

Final exam

Due to me (by paper or by email) on the day of the final, **Dec 11th by 5:00 PM – no late papers allowed.**

The basic goal is to write a **4-7 page paper**. This paper *will* be graded for grammar, writing etc as well as content. In short treat it like a grant proposal. It should be **double spaced with 12 point type**. There is a **maximum of seven pages!**

In grading, I will recognize that some of you are in your first year of graduate work and some are in your last. If you are just starting out, just give me as much description as you can about what you are thinking of working on. In writing, you may broadly bounce ideas off of colleagues (as you would for a grant proposal), but in the end you need to do most of the thinking and all of the writing. You should write a *brief* acknowledgements section at the end as if this were a refereed paper to make clear the intellectual debt you have for these ideas.

You should include one paragraph on each of the topics below (in the order given below):

1. What is your **scientific question**? Give the scientific background of why this is important. You can include a couple of bibliographic references for this if you want but it is not necessary. Remember in a grant proposal, you know more than your reader – your job is to educate a generally trained ecologist to your specific question.
2. Depending on the kind of work you are doing (see answer to #4) you may not need **a priori hypotheses**. But if you need a priori hypotheses describe them as best as you currently are able. If you don't justify why.
3. What **variables** will you measure? Are they categorical or discrete and why are you measuring them that way? What variables do you think are dependent or independent? Do you expect interactions?
4. We have discussed several continua of **scientific inference** including: controlled experiment (laboratory vs field) vs. natural experiment vs. observation; falsification/hypothesis testing vs. prediction; deduction vs induction, empirical vs. model; phenomenological vs. mechanism and possibly others. Discuss where you anticipate your work to fall on most or all of these axes. This should definitely be your longest paragraph and may be broken into two or three paragraphs if you wish. You probably should cite some of the papers we read here (no need to make a bibliography just stick the author(s) and year in parentheses).
5. We have also discussed a variety of **statistical philosophies** (frequentist, likelihood, bootstrapping/MonteCarlo, and Bayesian) and statistical goals (summarization, prediction, significance). We have also discussed a broad variety of statistical tools. Discuss what statistical approaches you anticipate using in your work. **DO NOT** submit any actual statistical analyses!
6. We have talked about **generalizability** from your results. What scale, scope, and heterogeneity levels do you anticipate that your research will be applicable to?
7. Describe your **experimental design** (as it exists or how you plan to go about figuring it out)?
8. Very generally, what **statistical methods** do you anticipate using?