Limnology Lab Reports

Biology 3371; Dr. Dirnberger; Kennesaw State University

General overall advice: Do not attempt to explain every bit of the data we collect. **Focus** on the central question/hypothesis/prediction and first decide what data will be most useful in addressing these. As you analyze this data and develop your argument, try to use other parts of the data set to support your argument. Some of the data we collect are likely to be irrelevant to your argument, so don't report these in your Result and don't disucuss these in your results.

In the Results, state **overall trends** that are important to your conclusions. Cite specific data to support these trends. The focus of your Results (both text and graphs) should be to make it as easy as possible for your reader to grasp the data trends important to supporting the conclusions you draw in the Discussion.

In your Discussion, do not focus on how you think the world ought to be, but instead on **how the actual data** support or do not support your predictions and hypothesis. Don't assume our data are going to support our hypothesis. Again, look at the data first. The whole point of a scientific investigation is that prior to the study one does not know whether the hypothesis is valid. If the data do not support the hypothesis, that's important to know and science is still advanced (i.e. if we convincingly reject that hypothesis, that's one less alternative hypothesis to worry about).

Be concise. If you need or would like help with your writing, contact the KSU Writing Center, a free service offered to all KSU students. Experienced writing assistants work with you throughout the writing process (on concerns such as topic development, revision, research, documentation, grammar, and mechanics) although assistants cannot edit or proofread your paper for you. Appointments are strongly encouraged. For more information or to make an appointment, visit http://www.kennesaw.edu/english/WritingCenter, or stop by Room 242 in the English Building.

Lab #1 - Physical/Chemical; Lake Allatoona

For this lab, turn in three sections (length should be no more than 7 pages not counting graphs, please double space):

- An introduction page that lists observations, hypothesis, and predictions (you can cut and paste from below, **but be sure to fill in the predictions**).
- A results section (see **Guidelines for Writing a Lab Report**).
- A discussion section (see **Guidelines for Writing a Lab Report**) that relates the results to the hypothesis and predictions.

For your data analysis and graphs, you may work in groups. However, each person must write his/her own results and discussion sections.

Observations:

Based on historical data sets, water entering Lake Allatoona differs in numerous physical and chemical parameters from water discharged from the dam. The lake some how greatly influences water as it moves through. Surface water at the dam also differs from discharge water, indicating that at least some of these differences are due to differences among depth in processes that affect water quality.

Central Question:

What factors explain the distributions of physical and chemical parameters in Lake Allatoona?

Hypotheses:

Hypothesis #1: The ability of light to be transmitted through lake water varies from up-lake (nearest to where major tributaries enter the lake) to down-lake (nearest to the dam where water exits the lake) as a function of the concentration of particles in the water.
Hypothesis #2: Light influences the distributions of other physical and chemical parameters in lakes.

Predictions:
For Hypothesis #1, you all measured turbidity, secchi depth, fluorescence and photic depth. Make predictions on how these might change from up-lake to down-lake stations.

For Hypothesis #2, you all came up with <u>two</u> generals ways to test this hypothesis, and you should take advantage of **both**:

One involves examining the general vertical distribution of parameters and determining whether they can be explained by vertical patterns in light (include a graph of light extinction with depth).

- Temperature decreases with depth
- Vertical distribution of Oxygen ►►(you decide)
- Vertical distribution of pH ►►(you decide)
- Vertical distribution of CO_2 (you decide; note that only 2 depths were sampled for this parameter)

The second involves comparing stations that vary in light properties from uplake to downlake. T**he concentration of a parameters (as well as it depth of stratification)** might vary as a function light penetration among stations. You should make specific prediction on how temperature, oxygen, pH, and CO_2 stratification might differ among the four stations. The depth of the thermocline can be determined and compared by calculating **RTRM** by depth (to do this, you must first calculate the density of water from temperature for each depth).

Also consider in your Discussion what factors might be confounding (i.e. what else differed between sites that could explain differences in profiles among sites).
