

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. ($F_{1,53}=0.7394$, $P=$

```
Error in pf(meta_phylo_lm$fstatistic[1], meta_phylo_lm_summary$fstatistic[2], :  
  Non-numeric argument to mathematical function  
).
```

diet similarity and phylogenetic distance

Phylogenetic distance was not correlated with similarity in diet ($F\sim$

```
Error in eval(expr, envir, enclos) :  
  object 'diet_phylo_summary' not found  
,
```

```
Error in eval(expr, envir, enclos) :  
  object 'diet_phylo_summary' not found
```

$\sim=$

33

34 Error in eval(expr, envir, enclos) :
35 object 'diet_phylo_summary' not found

36 ,P=

37

38 Error in pf(diet_phylo_summary\$fstatistic[1], diet_phylo_summary\$fstatistic[2], :
39 object 'diet_phylo_summary' not found

40). Indeed, all predators in this system appeared to feed readily on a wide range of prey
41 species.

42 Ecosystem-level effects and phylogenetic distance

43 All increases in predator phylogenetic diversity beyond damselflies resulted in a reduction of
44 prey mortality.

45 Figures

46 Discussion

47 Works Cited

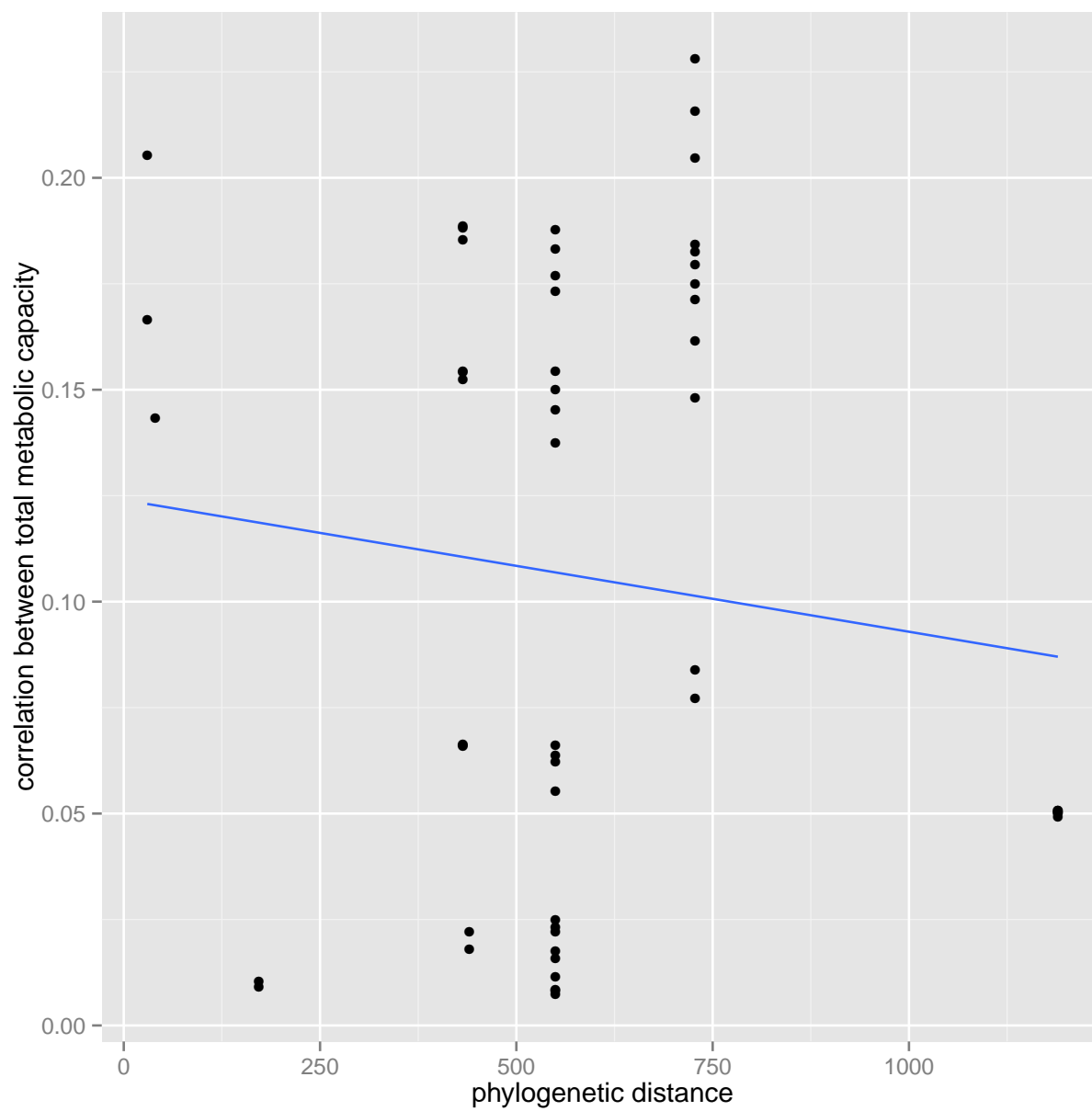


Figure 1: FALSE

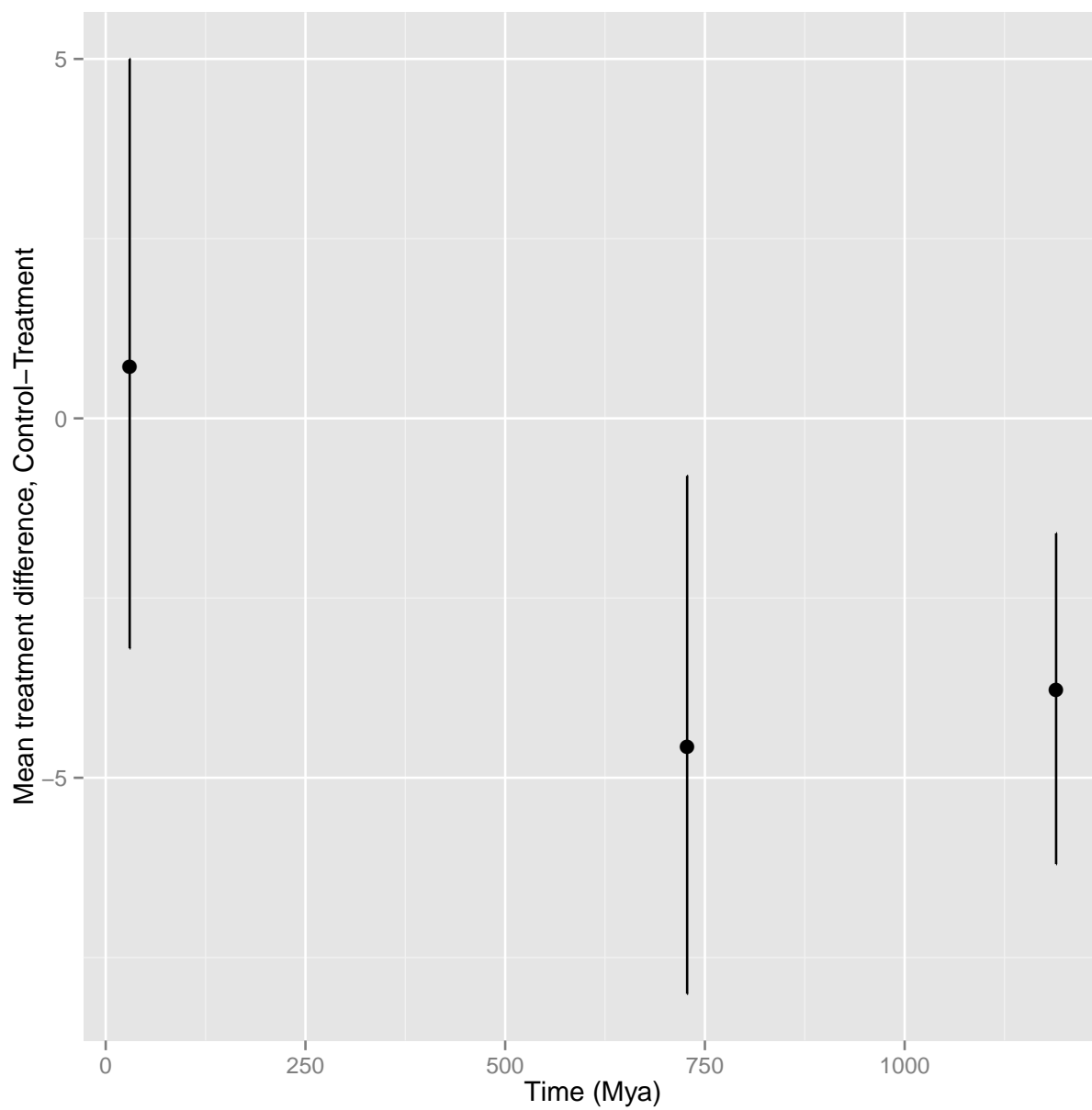


Figure 2: FALSE