Forecasting the spatio-temporal uncoupling of bumblebee-flower interaction networks

Michael D. Catchen [1,2] Paul CaraDonna [3,4] Jane E. Ogilvie [3] Francis Banville [5,6,2] Dominique Caron [1,2] Philippe Desjardins-Proulx [5,2] Norma R. Forero-Muñoz [5,2] Andrew Gonzalez [1,2] Dominique Gravel [6,2] Laura Pollock [1,2] Timothée Poisot [5,2] Tanya Strydom [5,2] Julian Resasco [7]

[1] McGill University [2] Québec Centre for Biodiversity Sciences [3] Rocky Mountain Biological Laboratory [4] Chicago Bontanic Garden [5] Université de Montréal [6] Université de Sherbrooke [7] University of Colorado Boulder

Correspondance to:

Michael D. Catchen — `michael.catchen@mail.mcgill.ca`

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Purpose: This template provides a series of scripts to render a markdown document into an interactive website and a series of PDFs.

Motivation: It makes collaborating on text with GitHub easier, and means that we never need to think about the output.

Internals: GitHub actions and a series of python scritpts. The markdown is handled with `pandoc`.

Abstract

Using a data set of [DESCRIBE EACH DATASET IN A NICE WAY], we predict a spatiotemporally explicit metaweb of interactions between bumblebees (*Bombus*) and wildflowers (within *find clade*). We integrate this data with crowdsourced occurrence data and climate data to [best paint the picture of the Colorado bumblebee-plant metaweb]. Using temporal climate data, we forecast how the spatiotemporal overlap of interacting species will change under proposed climate scenarios. We use this to estimate what interactions between bees and plants need the most attention to prevent the spatiotemporal decoupling of an interactions from threatening ecosystem functioning or the persistence of a species.

Introduction

- We estimate the Colorado bumblebee/wild-flower pollination metaweb using network embedding.
- Then decompose into spatial and temporally explicit network predictions
- Finally suggest a priority of sampling to improve our understanding of this system.

Data

Methods

Concept Fig

Metaweb Model

Phylogeny Construction

Feature Embedding

Relative Abundance

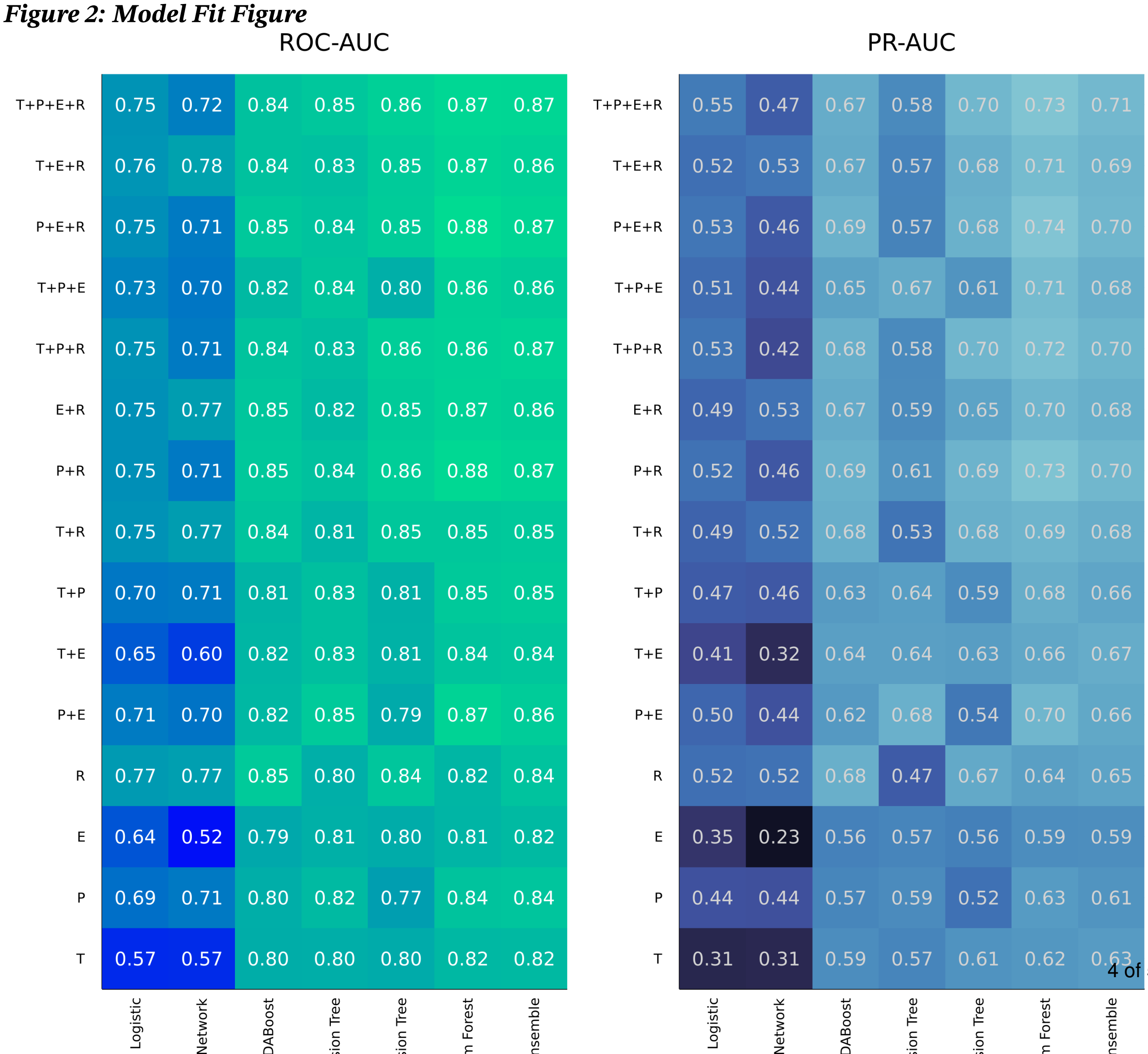
Phylogenetic features

Environmental niche features

Temporal niche features

Metaweb Model Fitting and Validation

Figure 2: Model Fit Figure



Spatiotemporally Explicit Networks

Now that we have a metaweb…..

Figure 3: Maps over time figure and Prob(Connectance) vs. Month figure

Sampling Prioiritization

Figure 4: Uncertainty and sampling priority map

Discussion