Predator phylogenetic diversity decreases predation rate via antagonistic interactions

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## Introduction

We test three related hypotheses:

1. *species co-occurance*: closely-related predators occur together more frequently than less-related predators, due to their similar habitat requirements. Additionally, very closely related species never co-occur because they are too similar.
2. *diet similarity*: similarity in diet (as measured by feeding trials) decreases with phylogenetic distance.
3. *ecosystem-level effects*: similarity in the effect of predators on whole ecosystems declines with phylogenetic distance. Additionally, the non-additive effect of predators will have a greater absolute value when their phylogenetic diversity is larger.

## Methods

## Results

### metabolic capacity and phylogenetic distance

Predators which are closer in the phylogeny are more likely to occur in the same bromeliads, and to do so with a similar overall metabolic capacity.

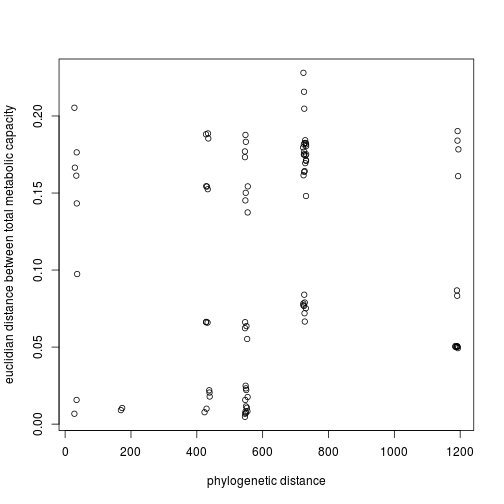
### diet similarity and phylogenetic distance

Phylogenetic distance was not correlated with similarity in diet (F1,4=0.2807,P=0.6243). Indeed, all predators in this system appeared to feed readily on a wide range of prey species.

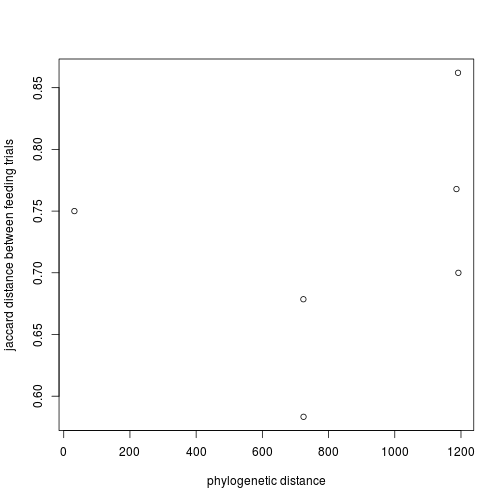
### Ecosystem-level effects and phylogenetic distance

All increases in predator phylogenetic diversity beyond damselflies resulted in a reduction of prey mortality; however, these did not reduce predator survivorship.

### Figures



FALSE



FALSE

### Tables

#### Table 1: phylogenetic distance effects on the correlation of metabolic capacity among predators.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| **PD** | 1 | 0.3631 | 0.3631 | 3.938 | 0.05028 |
| **Residuals** | 89 | 8.205 | 0.0922 |  |  |

#### Table2:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Df | Sum Sq | Mean Sq | F value | Pr(>F) |
| **PD** | 1 | 0.002891 | 0.002891 | 0.2807 | 0.6243 |
| **Residuals** | 4 | 0.0412 | 0.0103 |  |  |

## Discussion

## Works Cited