StreamWatch Ecological Study

Abstract

The abstract, although it comes first logistically, always should be written last. It needs to be written last because it is the essence of your report, drawing information from all of the other sections of the report. It explains why the experiment was performed and what conclusions were drawn from the results obtained. A general guideline for an abstract has five sections or areas of focus: why the experiment was conducted; the problem being addressed; what general methods were used to solve the problem; the major results obtained; and the overall conclusions from the experiment as a whole. It should only be about one page. Do not restate specific methodology.

Introduction

One very important part of the introduction section is outlining the purpose of the experiment as concisely as possible. Stating the question that is to be answered by the experiment can easily be introduced with the phrase "In this experiment" or "In this study" and then explaining from there. These statements should be as specific as possible to demonstrate a clear understanding of the experiment. The purpose of these statements is to explain what the experiment does and how the results will be interpreted. Once the question that the experiment attempts to answer has been stated, background information needs to be given to show why the question was asked. Background information should include, but is not limited to, the importance of each variables and the habitat along with the history of the Green Hope wetland and the importance of the specific study performed. Clearly state the scientific name of any organisms involved. Clearly identify the dependent and independent variables along with the controls. You should end with a clear hypothesis in the form of an “if/then” statement.

Materials and Methods

The Materials and Methods section is a vital component of any formal lab report. This section of the report gives a detailed account of the procedure that was followed in completing the experiment discussed in the report. Such an account is very important, not only so that the reader has a clear understanding of the experiment, but a well-written Materials and Methods section also serves as a set of instructions for anyone desiring to replicate the study in the future. This section should be copied verbatim from the StreamWatch procedures posted on the class website.

Results

The Results section should include all of the experimental data collected that was necessary in reaching the ultimate conclusions drawn. This includes data in the form of tables and graphs. Each set of data requires a logically selected label (e.g. Figure 1 or Table 1) and a descriptive title referring to the nature of the experiment. A brief caption (2-3 sentences minimum) of explanation should be included for each table or figure as well so that the reader knows exactly what he or she is looking at. You must include all data from the past twenty years for your focus within the StreamWatch study.

Discussion

The Discussion should be written after the Results section so that you have a good idea of what the experiment has demonstrated. The discussion section should definitely have a statement of your expected findings. This should include your hypothesis and a brief statement about why these types of results are expected. The results displayed in each table and graph should be analyzed. There should also be a comparison of how your actual results related to your expected findings. Here, you should state whether or not your results supported or didn't support your hypothesis. In addition, the degree to which the evidence supported your hypothesis should be stated. For example, were the results completely supportive, or were there variances? Refer to each specific data table and graph within the results section and explain trends and meanings. Also included should be sources of error and prognosis for the future.

Works Cited

The last part of a report can often be tedious, but it need not be difficult. The literature-cited portion of your paper is very important because it enables either you or another reader to go back and obtain the sources that you used in preparing your report. It also allows the reader to obtain additional information if he or she wants to find out about a certain topic you addressed. Another important reason for having a literature cited page is that it allows anyone who is unsure of your data to go back and verify that you reported everything correctly, thus eliminating any uncertainty. Be sure to cite all sources in APA format and include parenthetical citations where appropriate. Wikipedia is NOT an acceptable source due to its unreliability.

Beginning with Your First Ecological Study…

Step 1. Determine whether your topic can carry over to this quarter.

Is your independent variable something we measure in StreamWatch (from chemical or physical stations)?

If yes (temperature, D.O., nitrate, phosphate, pH, turbidity, flow rate, etc.), keep it!

If no (salinity, light, etc.), choose a new independent variable from the "yes" list.

Your dependent variable is an organism found at the wetland (unless your old topic went very wrong).

If the focus of your organism is abundance, keep it!

If the focus of your organism is growth rate or reproductive rate, change it to abundance.

Step 2. Confirm your new eco study topic, which may or may not be the same as the last one.

The effect of _____ on _____ abundance.

Step 3. Adjust your previous **Introduction.**

Reread your corrected Introduction from last quarter in turnitin, fixing any mistakes. If you changed your Independent variable, research the relevance of that new variable to aquatic systems and rewrite the 1.5 pages of background. Adjust names of variables, if needed, and remove references to controls. Read the history of the Green Hope wetland and include a half-page summary in your Introduction. Do not plagiarize the history!

Step 4. Remove previous Materials & Methods. Copy and paste the pertinent **Materials & Methods** from StreamWatch.

Step 5. Using all wetland data for your two variables from the past 20 years, create a minimum of one data table and three graphs for the **Results** section. Graph one must be a double-line graph with time on the x-axis and each variable on separate y-axes. Graph two must be a scatterplot with the I.V. on the x-axis and the D.V. on the y-axis. Graph three is open for your interpretation and should help support or refute your hypothesis.

Step 6. Interpret your data table and each graph in a **Discussion** section that analyzes and supports your conclusions.

Step 7. Copy and paste the **Works Cited** from your previous Eco Study, adding any additional sources used.

Step 8. Write a one-page **Abstract** that summarizes the entire report. This will be your first section.

Step 9. Create a title page that includes a proper title, your name and the due date.

The Rubric…

Reports should include a title page and be double spaced, 12 pt font, 1 inch margins. No portion of the report should include personal pronouns. All the intricacies of a report such as this cannot be contained on just this one page. Further instructions and clarifications will be given in class verbally. Please use our dedicated Eco Study workdays wisely.

Abstract (10 pts) - a stand-alone summary of the entire lab report, do not restate specific methodology, concentrate on purpose, hypothesis, and discussion with specific results (should be about one page)

Introduction (20 pts) - background information on the study, including information on each variable, importance of wetlands, history of the area, purpose of the study, and hypothesis (should be four to five pages)

Methods and Materials (10 pts) - a list of materials accompanied by a specific, numbered sequence of methods that someone unfamiliar with the study could easily follow - use StreamWatch procedures verbatim (length varies with study)

Results (25 pts) - data only, no analysis. must include all data from study focus and pertinent data from other stations; all data included should be in table format with pertinent data also included in graph format; at least three graphs must be included; all tables and graphs must have a title and a two to three sentence caption (length varies with study)

Discussion (25 pts) - analysis of data. what do the results mean? was the hypothesis correct? include at least three sources of error and a prognosis for the future. (should be five to seven pages)

Works Cited (10 pts)-APA format, minimum eight (8) sources – NO WIKIPEDIA!

Electronic versions of the paper are due to turnitin.com by 11:59 PM on the due date. The typical 20% plagiarism limit is waived due to the inclusion of standard materials & methods along with results. However, the abstract, introduction and discussion will be scrutinized for potential point deductions.