

manuscript

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September 16, 2022

Notes

Community composition is a primary driver of epidemics caused by generalist parasites. Dilution effects are an example of community composition influencing parasite transmission and species richness can be predictive of dilution effects when the necessary conditions are present. These conditions include a correlation between relative abundance of hosts, the rarity of hosts, and predictable assembly/disassembly of communities. For example, if host competence correlates positively with relative abundance and if more competent hosts are less likely to be lost as communities disassemble, then species richness can be predictive of parasite transmission via these mechanisms. Another way to understand this relationship is to use community competence as a community-level metric for how competent a community is. When dilution effect conditions exist, community competence will predictably increase as species are lost in a community. However, similar community competence values can be achieved via alternative community compositions that may not follow a dilution effect pattern. If host species still vary in their competence and if there is still a positive correlation between relative abundance and competence BUT if assembly/disassembly does not follow a dilution effect pattern, then species richness is not a useful predictor for parasite transmission but community competence can still be predictive. If assembly/disassembly is random, then high competence communities will exist simply by chance. Alternatively, if there is not a correlation between relative abundance and host competence but there are dilution effect patterns in assembly/disassembly, then species richness is still not useful, but community competence is. In a situation where the rare host is most competent, high species richness communities may be the most competent. Also, if competence is distributed randomly with high variance, then community competence may vary unpredictably with species richness, but community competence can still be predictive of parasite transmission.

- Dilution effects depend on
 - a positive correlation between relative abundance and competence
 - a correlation between relative abundance and assembly pattern
 - * i.e. higher relative abundance means less likely to be lost from a community
- Community competence should correlate with species richness if these conditions hold
- Community competence can still be high even if these conditions do not hold
- In empirical data, do we see these dilution effect patterns?
- If we do not see these dilution effect patterns, then are we still able to see high community competence values?
 - What drives these community competence values?
 - * Is it a rare but highly competent species, abundant but moderately competent species?
 - * How does evenness help to explain community competence?
- Other things to check
 - Variation in competence within species - is competence a robust trait or highly plastic?
 - Variation in qPCR values - how reliable are our estimates?

Introduction

Effects of diversity on disease exist (Ostfeld and Keesing 2012).

Methods

Results

Discussion

References

Ostfeld, Richard S., and Felicia Keesing. 2012. “Effects of Host Diversity on Infectious Disease.” *Annual Review of Ecology, Evolution, and Systematics*. <https://doi.org/10.1146/annurev-ecolsys-102710-145022>.