Community Ecology: Mid-term Exam (75 points total)

- You will be graded on both the quality of your answer and the quality with which you present your answer (ie, write good essays that are made up of good paragraphs that are made up of good sentences…). Please answer all of the questions.
- Please use a word processor to prepare your **double-spaced answers** to the questions.
- If you choose to answer a question using your notes, the assigned reading, or any other source, be sure to let me know that in your answer.
- The exam is due **Friday, March 11 by 12:15pm**, via email to me.
- You must work alone; no collaboration of any kind is permitted.
- Let me know if you have any questions.

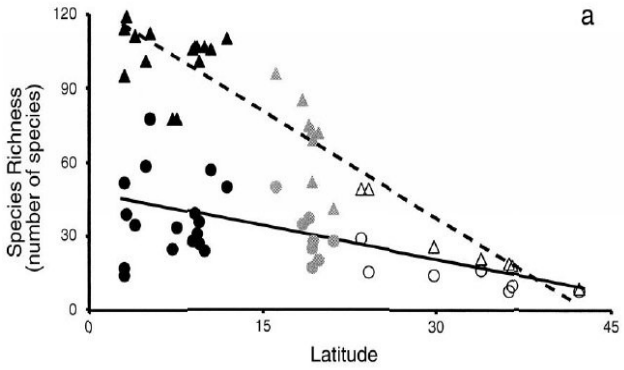
1. What is the key conceptual difference between rarefaction and a simple diversity index, such as Shannon diversity (H')? Give an example of when and why you would use each. [10 points]

2. You probably have heard the saying “Correlation is not causation.” With that in mind, carefully read the paper cited below and offer an alternative explanation for the key pattern (in Figure 1) described by the author. [10 points]

   Available on the Blackboard site under 'Readings':
   Grim, T. (2008) A possible role of social activity to explain differences in publication output among ecologists. *Oikos* 117: 484-487.

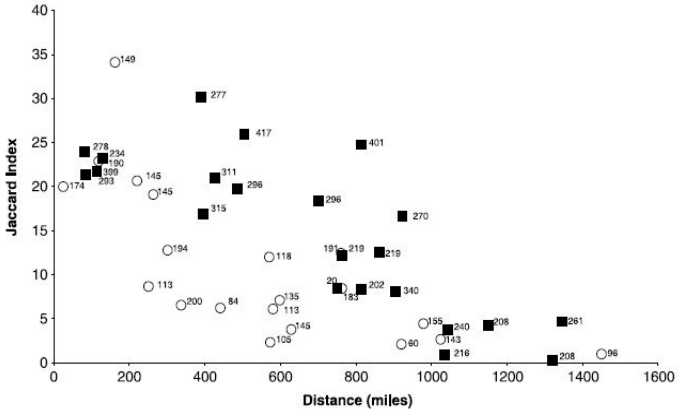
3. Imagine three communities, each with 25 individuals. If each community has alpha diversity of 25 species, what would have to be true for gamma diversity to be equal to alpha diversity? Alternatively, what would have to be true for beta diversity to be as high as possible? What is the maximum value beta diversity could be? [10 points]

4. The figure to the right is from Stevens & Willig 2002. How would you use the figure to tell Lawton that there ARE general laws in ecology? How would you use it to say something about the contingent nature of laws in ecology? [10 points]



5. Realized niches are often thought to be smaller than fundamental niches. Why is this? The best answer will use a specific example [10 points]

6. The figure to the right is Figure 1 from McKinney 2004. What does it show about the relationship between community similarity and geographic space? Why did McKinney have to 'control for' this relationship in order to study biotic homogenization? [10 points]



7. How would you design an experiment to test for top-down control (i.e. trophic cascade) in a system consisting of predatory lizards, herbivorous arthropods, and plants? Specifically, what would be the experimental design, what would you measure about the system, and what would you expect to observe if a trophic cascade is operating [15 points]?