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12/11/15 Update

This semester I have been primarily researching existing models of plant and seed dispersion although I also wrote a basic model with a simple dispersion system.

The models I researched were variations of seed-bank plant dispersion models. In these models, plants create seeds, and the seeds are dispersed by factors such as wind. The seeds can then either grow into plants, enlarging the population, or be stored in a seed bank, from which they can grow in later years. Unfortunately, I have not found models which take into account dispersion by water, which is the primary vector of dispersion for the seeds of the plant species I am looking at, so I need to research more into this specifically.

Thus far this semester I have written a 2 dimensional discrete seed-bank model that does not take into account environmental factors. Because this model does not take into account environmental factors, it does not model all 3 species as the species do not directly compete and instead occupy different ecosystem niches. The current dispersion model that is implemented is a form of random-walk. In this model, the seeds are only able to either move to adjacent cells or stay within the same cell. This is unrealistic and does not take into account both plant density and water currents. I currently have a model that needs to be tuned that takes into account plant density when calculating to where the seeds move; this is important because seeds will be less likely to pass through population-dense areas.