

Plant Ecology: Bi 471

Research Paper Assignment:

Prepare a 2-3 page single-spaced research manuscript following the format of the journal *Ecology*. This manuscript will be based on our class data from research at Tualatin Hills Nature Park. Use the Tualatin Hills experiment handouts from class as a guide for summarizing hypotheses and methods into your own descriptions of how you actually did the data collection.

The data you should include will have been collected during class, and the class data provided to you. You will set up your paper in the format of testing a hypothesis or hypotheses with respect to differences between thinned Oregon Oak.

For information on the format of *Ecology* (except that you will use single space instead of double spaced document)

<http://esapubs.org/esapubs/AuthorInstructions.htm>

Be sure your research paper includes the following sections:

- a. **Abstract (one long paragraph):** Summarize all the key information and findings; include i) information on the broader topic that your research fits into; ii) your research hypothesis or hypotheses; iii) a brief description of your methods; iv) an overview of your most important result or results; and v) how these results are important or advance the field of research.
- b. **Introduction (2-4 paragraphs):** Provide background that will enable the reader to understand the question that your study addressed.

Start off with a broad overview of the background of your problem; synthesize the existing relevant literature on the broader topic (in the case you will be limited to 2-4 references, but normally you would do a broader search). Help the reader understand the significance of the problem by summarizing the major themes, strengths, and weaknesses from previous related work.

ii. Then explain what hypothesis or hypotheses you tested. You will probably include a phrase or a one or two sentence overviewing of your methods.

- c. **Materials and Methods (2-3 paragraphs):** How you implemented your project (all the detail necessarily for someone to repeat your study); include:
 - i) a section on the study species, if you have one primary or set of main species on which your work concentrates.
 - ii) a section on the study location, if you have one study site or main sites in which you worked.
 - iii) a section on each primary technique you used (you will have to figure out the best way to break up your methods into sections) – “field sampling” “greenhouse” etc..

Plant Ecology: Bi 471

iv) a section on “data analysis” is almost always necessary and is the last section of the material and methods. You use this section to describe how you analyzed your data.

- d. **Results:** This section should include your results with your statistical analysis and no inference about what the results might mean. You can break the results into sections if there are many analyses.
- f. **Discussion:** In this section you summarize your results, and place them in context with the literature. What do your results mean? Include any suggestions for furthering your research or follow up experiments.
- h. **Literature Cited:** Alphabetical list, by author, of the articles you referred to in the introduction.

Note: the page limit does not include figures or literature cited.

Writing:

I will grade for grammar, so take care. Come to me for help early on, if you feel you will need a little extra guidance.

Turn your paper in as a hard copy and email a Word copy to me.

Plant Ecology: Bi 471

		Low quality	High quality
15%	Abstract	Did a poor job of explaining why the research is of interest. Did not place the research in context. Gave too much or too little detail about the results and methods.	Concisely explained the main points of the research and placed the research in context. Explained why the reader should be interested in the research, what the main results are, how they were obtained, and what impact these results might have on the research area.
15%	Introduction	Missed the main point or could not explain it clearly. Used too many scientific terms without explaining them to the non-scientist. Did not clearly state the researcher hypothesis or hypotheses.	Concisely explained the main point of the article to a non-scientist. Precisely explained what hypothesis or hypotheses the researchers were testing.
15%	Methods	Is difficult to follow or gives too little detail for the reader to understand what the researcher did at each step in the study.	Clearly laid out the methods used in the research so that another researcher could repeat the study.
15%	Results	Did not include results for all aspect of the study, are disorganized, included inferences about the results instead of just the plain results.	Accurately explained the results of the research, including statistical information.
15%	Discussion	Did not accurately and/or concisely explain the conclusions reached or how they fit in with previous results.	In two to four paragraphs explained the conclusions the reached from the data. This section should summarize the results and place them in context.
15%	Writing structure	Difficult to follow. The main point is lost along the way. Hard going and loosely constructed.	Topic sentences lead the reader along. The content is easy for the reader to follow. It does not take the reader work to get through.
10%	Grammar and spelling	Sloppy sentences. Punctuation lacking or misused. Spelling inaccurate.	Sentences tightly written. Punctuation used correctly and spelling accurate. There is nothing sloppy about this writing. Uses formal scientific writing (no contractions, italics for scientific names of species, spells out numbers under ten, etc.).