Instructions for Writing Scientific Paper on the Impacts on Soil Biodiversity of Habitat Type and Position in the Soil Profile

Objective
Using the data from our study and information gathered from a search of the scientific literature, you will write a complete scientific paper on the soil diversity study we conducted in lab. The paper will include Title, Abstract, Introduction, Materials and Methods, Results, Discussion, Conclusion, and Literature Cited sections. A portion of your grade will be based on how well you adhere to the format outlined in *The Guide to Writing Scientific Papers*. Your paper must be submitted to me electronically following the normal submission rules no later than 11:59PM on the last day of Fall semester classes, 5 December 2008. The assignment name is SOILDIVERSITY.

The following information should be helpful in addressing the various sections of the paper. Read the directions in their entirety before beginning to work on the assignment.

Collaboration
You may choose to co-write the paper with one of your BI 131 colleagues. The rules for collaboration are as follows: 1) researching and writing the paper must be shared more or less equally between team members, 2) only one paper is submitted per team, with both of your names on it, and 3) both participants will receive the same grade for the paper. Since the Thursday lab section conducted a separate study, Thursday students may only collaborate with students from the Thursday section.

Title
The title should be as specific and self-explanatory as possible with respect to the variables that were investigated in the study. The title of our lab handout is not a sufficient title for this scientific paper.

Abstract
An easy way to write the abstract is to distill the most important one or two sentences from each section of the paper. Some friendly advice: write the abstract after you have written a completed final draft of the paper. Resist the urge to write the abstract before then!

Introduction
The introduction should start general and gradually become more specific. Use this section to provide background information to explain how the type of habitat or position in the soil profile might be expected to influence soil invertebrate diversity. Do not make the introduction too broad. Present only the most relevant ideas and quickly get to the point of the paper. The introduction should clearly state the purpose of the study and the specific research questions your study intends to answer. Your experimental hypotheses should be stated in this section.

Materials and Methods
This section has been written by your instructor and is posted on the laboratory web page.

Results
Our study consisted of two basic parts, the first addressing the role of position in the soil profile on the diversity of soil invertebrates, and the second, the role of habitat type on soil biodiversity. The organization of the results section should follow the basic organization of the study.
Summarize the results of the study using narrative text and a table or two where suitable, the operative word here being 'summarize!' Figures such as graphs or charts are not especially helpful for summarizing these types of data. Raw data, such as that posted on the lab web page, are not appropriate to include in a scientific paper. See The Guide to Writing Scientific Papers for things to consider when designing and using tables in your paper.

Remember that the purpose of the study is to compare diversity among the different habitats and the different soil layers. The organization of your results summary, especially the table(s), should make it easy for the reader to make these comparisons. In general, limit your focus when describing diversity to taxonomic groups, such as Acarinans, Collembolans, etc., rather than individual morphotypes.

In summarizing the results address the following points:

- In general terms, how thorough was the sampling approach used in the study?
- How did the prevalence of taxonomic groups differ between habitat types? Among soil layers? Were some taxonomic groups more prevalent than others?
- How did the diversity indices differ among habitat types? Among soil layers?
- How did trends compare across habitat types?

Focus on general trends rather than getting caught up in small details or small differences. When making comparisons, only differences of ±10% or greater should be considered significant.

Discussion
The organization of this section should mirror that of the Results section. Use this section to interpret the meaning of your results in a broader biological context. Describe how your findings compare to similar studies published in the scientific literature. Were any of your results surprising, unexpected, or contradictory to other studies? Were there limitations in your experimental design or methods that could have affected the results? What are the implications of your findings regarding how different habitats and position in the soil affect soil invertebrate diversity? In the discussion you are free to speculate on the reasons for what was found, so long as the reasoning is logical and can be defended with evidence and examples.

Conclusion
This section should be clear and concise, consisting of only a few sentences. State what you think your results mean with respect to the specific research questions mentioned in the Introduction. Keep in mind that the conclusions here are logical conclusions that must be drawn specifically from your results, not from things you may have speculated upon in your discussion, or from the results of other studies.

Literature Cited
When searching the scientific literature some good key words to use are: ‘soil invertebrate diversity’. It is not intended for you to spend inordinate amounts of time locating literature references. Start with the references posted on the laboratory web page, then move to other sources to round out your references.

You must have at least five references and you may only use references that include author, year of publication, title, and name of publisher or journal. If you cannot find this information for the reference (this is particularly common with some web pages), you may not count it as one of your five references. Three of your references must be articles from the primary scientific literature, i.e., the scholarly journals in which original research articles are first published.