

# How is life in temporary ponds?

## An experimental study of regulating factors in temporary ponds

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### Temporary ponds



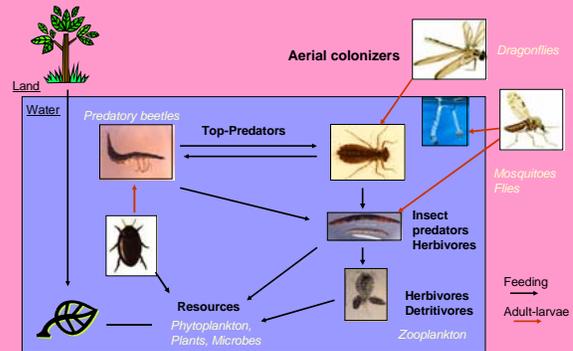
Keep water for a few weeks - fills up with water in early spring and dries out in the summer

No fish = lower predation than in lakes

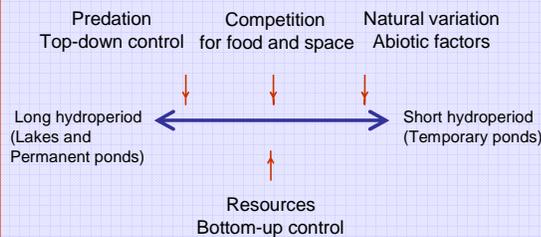
Important habitats for wildlife (frogs, mammals, birds)

Unique species that do not occur elsewhere - specialized to survive pond drying, rapid growth and development, terrestrial or resting stages, overwinter as eggs or larvae or burrowed in the pond bed

70% of all temporary ponds have disappeared due to human alterations of the landscape (agriculture etc.)



### Permanent vs. temporary waters



### Hypotheses

1. Strong natural variation within and between years
2. Leaf litter is an important source of nutrients and food for insects and zooplankton in temporary ponds
3. Insect predators regulate other insects in temporary ponds

### Methods

Adding and removing large insects (predators) and Leaf litter (resources) in large pond enclosures  
Compare to control enclosures



Collection of insects and zooplankton      Net prevent colonization of insect predators

### Results



No Aerial colonization results in less predators



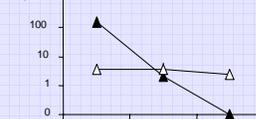
Insect predators feed on zooplankton. Less insect predators = lower predation = more zooplankton

Zooplankton eats microbes -> higher abundance of zooplankton results in lower abundance of microbes

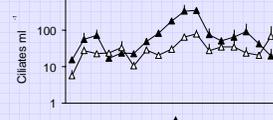


— Control  
— No aerial colonization

### Mosquitoes and Midges



### Ciliates



△ Control  
▲ + Leaf litter

### Conclusions

Predation and Resources influence the food web in temporary ponds

The manipulations resulted in trophic cascades = predators -> midges -> zooplankton -> microbes

Treatment effects changed with time

The natural variation was stronger than the biotic factors

To preserve the function and diversity in temporary ponds it is important to keep the surrounding vegetation (source of resources) and adjacent water bodies (source of insect colonizers)