Temporal turnover of bee-flower interactions

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Dynamics of bee-flower interactions

Bee-flower interactions differ drastically between subsequent seasons or even weeks. However, this high interaction turnover has been largely overlooked by previous studies, which assume a static picture of pollination networks. Understanding how and why bee-flower interactions vary over time is crucial in the conservation of bees, and in the continuation of their pollination services. Moreover, climate change can result in fluctuating flowering times, thereafter indirectly sabotaging bee-flower interactions.

We ask...

- Does temperature, precipitation or humidity affect bee-flower interaction turnover?
- Do bee-flower interaction turnover rates differ between seasons?
- Do bee-flower interaction turnover rates of the tropics differ from those of the temperate regions?

Data

- *Species level:* More than 200 different species of plants and bees
- *Interactions level:* More than 600 unique interactions and more than 3500 recorded interactions across 39 months

Aim: To investigate the effect of climate on bee-flower interaction turnover.

Calculating turnover rates

Whittaker's dissimilarity index, β_{int}, reflects the difference between two successive monthly networks.

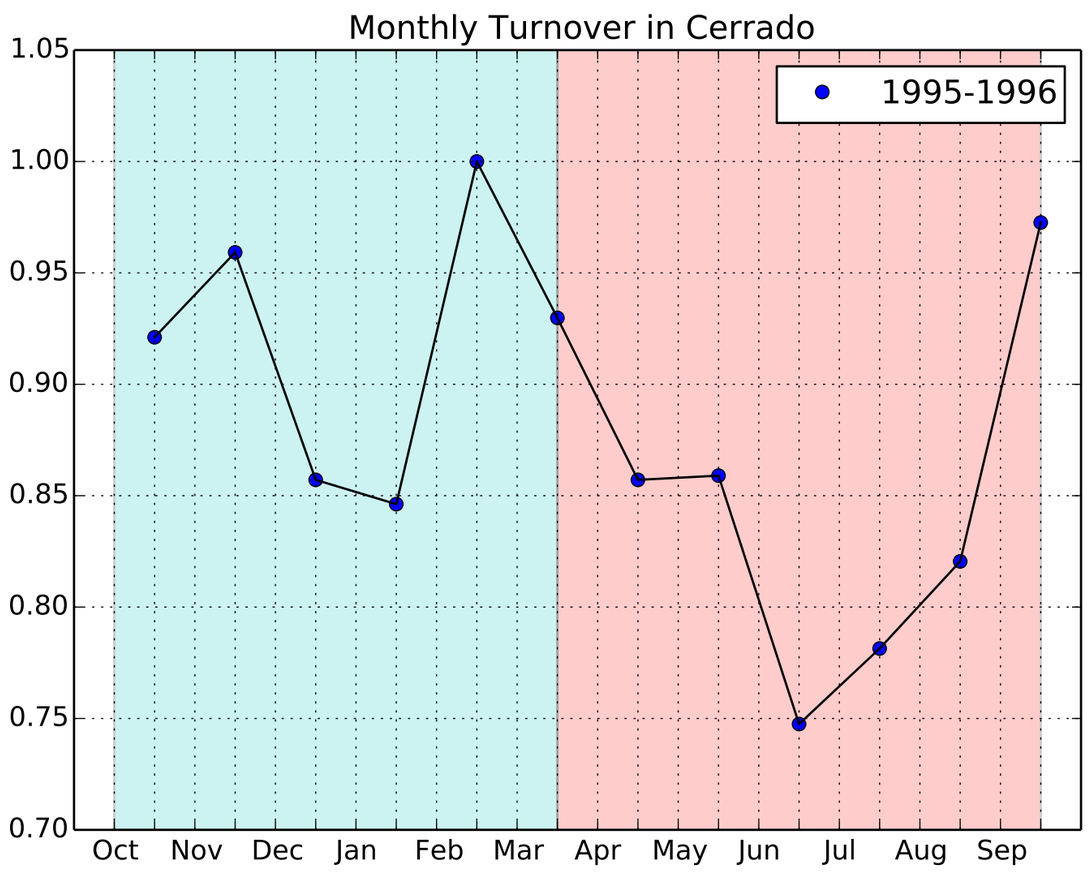
$$\beta_{int} = \frac{a+b+c}{(2a+b+c)/2} - 1$$

where:

- a is the number of interactions shared between the two networks
- b and c are the number of unique interactions in the two networks

β_{int} ranges from 0 to 1; a higher β_{int} reflects a higher difference between monthly networks.

Preliminary Results



graphic note

Conclusions and Ongoing work

- Monthly bee-flower interaction turnover is high.
- There are no significant differences between turnover rates within seasons and between seasons.
- There are significant differences between turnover rates in the tropics and in temperate regions.

Possible challenges

- Insufficient data; However, β_{int} is rarely affected by small sample sizes.
- If climate does not affect bee-flower interaction turnover, other factors to be considered include bee body size and lifespan.

References(TOBE DONE):

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