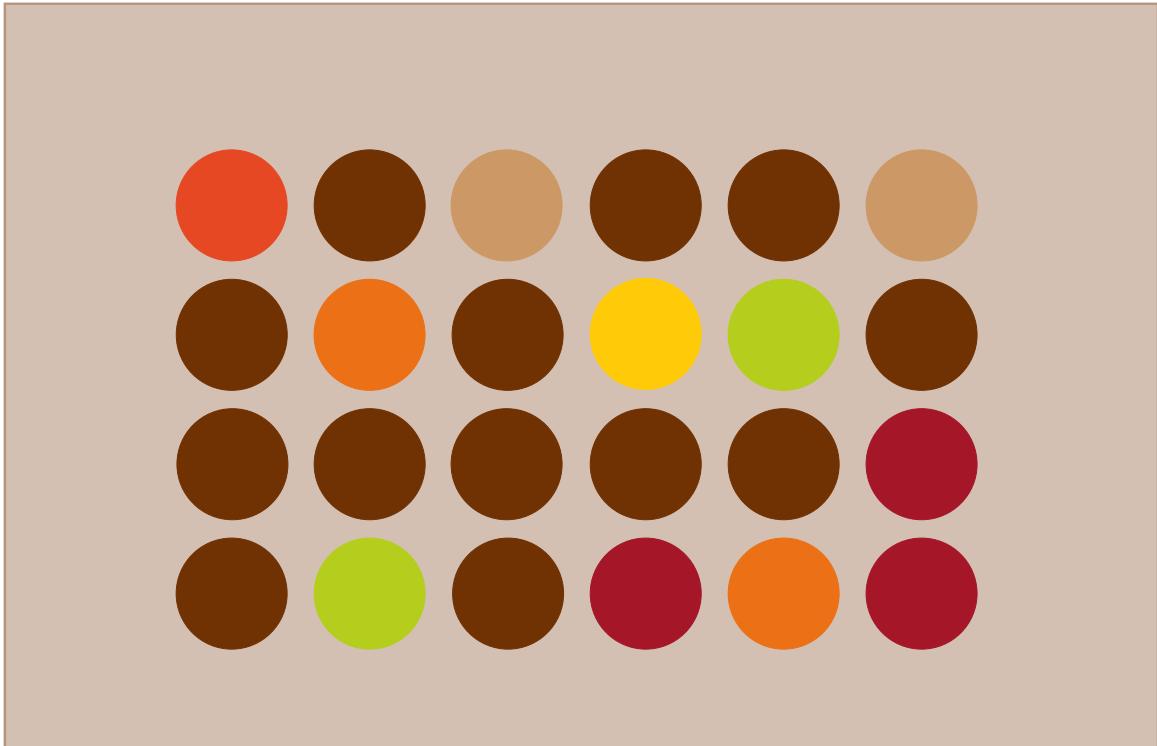
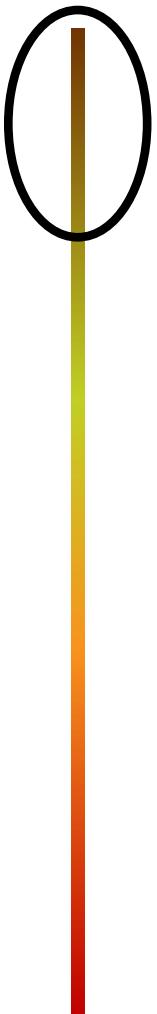
# mutação



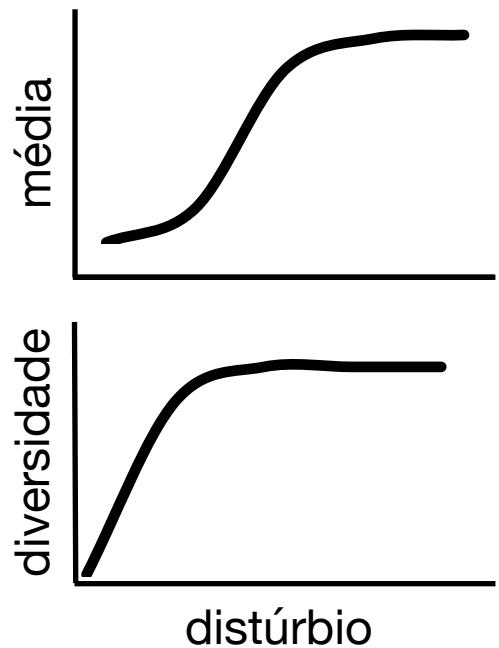
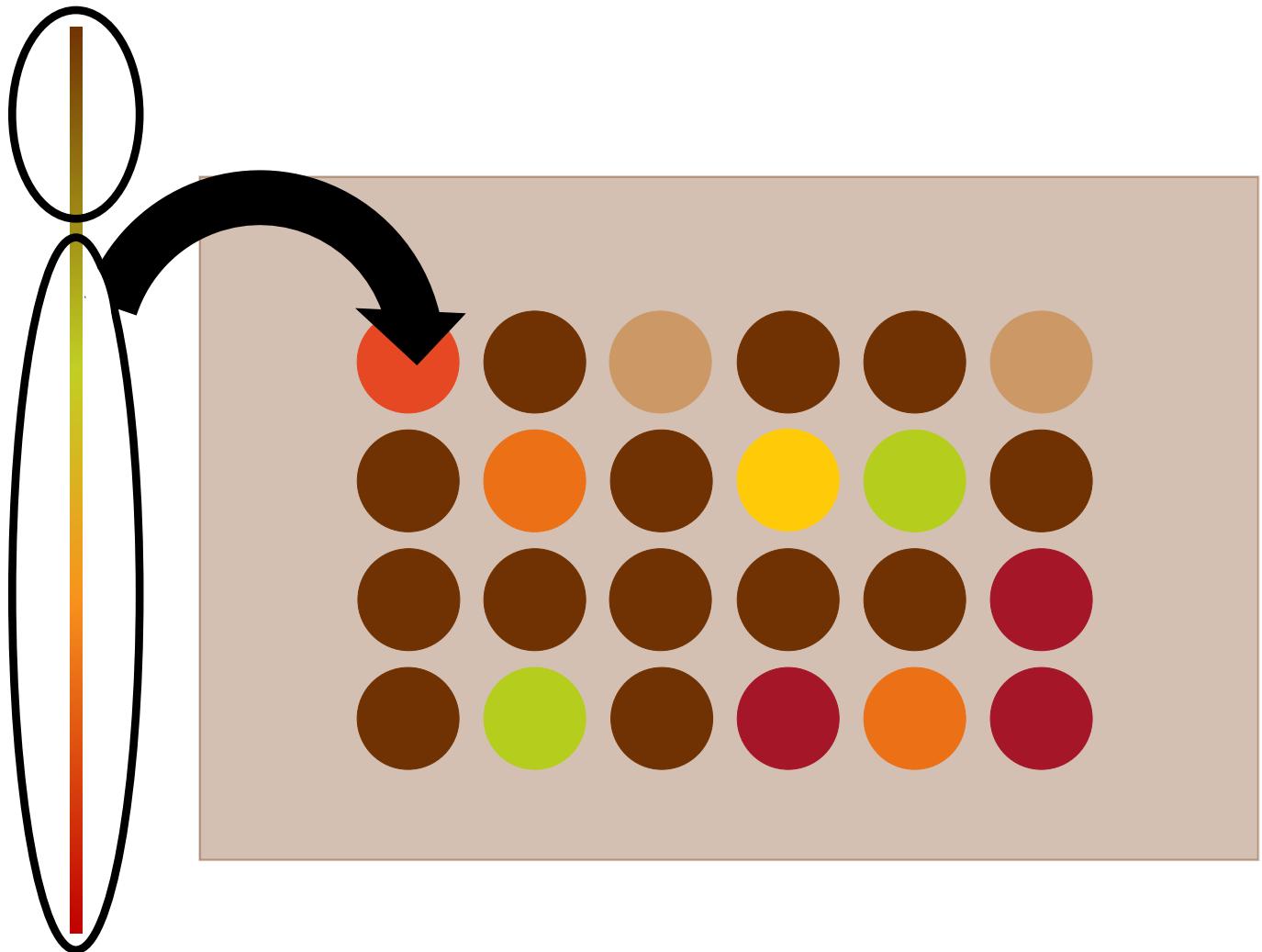
**evolutivo**



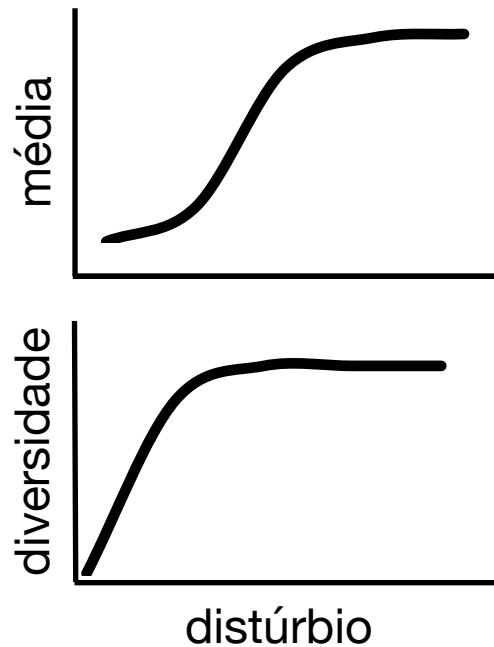
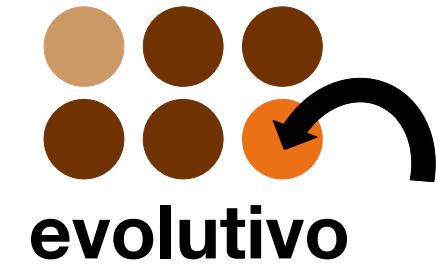
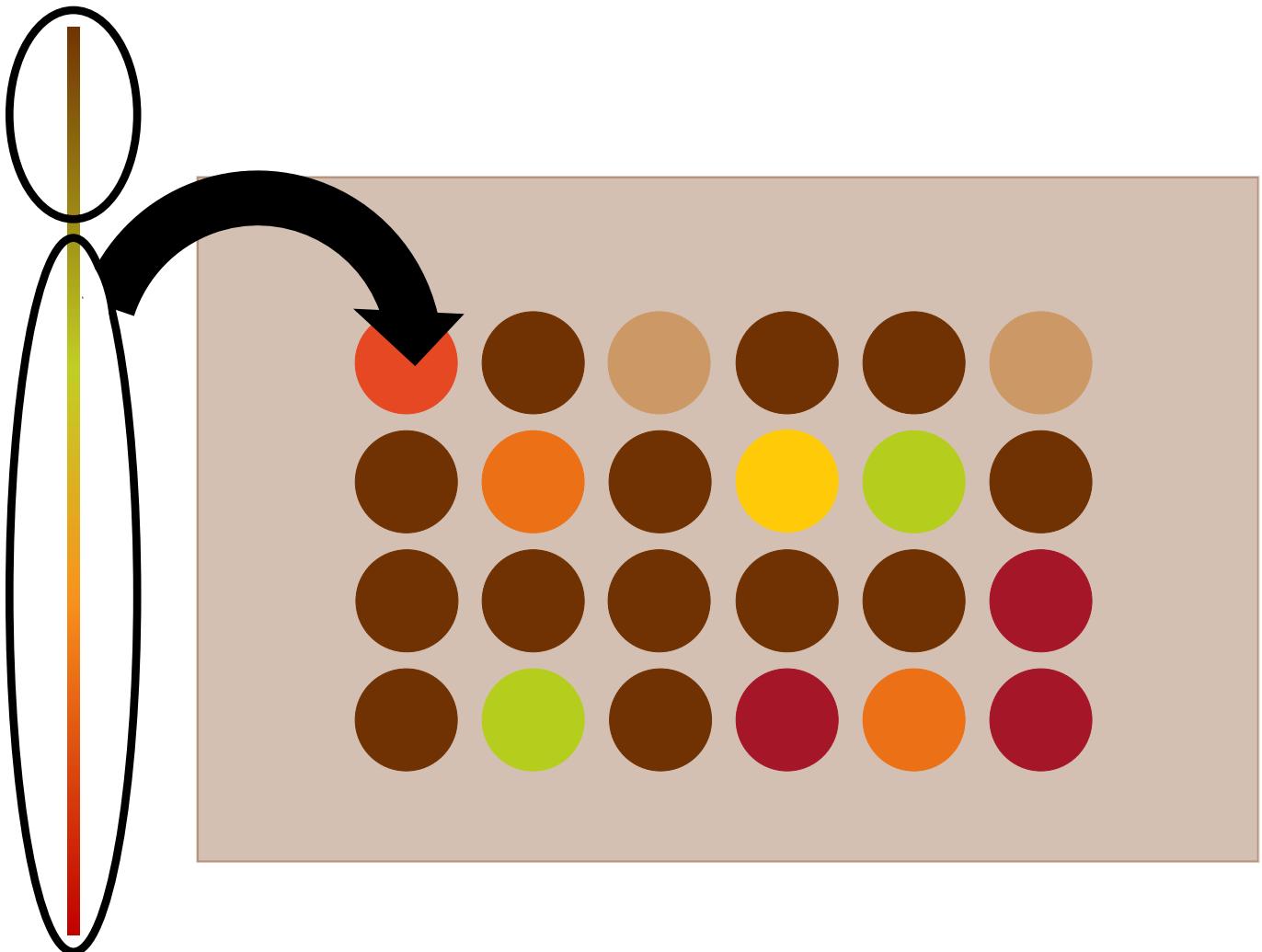
# mutação



# mutação



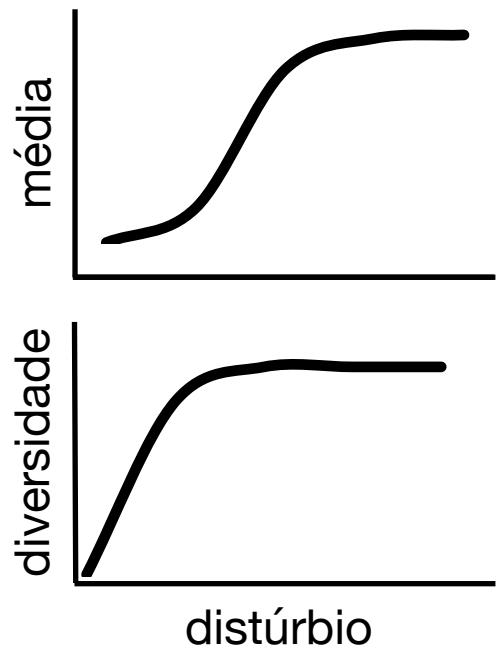
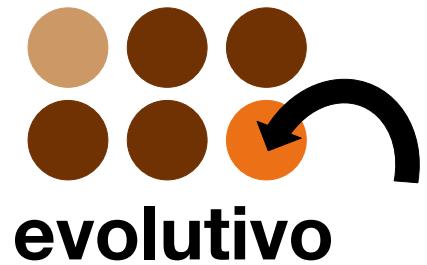
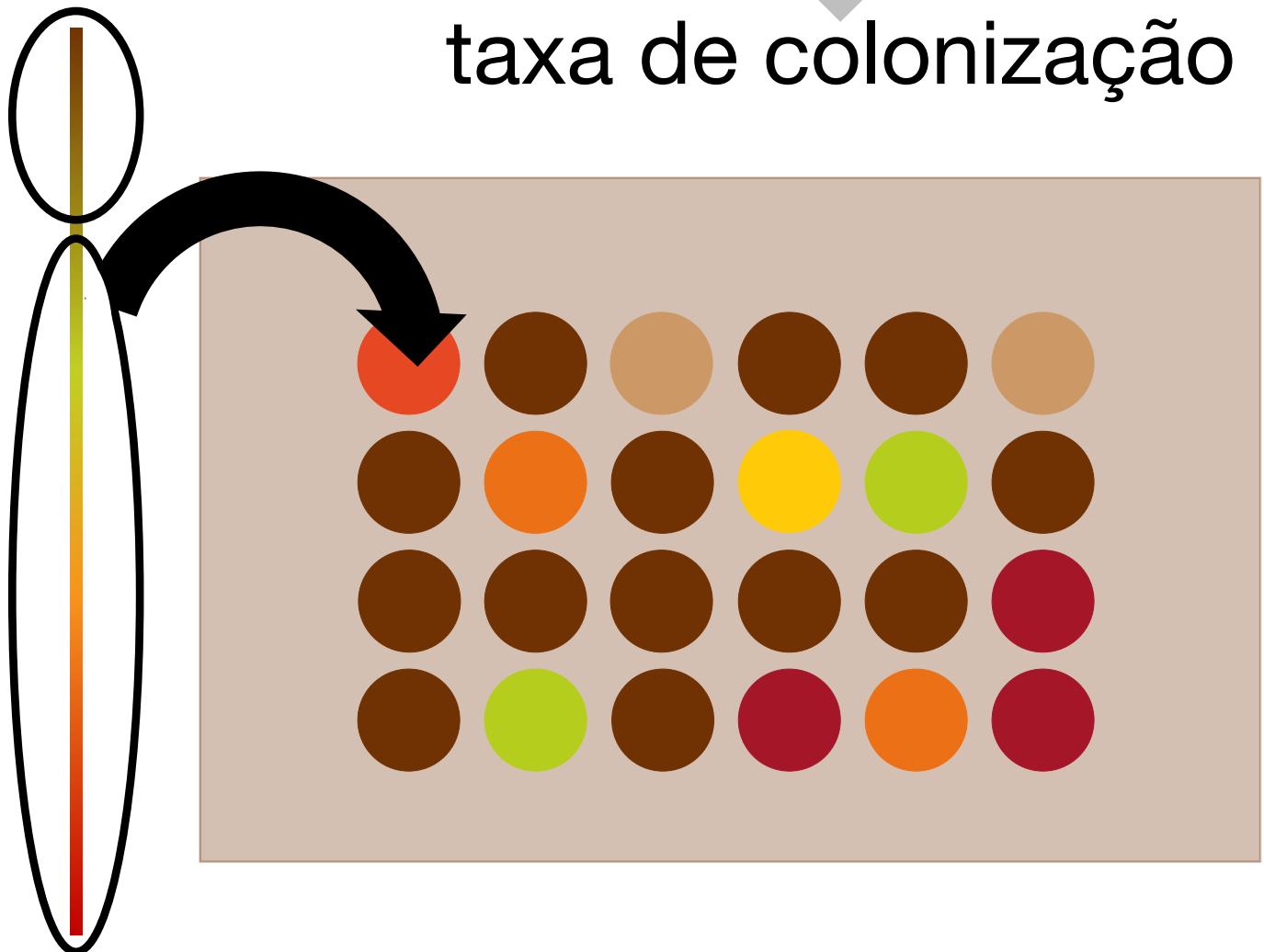
# produtividade



produtividade



taxa de colonização



## Queda na diversidade:

- O aumento do distúrbio, ainda que possa prejudicar o melhor competidor anterior, cria uma nova condição, em que outra estratégia passa a ser melhor competidora
- Quanto maior o distúrbio, mais **rápida** é a perda de espécies por deriva ecológica e por exclusão competitiva

