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Non-lethal effects of dragonfly predators on the interactions between the tadpoles of two Neotropical hylid frogs [poster]

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Non-lethal effects of dragonfly predators on the interactions between the tadpoles of two Neotropical hydrid frogs

Zacharia J. Costa & James R. Vonesh

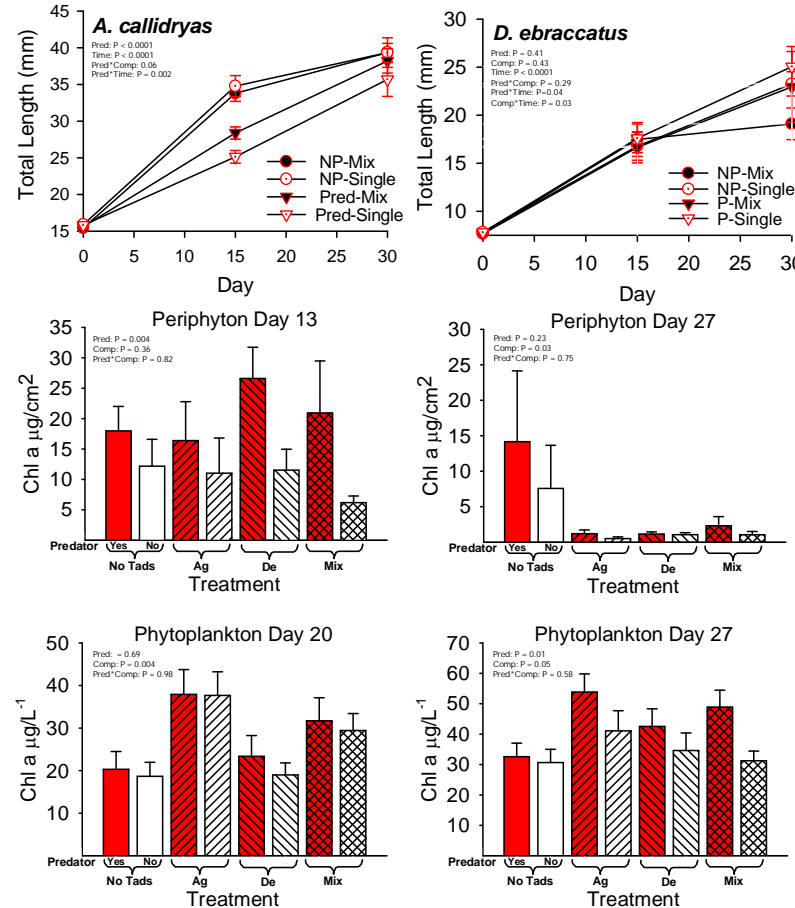
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Introduction

Prey often alter their phenotype in response to perceived predation risk in order to reduce their vulnerability. These non-consumptive predator effects can vary through ontogeny and between prey species due to differences in the relative costs and benefits of their plastic responses. Such costs often involve altered resource acquisition and growth rates, thus having the potential to affect competitive interactions and basal resources of the prey.

Here we examine how cues from the predaceous dragonfly nymph (*Anax amazili*) affect growth in tadpoles of two Neotropical tree frogs (*Agalychnis callidryas* and *Dendropsophus ebraccatus*) and their interactions with each other and their resources.

Results



A. callidryas growth

- Predators initially decrease growth but sizes then converge
- With predator cues, *D. ebraccatus* increases growth

D. ebraccatus growth

- Predators increase and *A. callidryas* decreased growth

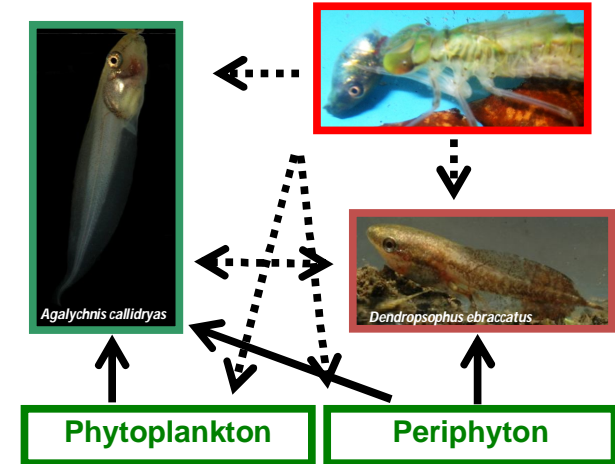
Periphyton

- Predators initially increased periphyton by 100% across treatments but tadpoles of both species strongly reduced periphyton by day 27

Phytoplankton

- Tadpoles and predators both increased phytoplankton

Conclusions



- Tadpole growth responses to predators and competitors differed between the species and through their development
- Growth responses most likely involved resource levels and their perception of relative risk, as predators increased both resources. The lack of a tadpole x predator interaction with resources suggests this is not only driven by a trait mediated trophic cascade, but by other indirect effects as well
- This study demonstrates how non-consumptive effects of predators on herbivores can be influenced by both species identity and ontogeny, in addition to predator mediated indirect effects on primary producers.

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Methods

- Smithsonian Tropical Research Institute, Gamboa, Panama
- 2 X 4 factorial experiment which crossed predator cues (caged dragonfly larvae) with 4 tadpole compositions: (1) None, (2) 25 *A. callidryas*, (3) 25 *D. ebraccatus*, (4) 25 both
- 5 replicates in 400 L mesocosms for 4 wks
- Tanks inoculated with pond microorganisms
- Caged predators fed 2 tadpoles d⁻¹
- Effects of predator, tadpole composition, and time on tadpole size and resource abundance analyzed with LMM

