

POND
life

Comunidades de Ambientes lênticos – Aula 2

Tipos de corpos d'água lênticos e
gradientes ambientais

Sumário da aula

- Tipos de corpos d'água lênticos
- Como podemos classificar corpos d'água
- Tipos de organismos encontrados
- Importância do gradiente de hidroperíodo e cobertura de dossel

Outros tipos de corpos d'água lênticos

- Fitotelmata
- Poças
- Brejos
- Lagos
- Lagoas



Plantas “carnívoras”, tipo
Nepenthes



Sarracenia (América do
Norte)



Bromélias tanque (e.g., *Quesnelia*, *Bromelia*) acumulam água na sua roseta. Sustentam ampla diversidade de organismos, tanto micro quanto macroscópicos



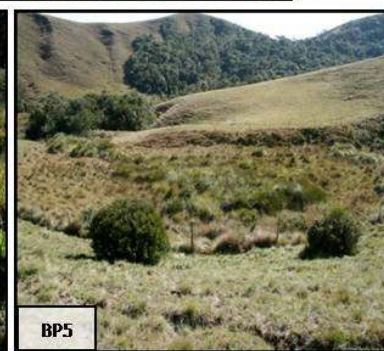
Both ecology and conservation biology seek to understand how variation in species distributions affect the functioning of ecosystems and the stability of food webs. This issue has become more pressing in a world experiencing rapid, and sometimes unexpected, declines in biodiversity. To date, most of what we know about species effects on ecosystems comes from experiments in single locations, where species occurrence is randomly perturbed. While such experiments tell us that species composition can be exceptionally important in determining ecosystem functions, they do not tell us if large-scale changes in species distributions will change, or have changed, ecosystem functions. To answer the latter question, we need replicated experiments over large spatial scales that consider either natural (e.g. biogeographic) or anthropogenic (e.g. climate change) patterns in species turnover. This has rarely been attempted.

We are a formal international research network which conducts replicated experiments over both hemispheres. We aim to serve as a model for merging the fields of community ecology, biogeography and phylogeny by taking advantage of an ecosystem that is naturally replicated from Florida to Argentina: the faunal food web inhabiting water-filled bromeliads. This system is especially amenable to studies of food web structure and ecosystem function. As it is small, it can be completely censused, yet still contains multiple trophic levels from bacteria to dragonflies. Moreover, there is a strong biogeographic gradient from depauperate communities in the Caribbean, to medium diversity in Central America and Argentina, to exceptionally high diversity in tropical South America.

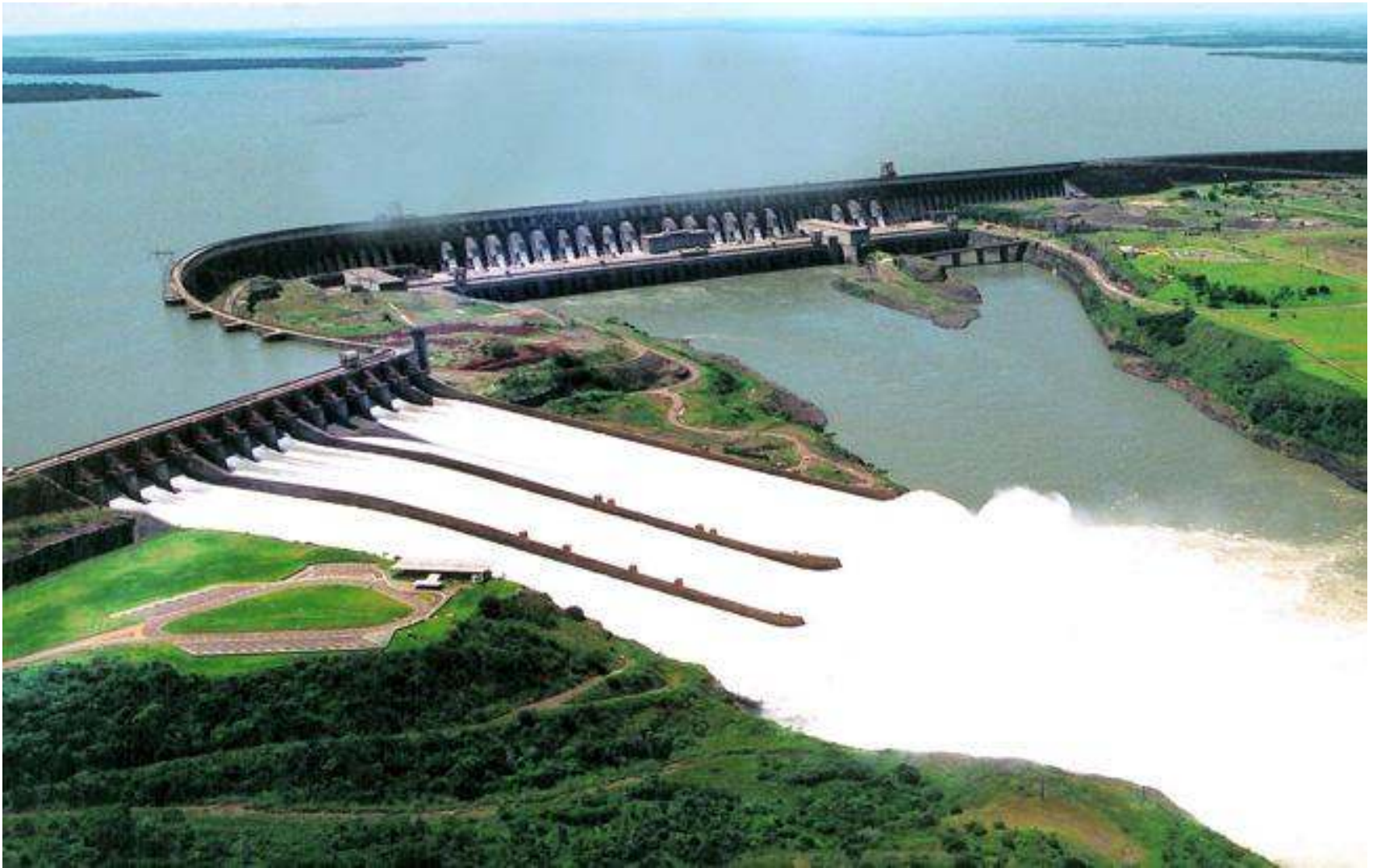
Our immediate goals are:

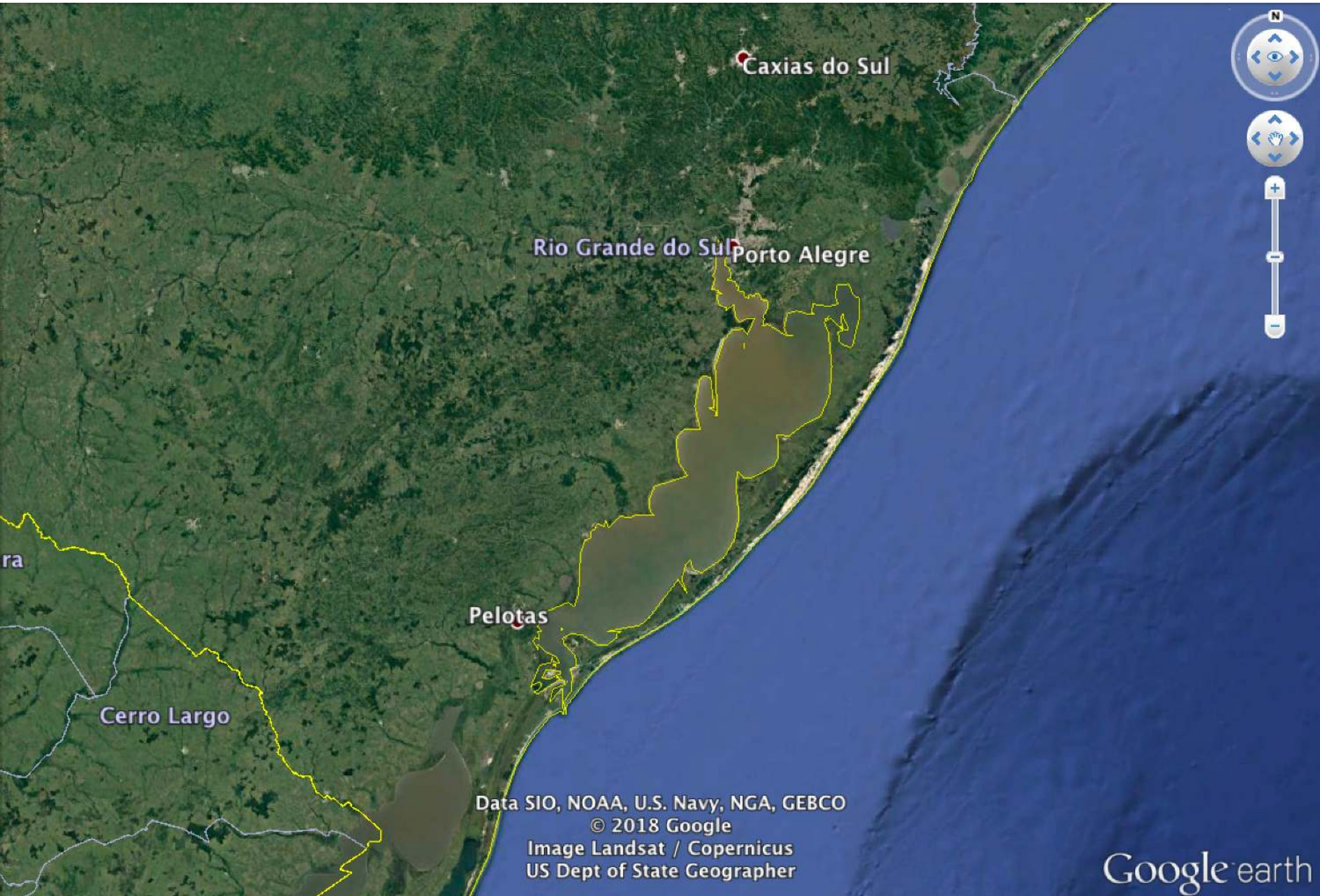
- * to develop experiments that will be replicated at five sites to examine if biogeography affects the functioning of the food web, or whether convergence in community structure ensures that food webs are functionally similar.
- * to use existing survey data to examine if biogeography affects the structure of food webs, as well as the role of particular species in driving dynamics of the study system.
- * to develop a methodology to quantify the relative roles of dispersal, speciation and local interactions in determining the phylogeny of invertebrates living in bromeliads.

Poças e brejos PNSBocaina









Caxias do Sul

Rio Grande do Sul Porto Alegre

Pelotas

Cerro Largo

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2018 Google
Image Landsat / Copernicus
US Dept of State Geographer

Google earth



Caxias do Sul

Rio Grande do Sul Porto Alegre

Peleças

Cerro Largo

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2018 Google
Image Landsat / Copernicus
US Dept of State Geographer

Google earth



Quinta

Rio Grande

São José do Norte

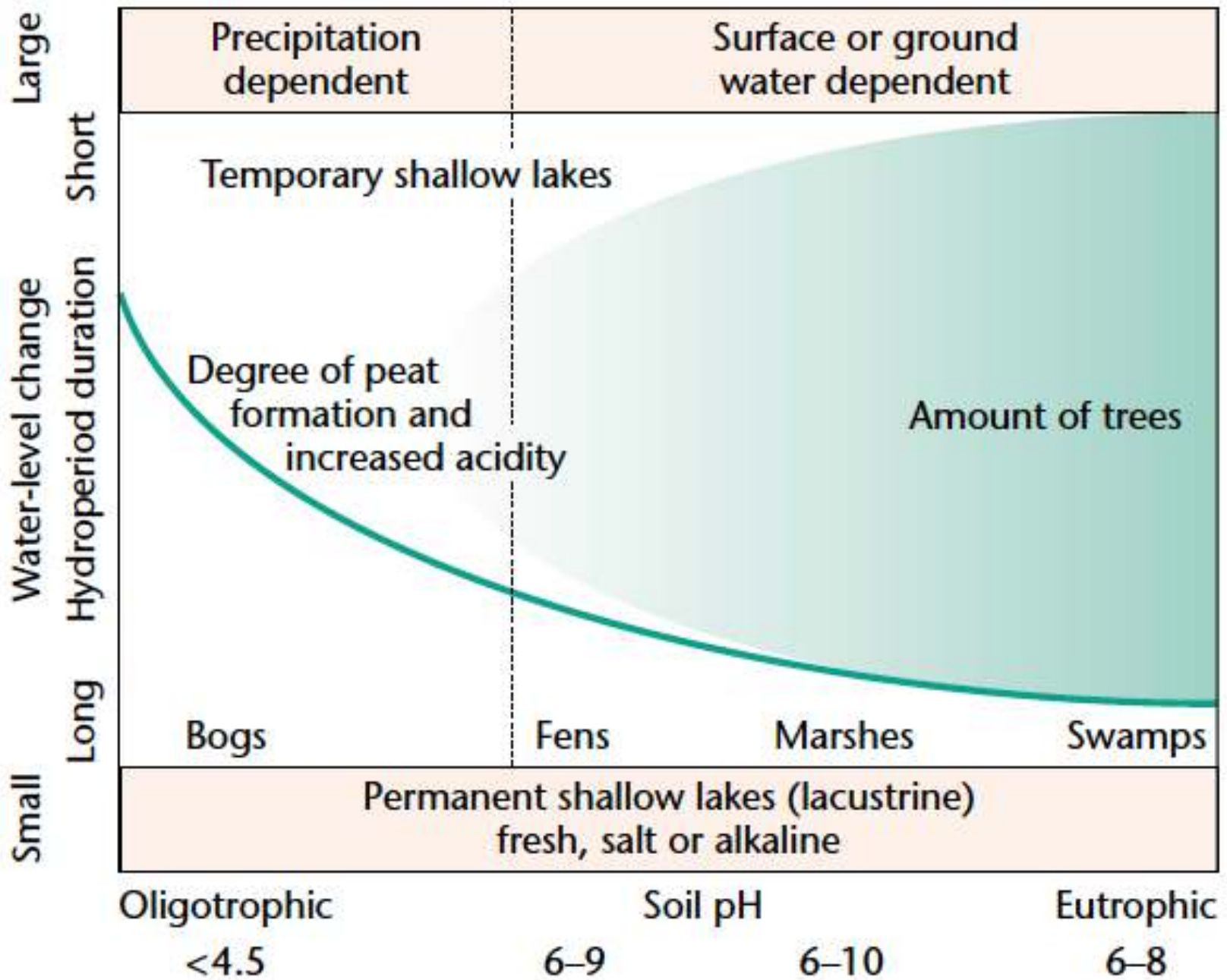
Cassino

Data SIO, NOAA, U.S. Navy, NGA, GEBCO
© 2018 Google
Image © 2018 DigitalGlobe
Image © 2018 DigitalGlobe

Google earth

Classificação de corpos d'água lênticos

- Tamanho (Área)
- Profundidade (penetração de luz)
- Produtividade (oligotrófico, mesotrófico, eutrófico)
- Hidroperíodo (ou Permanência)

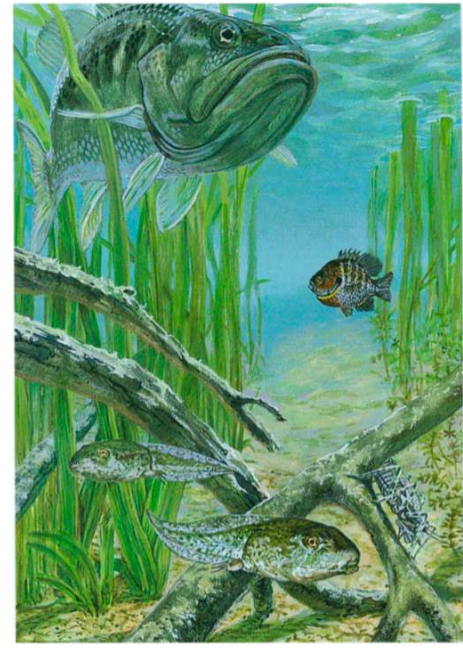
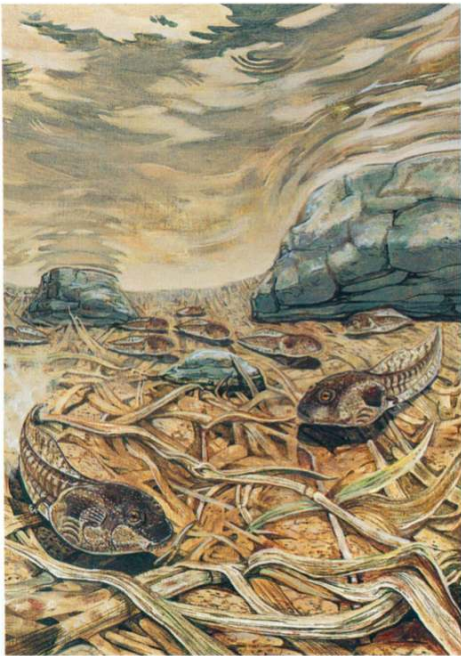


Classificação de corpos d'água lênticos

- Tamanho (Área)
- Profundidade (penetração de luz)
- Produtividade (oligotrófico, mesotrófico, eutrófico)
- **Hidroperíodo (ou Permanência)**

Common Ephemeral Pond Taxa





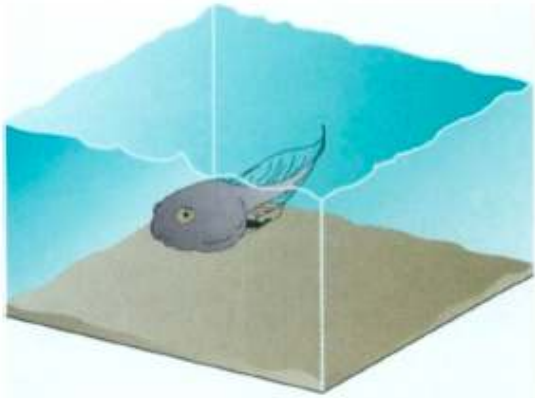
Gradiente de hidroperíodo

Gradiente de hidroperíodo

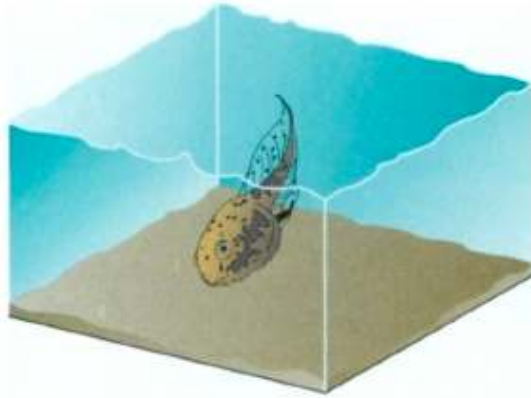
- Como medir?
 - Tempo (semanas, meses) em que um dado corpo d'água retém água
- Influencia vários aspectos da comunidade
- Mecanismo subjacente é um aspecto de história de vida dos organismos
 - Demanda conflitante (*trade-off*) entre risco de predação e crescimento (movimento para obtenção de recursos)

Experimentos com mesocosmos (enclosures)

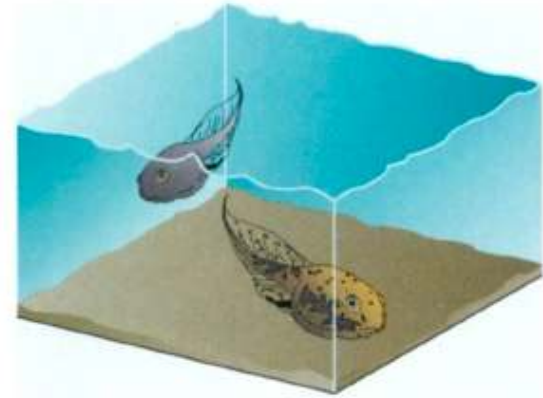




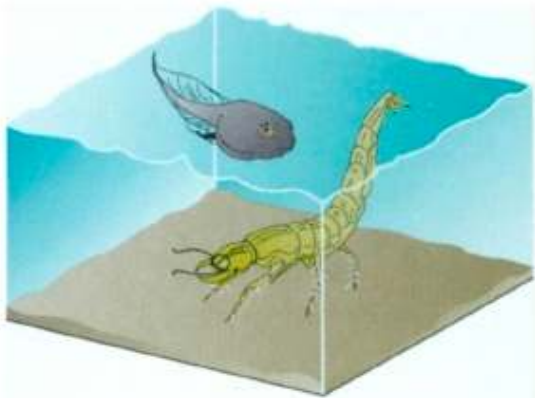
chorus frog



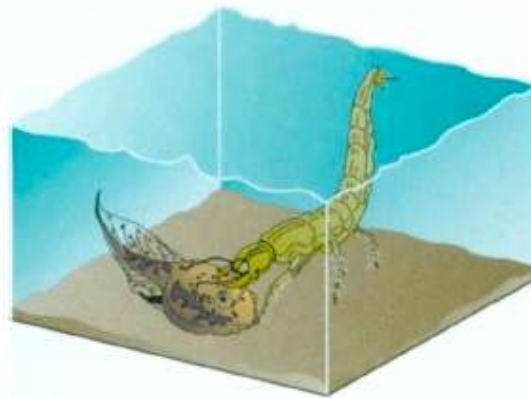
spring peeper



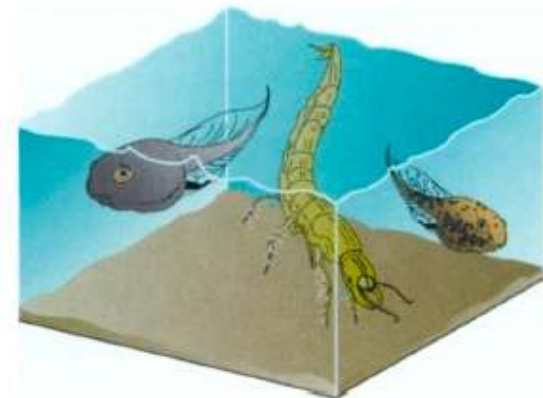
chorus frog and spring peeper



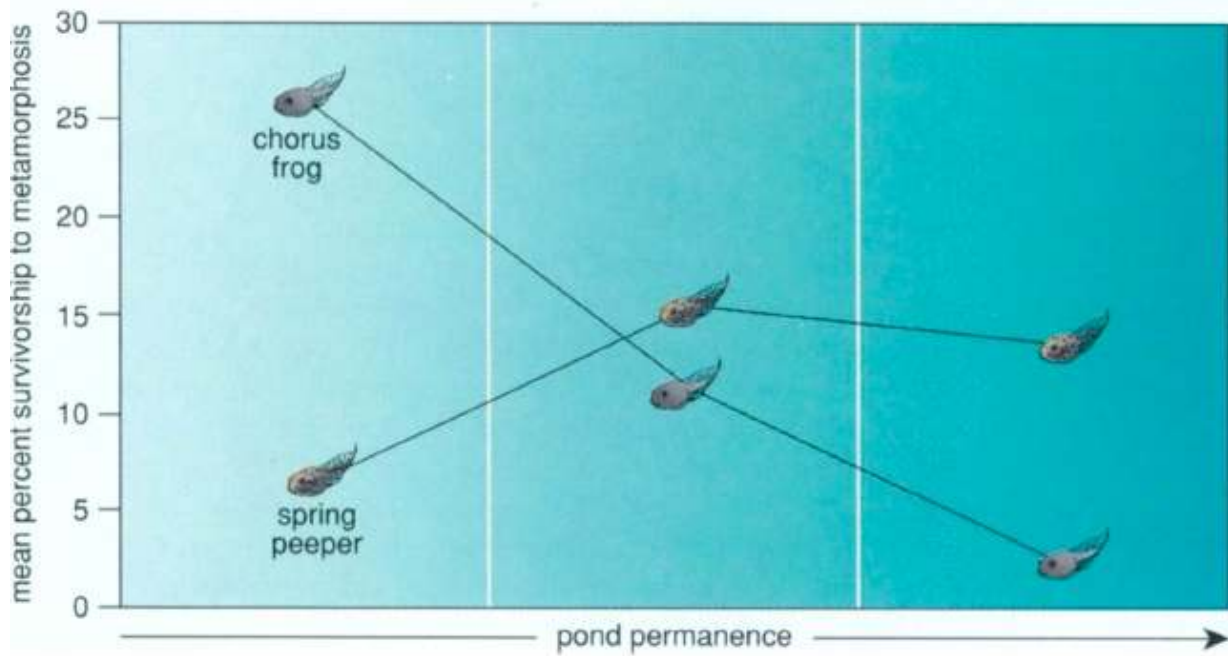
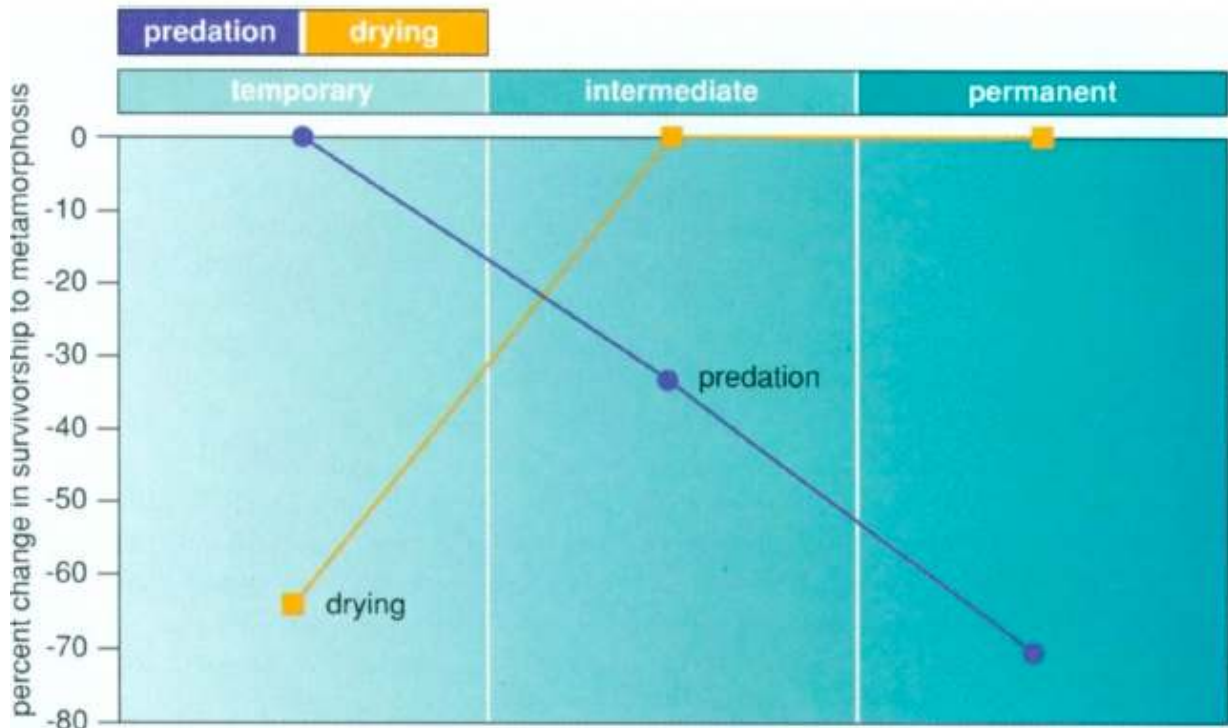
chorus frog and predator



spring peeper and predator



chorus frog, spring peeper and predator



David K. Skelly
Yale University

temporary

intermediate

permanent

frequent drying

infrequent drying



beetle larva



very active, rapidly developing tadpoles



salamander larva



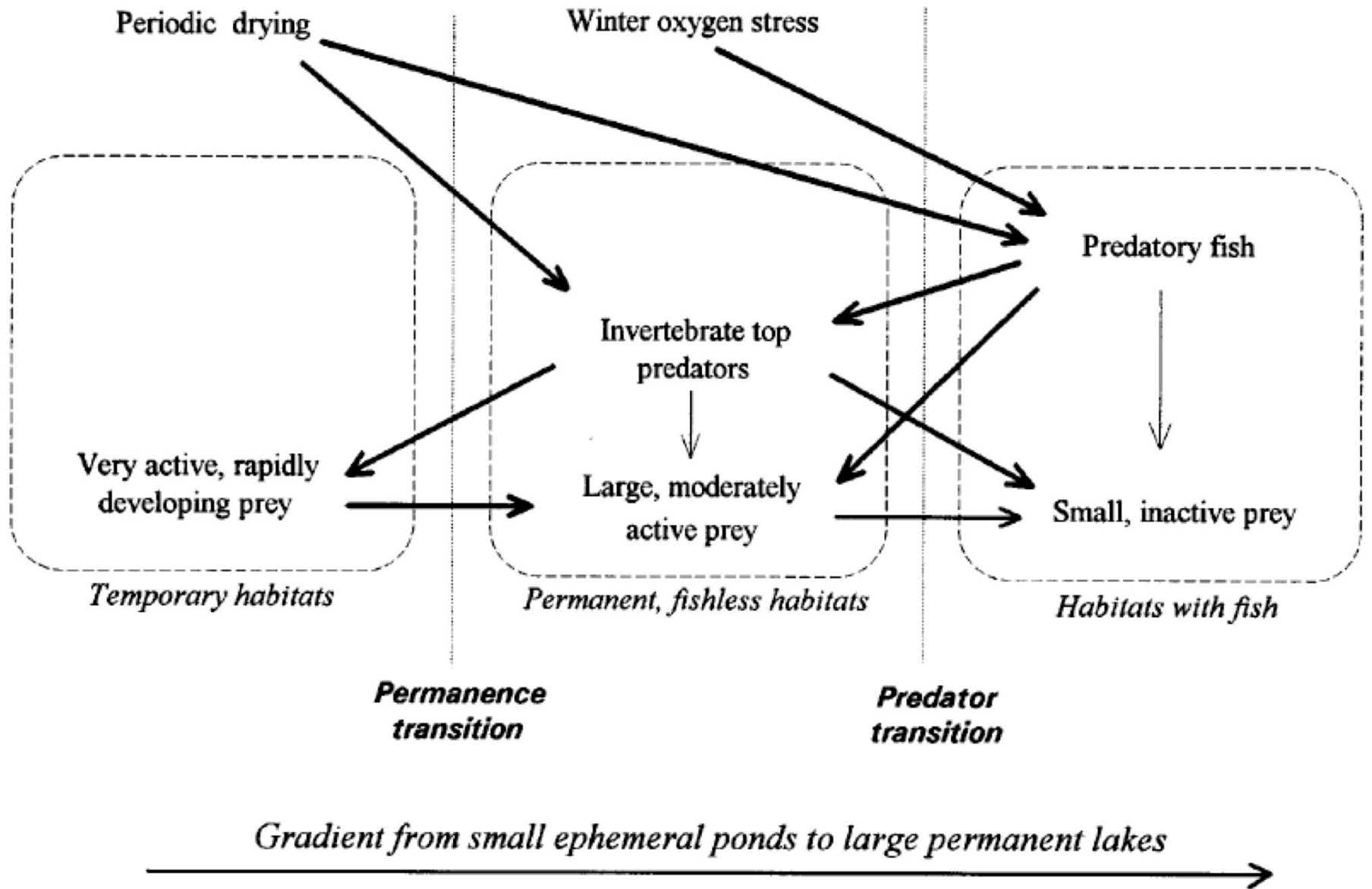
moderately active,
moderately developing tadpoles



predatory fish

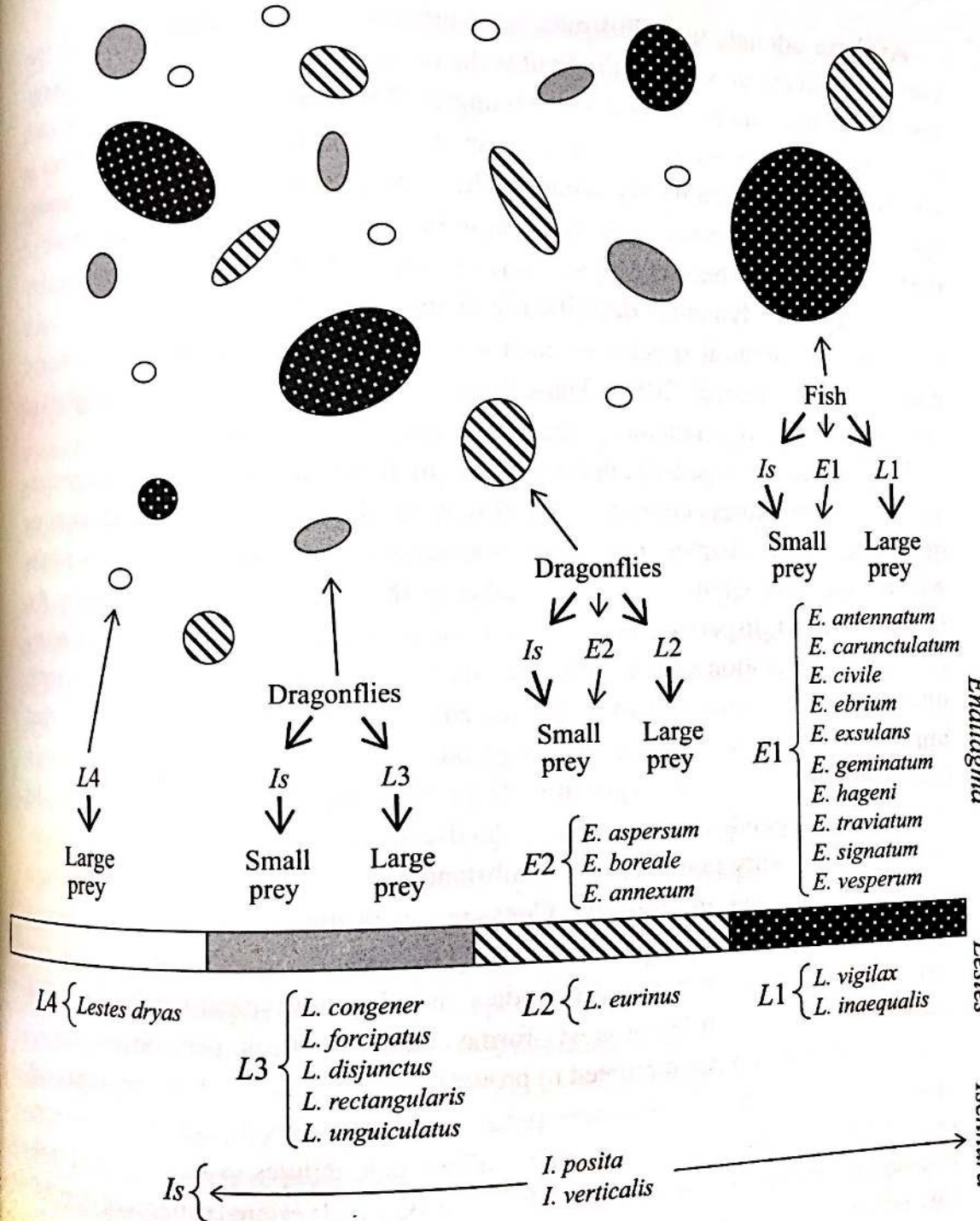


inactive, slowly developing tadpoles



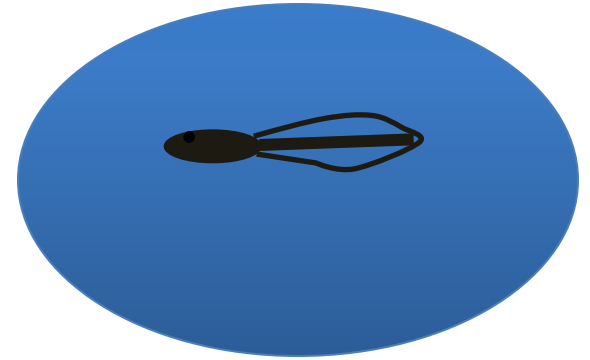
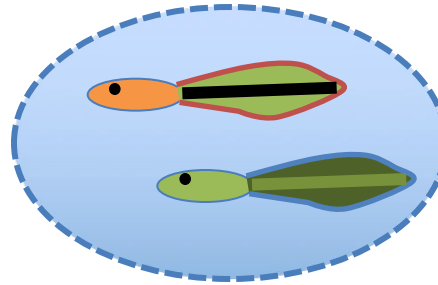
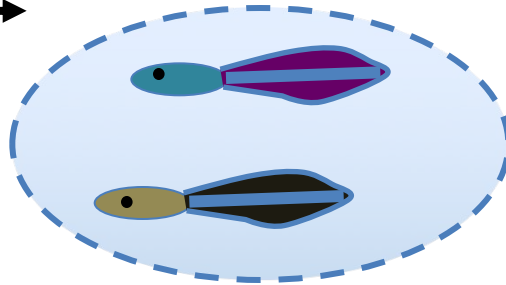
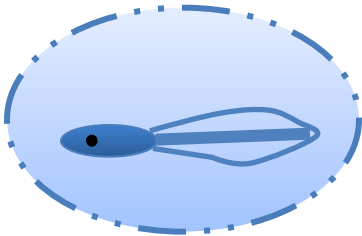
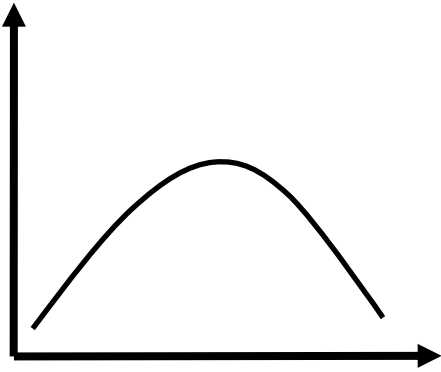


Mark A. McPeck



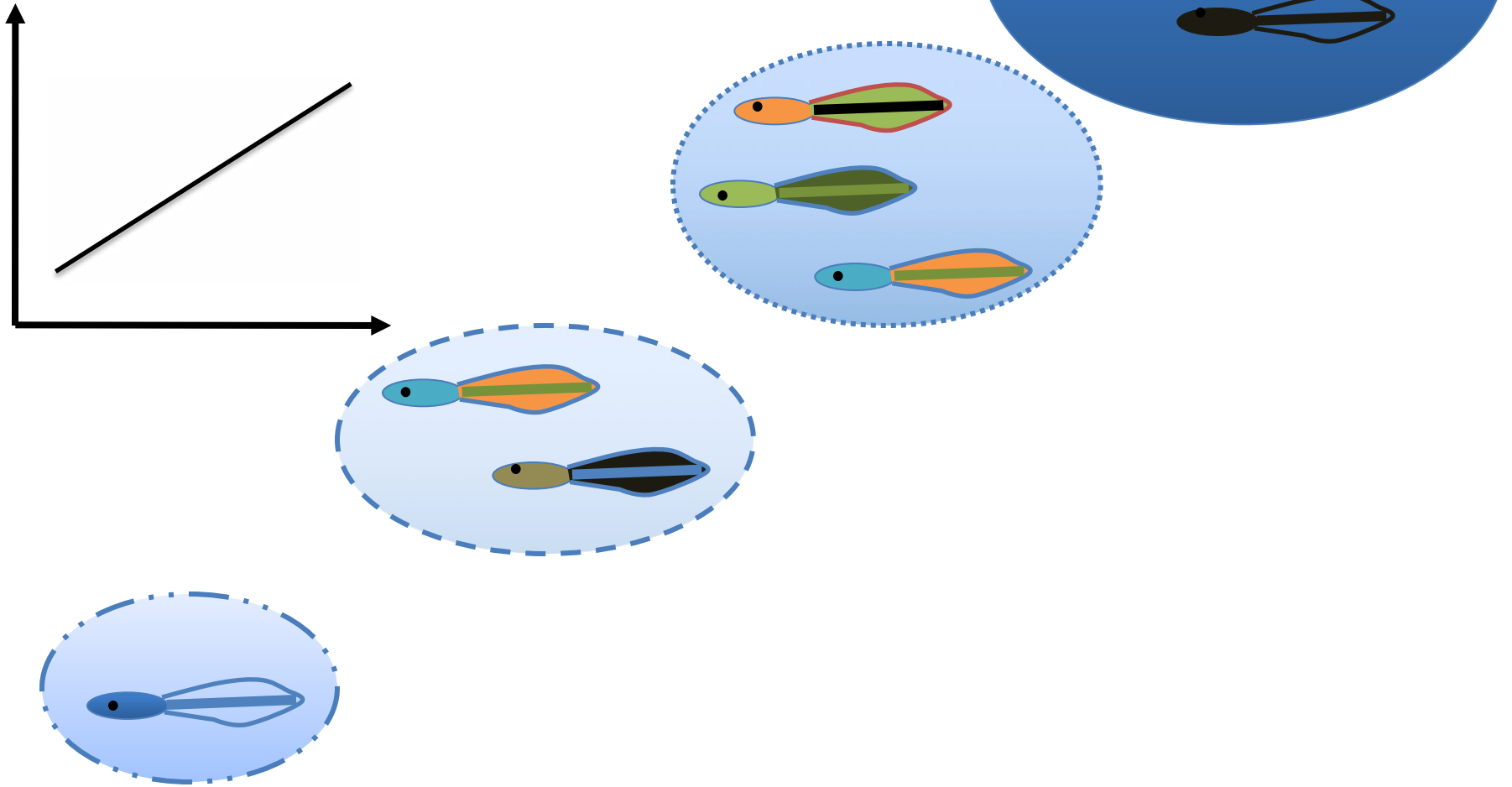
Hidroperíodo

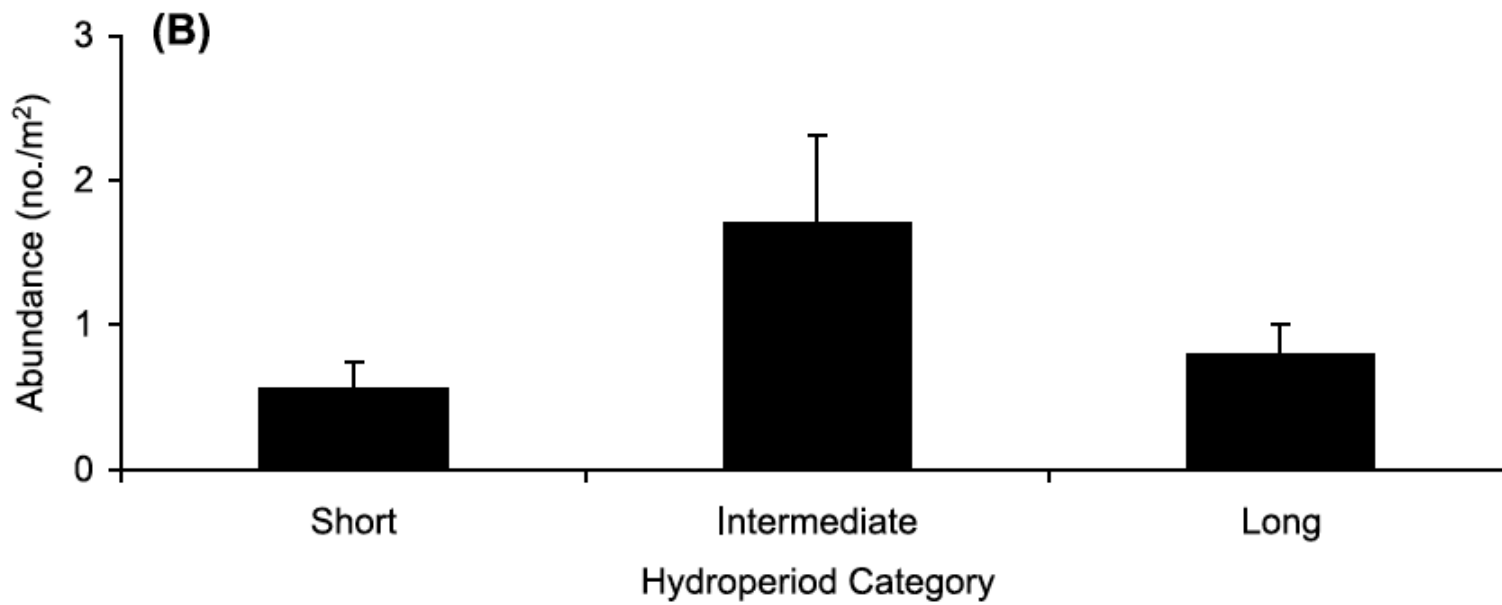
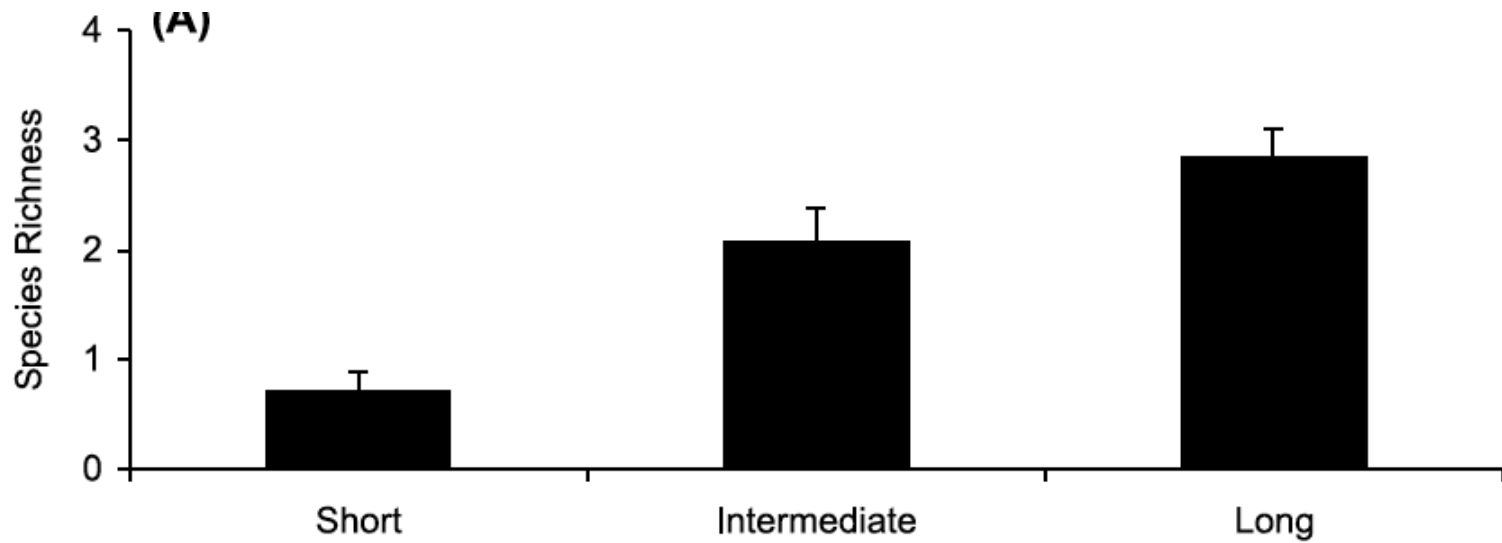
Modelo clásico (Heyer et al. 1975;
Wilbur, 1980)

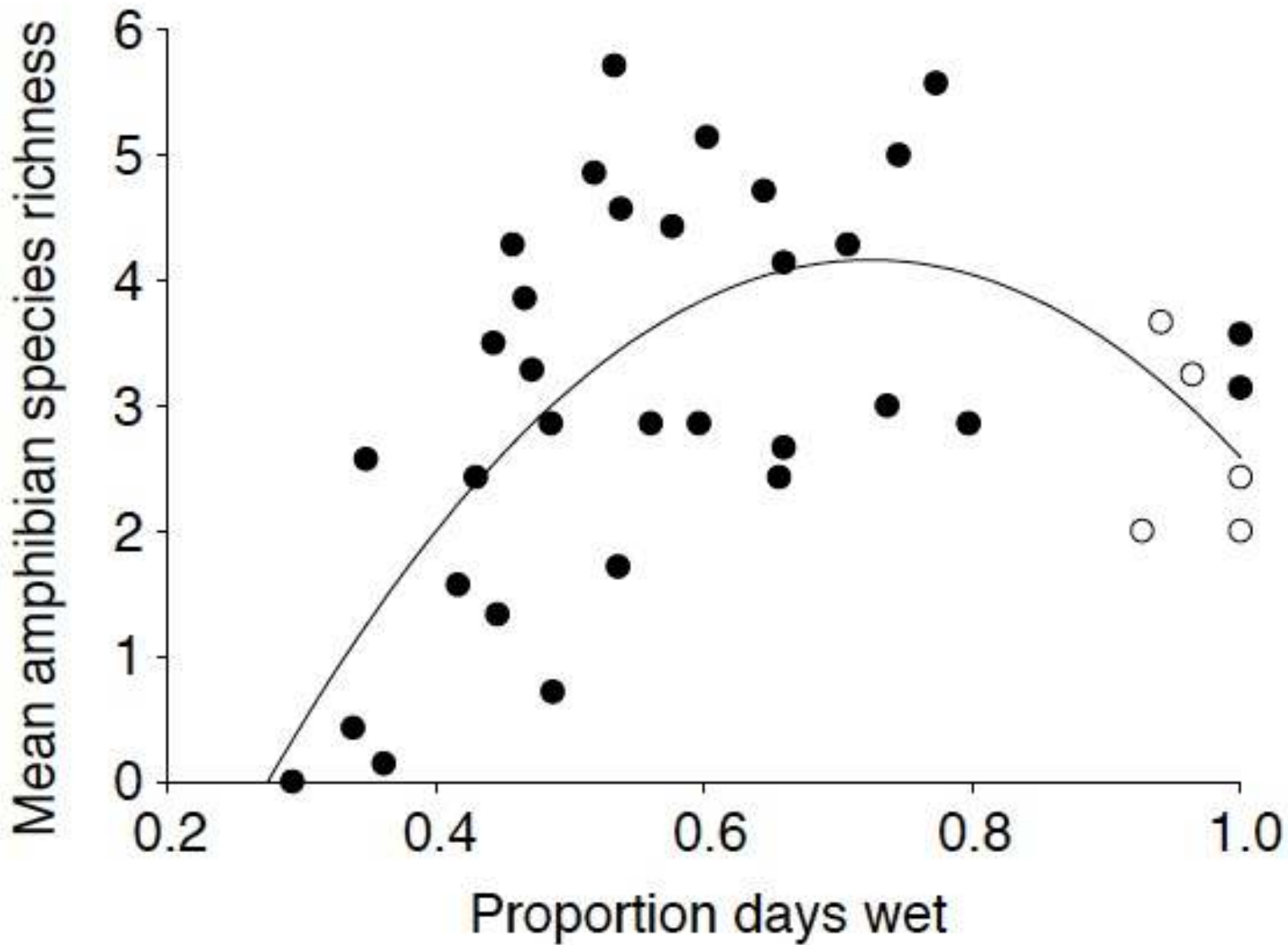


Hidroperíodo

Resultados recientes (e.g., Semlitsch *et al.* 1996, Wellborn *et al.* 1996; Babbitt *et al.* 2003)







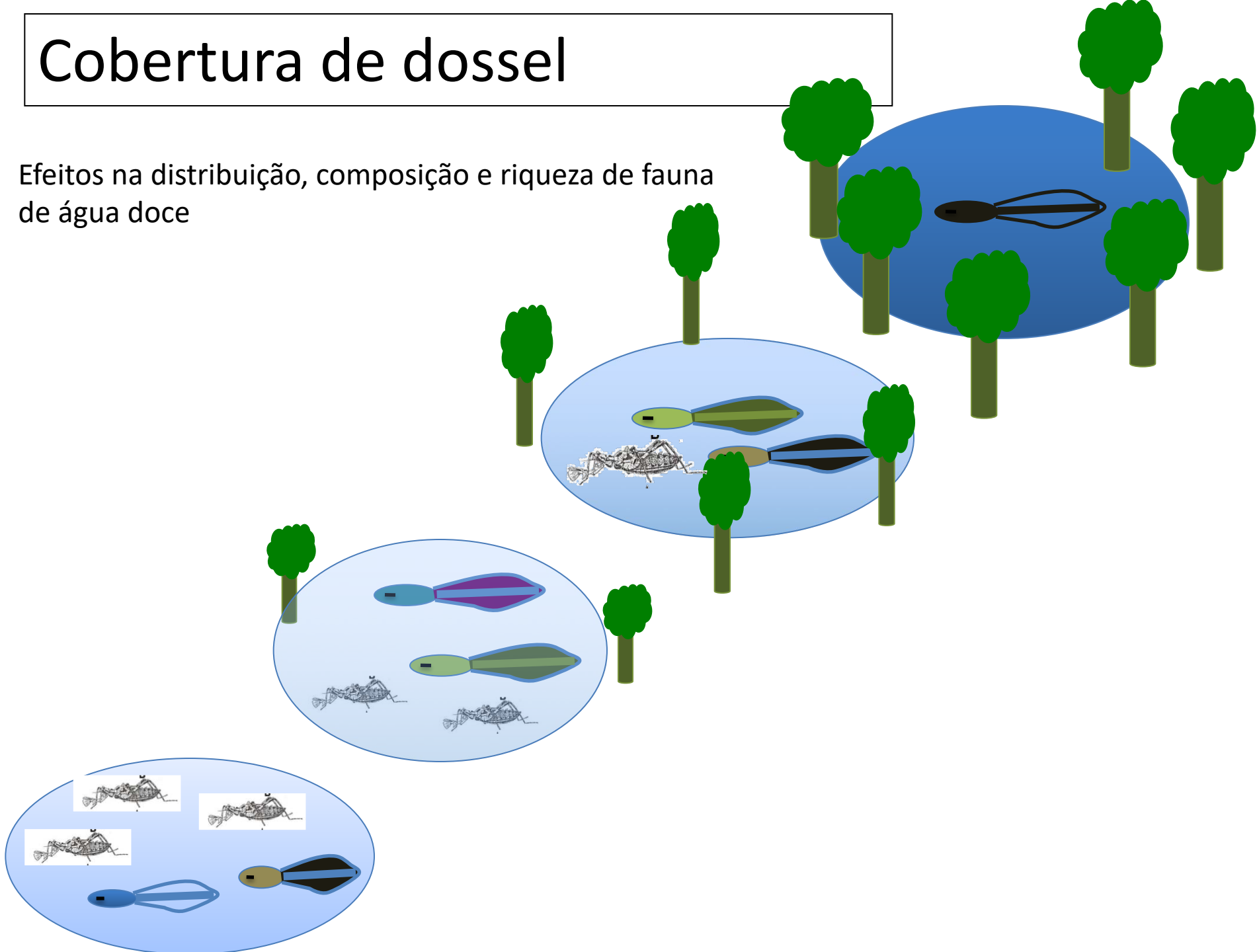
	Pond	Species													
		H. scutellatum	A. maculatum	R. sylvatica	B. americanus	A. laterale	A. tigrinum	P. triseriata	H. versicolor	P. crucifer	N. viridescens	R. clamitans	R. pipiens	R. catesbeiana	R. pallustris
	Willow Pond														
	Southwest Woods Pond														
	North Fence Pond														
	Uzzell's no. 1														
	West Woods Little														
	Spring Pond South														
	North Fence Swamp														
	Red Maple Swamp														
	Big Island Pond														
	Spring Pond North														
	Dreadful Hollow														
	West Woods Big														
	Ilex Pond														
	West Marsh no. 10														
	Gravel Pit Marsh														
	Gravel Pit Pond														
	West Marsh no. 11														
	Cassandra Pond East														
	Buck Hollow														
	Crescent Pond														
	Star Pond														
	West Marsh no. 6														
	Uzzell's no. 4														
	Buffer Zone Marsh														
	Cattail Marsh														
	Aspen Grove Pond														
	Cassandra Bog West														
	Dreadful Swamp														
	Grunge Pond														
	West Marsh Dam Pond														
	George Pond														
	Burt Pond														
	Fishhook Marsh														
	Southwest Swamp														
	Crane Pond														
	East Marsh														

↑ Increasing canopy cover

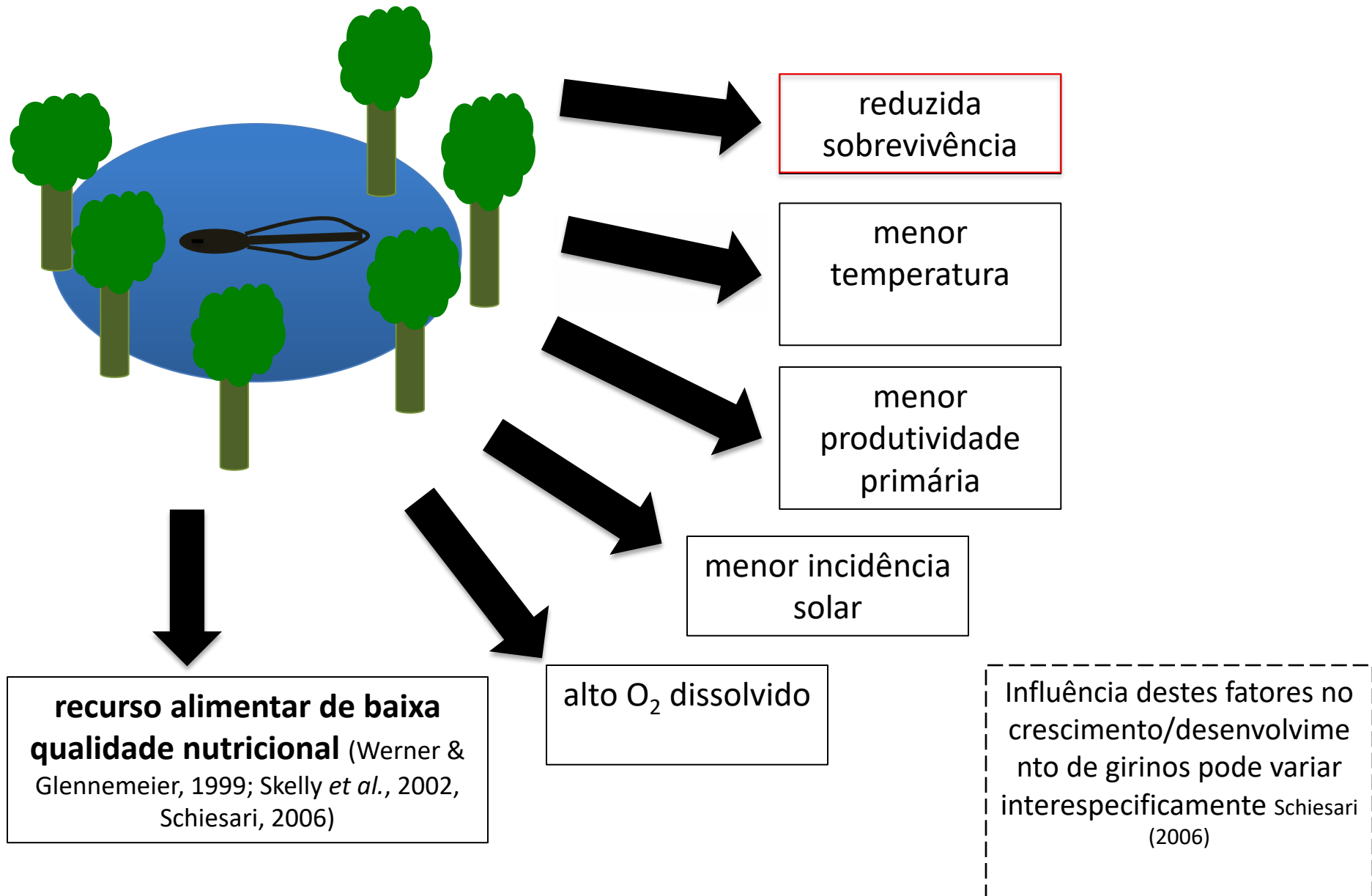
↓ Increasing area and hydroperiod

Cobertura de dossel

Efeitos na distribuição, composição e riqueza de fauna de água doce



Introdução



Poças e brejos PNSBocaina



AP1



AP2



PP1



PP2



PP3



PP4



BP2



BP5



BP9



PT1



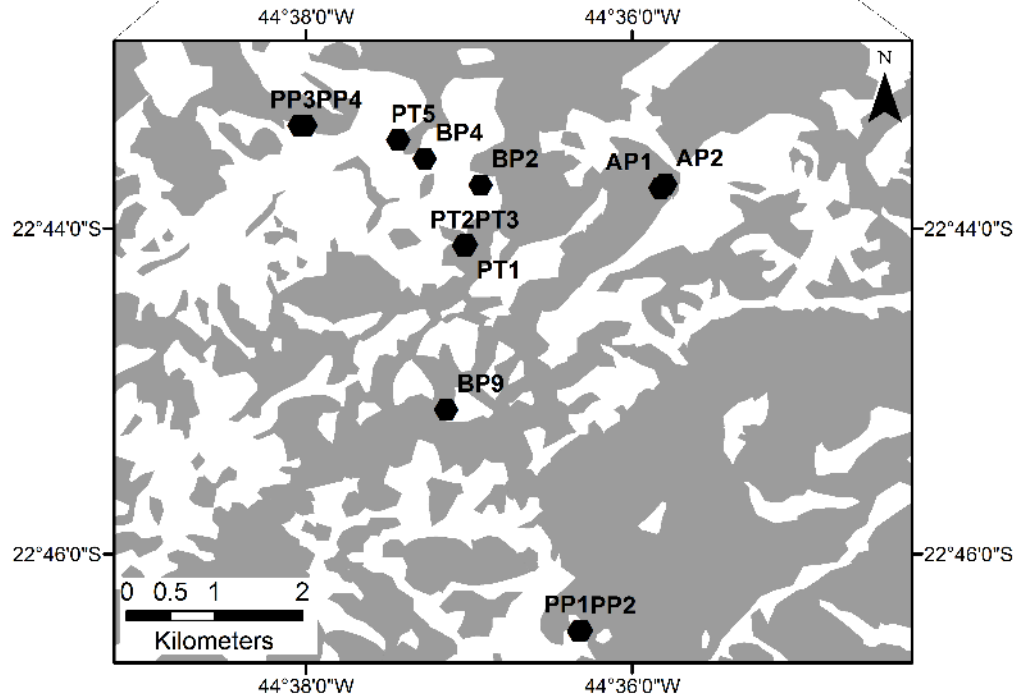
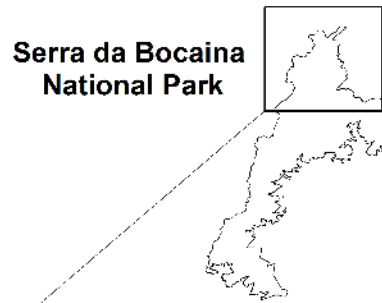
PT2



PT3



PT5



PP4 - Conde D' eu

PP3 - Conde D' eu

PT5 - Fl. Mariana

BP4 - Paredão

Brajo FAz. Fl. Mariana

BP2 - Nasc. Éder

PT2 - base

PT1 - Base

Pt3 -

AP2 - Pte. Alta

AP1 - Pte. Alta

BP9 - atalho

pp1 PP2

© 2012 MapLink/Tele Atlas
Image © 2012 GeoEye

Google earth

2288 m

Data das imagens: 10/21/2010

22°45'01.72"S 44°36'34.66"O elev 1437 m

Altitude do ponto de visão 11.76 km

PP3 - Conde D' eu
PP4 - Conde D' eu

PT5 - Fl. Mariana
Brajo FAZ. Fl. Mariana

BP4 - Paredão

BP2 - Nasc. Eder

AP2 - Pte. Alta
AP1 - Pte. Alta

PT2 - base
Pt3 -

PT1 - Base

BP9 - atalho

SP-221



Image © 2011 GeoEye
Image © 2011 DigitalGlobe
© 2011 MapLink/Tele Atlas

PP1
PP2
Google earth

400 m

Data das imagens: 10/21/2010 2002

22°45'42.59"S 44°36'45.58"O elev 1430 m

Altitude do ponto de visão 2.76 km

