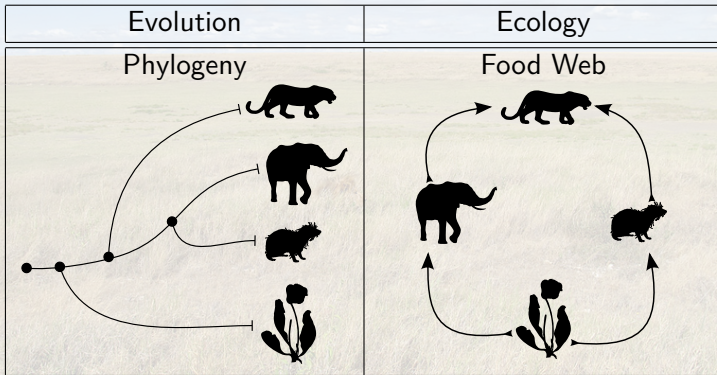


Stochasticity and Evolution in Food Webs

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Granada Seminar June 16, 2015
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species ARE related



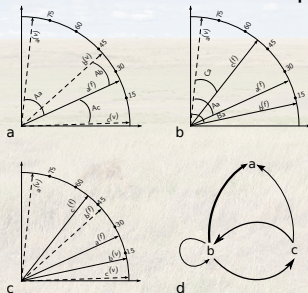
Evolution in/of Ecology

Evolution shaped the stochastic backbones of Food Webs

[Two images: Serengeti and Weddell]

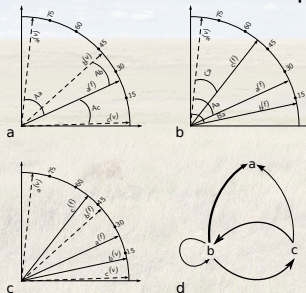
Food Webs embedded

► Random Dot Product Graphs



Food Webs embedded

► Random Dot Product Graphs



► Phylogenetic vs. Observed traits

$$\text{vcv}(\hat{X}|\tau, \text{model}) \text{ vs. } \text{vcv}(X)$$

More questions (than answers)

- There is phylogenetic signal

p-values anybody?

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20% 30% of variation explained

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$d \in \{2, \dots, 8\}$

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20% 30% of variation explained

- ▶ It saturates with dimensionality

$d \in \{2, \dots, 8\}$

- ▶ \therefore “fine wirings” may be deceiving

- ▶ Evolutionary model is inadequate

no interaction effects

(Not a) Conclusion

- Spoiler 1: Evolutionary distinctiveness vs. Web Centrality
Do evolutionary unique species play a keystone role in Food Webs?

(Not a) Conclusion

- ▶ Spoiler 1: Evolutionary distinctiveness vs. Web Centrality
Do evolutionary unique species play a keystone role in Food Webs?
- ▶ Spoiler 2: An ecological informed model of species evolution
maybe it's (almost) there.
I am looking at you, Ornstein and Uhlenbecki ...

Thanks!

Joint work with Daniel B. Stouffer (University of Canterbury)

Many thanks to Mike Steel; Carey Priebe; A. Mooers', D.B. Stouffer's & J. Tylianakis's labs; ...

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By the way, I'm looking for a postdoc.
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