Paper breakdown

1. Outline problem
   1. Coexistence + aggregation
   2. How are latitudinal trends of aggregation formed?
   3. What are their effects on diversity?
2. The data
   1. Latitudinal patterns of aggregation + rareness
      1. Need to define aggregation clearly here
   2. Make sense of data?
      1. Animal dispersers
      2. Things cause this
      3. Mechanism isn’t completely known
3. The model
   1. Outline
      1. Density-dependence
         1. Emphasize that models typically need to assume conspecifics affect other conspecifics more than others
   2. Simulation
      1. Similar to their shlooz
   3. Analytical results
      1. Insight into the aggregation / rareness
      2. Try to get insight into shlooz
4. Conclusions
   1. Improved theory
      1. Show how aggregation may be important
   2. Mechanisms
      1. AM vs EM + animal dispersal

**Hook**

* Compare something to homogenous
* Look at forests – not so
* Is this important?

**Introduction**

* Want to understand how drives spatial structure in of plant communities
* Want to understand how patterns of aggregation relate to biodiversity and species coexistence.

**So, what does this paper focus on?**

* Patterns of aggregation with latitude
* Using many forest plots from the ForestGEO network…
* Show that species with low abundance tend to be more spatially aggregated than more abundant species in forests throughout the world
  + Refer to this as the a negative aggregation-abundance relationship
  + So, species that are more common tend to be less aggregated that common species
* Using many forest plots from the ForestGEO network…
  + Show there is a latitudinal gradient in the strength of this negative aggregation–abundance relationship that increases from tropical to temperate forests

**What causes this?**

* latitudinal gradients in animal seed dispersal and mycorrhizal associations may jointly generate this pattern
  + Explain animal dispersal
  + Explain how mycorrhizal associations would be important

Impacts on biodiversity: the model

* The idea goes like this…

**Model highlights**

* Typically, if one assumes these effects are identical between species, you don’t get this kind of stabilizing attractor
  + Or, not much of one
* So, it’s genuinely the interaction between that causes things

**Conclusions**

* Another piece of evidence that many of our previous models, which don’t consider space or consider space “implicitly” may be missing key processes

**My opinion**

* Impressed with the theory of this paper and a companion paper
* Also, relatively to previous paper, very impressed with improvements in the writing / clarity, which is so important in science
* Not convinced this is THE mechanism that is important in tropical forests, but it very clearly demonstrates that our theories need to be combined with [xxx]

**Practical things / code / simulations**

* Build model for simulations
  + Maybe 10 or 15 species…
* Translate model outputs into animations
  + Yikes! But it will work…
  + Maybe just sample area ?
* Very good test case

Need to explain

* Neutral vs. having an attractor
* Rare species advantage
  + Rebound when rare

Things to note

* dispersal + aggregation
  + note that things seem superficial the same
  + matter what happens over time,