

# Predator phylogenetic diversity decreases predation rate via antagonistic interactions

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## Introduction

We test three related hypotheses:

1. *species co-occurrence*: 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 ( $F_{1,4}=0.2807, P=0.6243$ ). 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

## Tables

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
<b>PD</b>	1	0.3631	0.3631	3.938	0.05028
<b>Residuals</b>	89	8.205	0.0922		

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

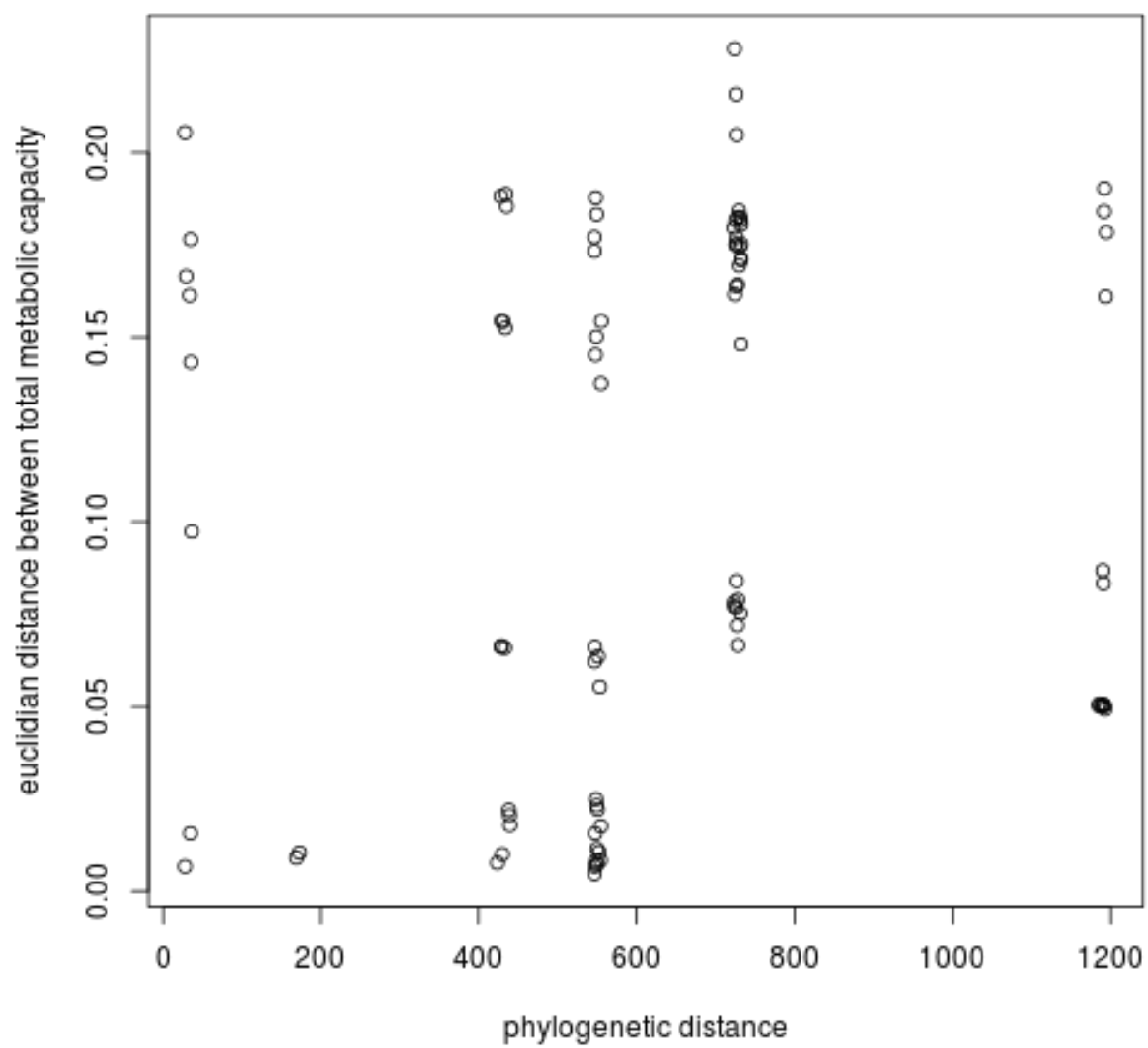


Figure 1: FALSE

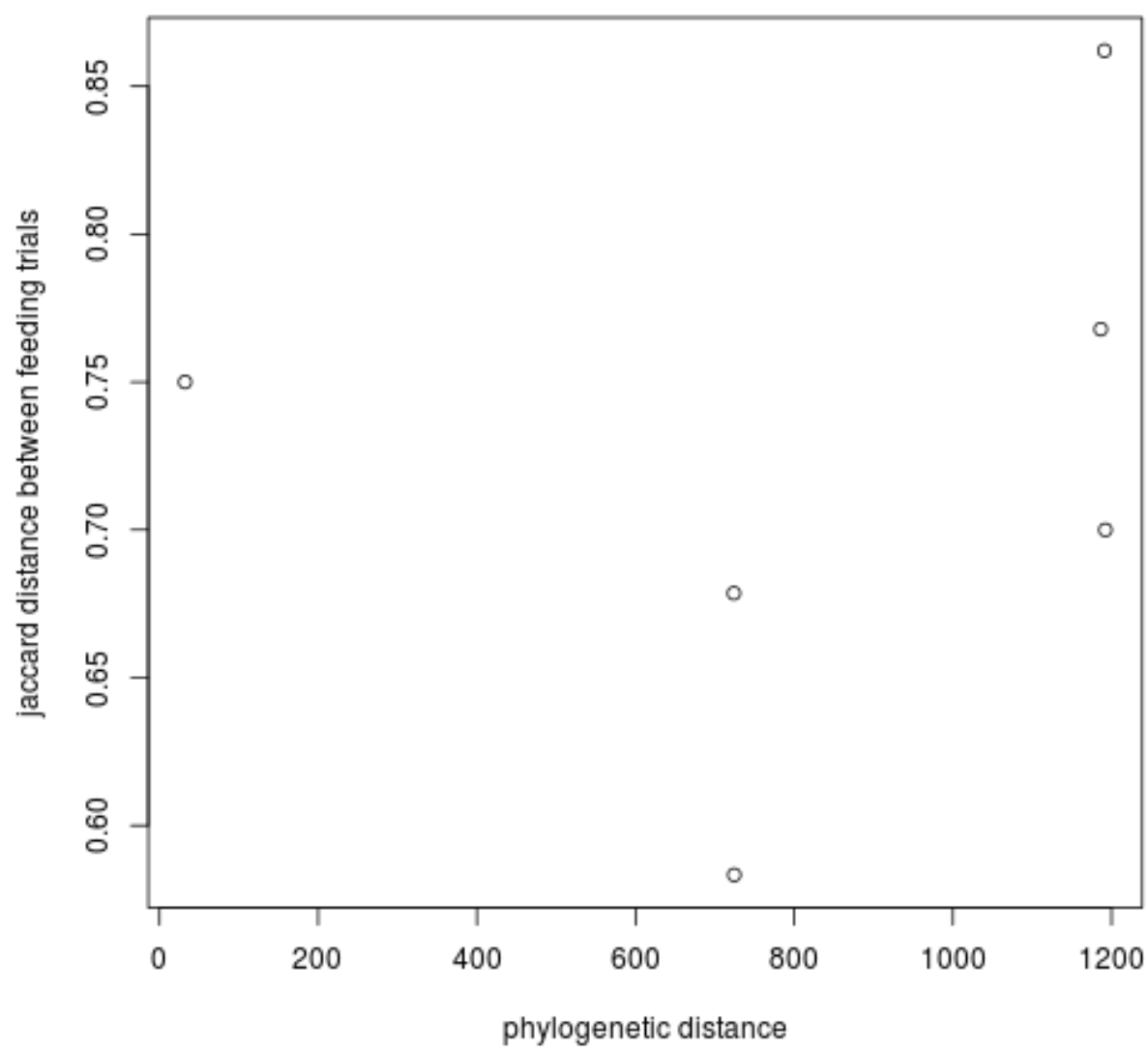


Figure 2: FALSE

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
<b>PD</b>	1	0.002891	0.002891	0.2807	0.6243
<b>Residuals</b>	4	0.0412	0.0103		

<sup>29</sup> **Table2:**

<sup>30</sup> **Discussion**

<sup>31</sup> **Works Cited**