

Writing a Paper in Scientific Format: Tips for the Meiofauna Lab

A scientific paper consists of the following sections: Title, Abstract, Introduction, Methods, Results, Discussion and Literature Cited.

- However, you should not write the sections of your paper in this order. Certain sections are easier to write first, and it is best to save some for last. Follow the sequence outlined below.

Introduction

- The introduction is the section in which you introduce what you are studying and why.
- You will need to define what meiofauna are.
- Use literature to provide background information on your subject/question. In this case we have given you the meiofauna book chapter as well as an article by Rodriguez et al. (2003). Use these sources to summarize what is already known about meiofauna and the physical factors that affect their diversity patterns.
- When you cite a source, do so in the body of the text itself [e.g. Meiofauna biomass has been found to increase with wave exposure on Spanish beaches (Rodriguez et al. 2003)].
- Why is this research important?
- You will end the introduction with your hypothesis. What factor are you testing, how do you think it will affect meiofauna diversity, and why.

Methods

- Do not write the methods like a typical lab report. You do not need to give a list of equipment or step-by-step instructions. You do, however, need to provide the details necessary to allow someone to replicate your experiment.
- In our case:
 - Where were meiofauna sampled from (which beaches and where on the beaches)?
 - When were meiofauna collected? (I collected them the morning of the lab)
 - How many samples were taken?
 - How were meiofauna processed (i.e. how much sand, what chemical was used to anesthetize, what groups were IDed, etc.)?
 - How many replicates of each sample were there?
 - How was diversity calculated?
 - How were results for each site/exposure combination analyzed? (You probably will need to take an average of the replicates for each site/exposure combination.)

Results

- All results you want to discuss need to be presented in graphical and text form.
- However, you do not need to write out or include every datum we collected (e.g. the number of nematodes in each sample). Instead, the idea is to synthesize that data and present the trends that you found.
- Your graph should look something like the one below (although the actual data will be different). You should include a legend (text below the graph) that makes the graph understandable without reading the results section itself (i.e. the figure should be able to stand alone).
- You should also explain all of your results in text form and cite your graph where appropriate. Do not explain what the results mean (save that for the discussion), just say what they are [e.g. The diversity of meiofauna was greater at exposed sites as compared to protected sites at both Makapu'u and Sandy beach (Fig. 1)].
- While you could report a variety of different data (most common groups found, abundance, etc.), for this report we mostly expect you to discuss patterns in diversity. If you want to discuss other results as well, that is great!

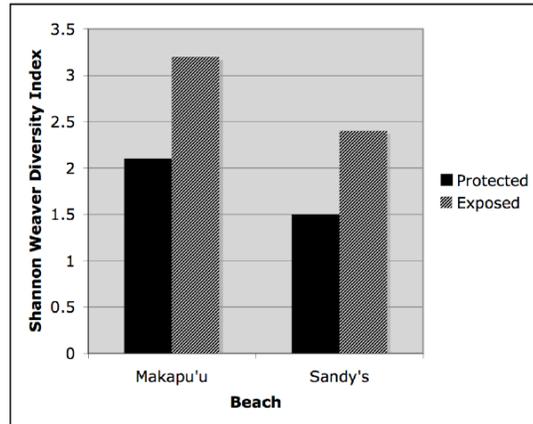


Figure 1. Meiofaunal diversity at blah blah blah

Discussion

- Sometimes people only read the discussion section of a paper, so it is important to start your discussion section by restating your hypothesis and your most important results.
- You should cite your figures/tables as you discuss each result. Do not introduce new results in this section, but make sure to discuss all results that you reported in your results section.
- Discuss what these results mean. Do they agree with your hypothesis? Do they agree with what other studies have found (again, reference sources as you did in the introduction)? If not, why not? Is there an alternative explanation?
- Also discuss any problems with your experimental design. Where might error have been introduced? How could the experimental design be improved to get more conclusive results? What other studies could you perform?

Abstract

- In one paragraph, summarize the major points of the entire paper. Readers will consult an abstract to see if they are interested in reading the rest of the paper, so make sure to include key information like your main findings.
- Write the abstract last. You can often write the abstract simply by cutting and pasting the one or two most important sentences from each section of your paper.

Literature Cited

These are the appropriate citations for the literature we have provided you. Feel free to use any other information you find, but make sure to cite it properly.

Nybakken, J.W. and M.D. Bertness. 2005. Marine biology: and ecological approach. 6th ed. San Francisco: Pearson Education, Inc. 579 p.

Rodriguez, J.G., M. Lastra and J. Lopez. 2003. Meiofauna distribution along a gradient of sandy beaches in Northern Spain. *Estuarine, Coastal and Shelf Science* 58S: 63-69.

General Tips

- Be concise!
- Write in the past tense.
- Use the “royal we” (e.g. We collected sand samples from Makapu’u and Sandy Beach blah blah blah). Don’t say Kim collected it, or your classmates processed samples, etc.