

Fish Management (Zool 466)

Laboratory Notebook Guidelines

Introduction. As you will discover during this course, no strict set of rules guides the management of freshwater fish assemblages. Rather, management involves an active process of (1) discussing goals with constituents, (2) assessing and *understanding* the fish assemblage and surrounding ecosystem, (3) setting realistic goals, (4) researching possible management strategies, and (5) implementing the most appropriate management strategy. All decisions should be based on the best available biological and ecological information.

In many of our laboratories, we will sample local streams, reservoirs, and ponds. Each system contains a unique fish assemblage that has arisen due to a combination of ecological/environmental factors (e.g., lake productivity, prey availability, fish density, habitat quality and quantity) and human activities (e.g., stocking, size-selective exploitation). These are *field-oriented* laboratories. In departure from your typical lab course in which most exercises are highly controlled, our field activities will produce unexpected and often surprising information. Our goal is to use information learned in this course to assess the ecological and anthropogenic factors shaping the fish assemblage. From this, you will develop a management recommendation.

Other laboratory exercises will be more structured and will involve analysis in the lab. Much of the data to be analyzed will derive from our field exercises. The information from your analyses should be summarized in much the same way that you document your field exercises.

Notebook Overview. Your notebook will be used to document the activities in all the laboratory meetings, whether they involve field or laboratory work. Your notebooks should be neatly written and legible, following the format outlined below. The notebook will be handed in *twice* during the semester for evaluation. It will be worth **50 points (12.5% of your final grade)**. When in the field, you should take good, complete notes. Following the field trip, you should then transcribe this information into the formal notebook. Use complete sentences in the formal notebook.

Recommended Notebook Format: Each laboratory should be summarized using the following subsections. You may want to add additional subheadings to make the presentation clearer.

- **Title.** Provide a short but descriptive title for the laboratory.
- **Objectives and goals.** In this section, you should explicitly outline the goals of the laboratory. It may be something as simple as “To assess the fish assemblage and various limnological parameters of Campus Lake and to determine potential management options for improving sportfish abundance”. Other laboratories will have more sophisticated objectives and goals. Always include both a research and management objective in this section.

- **Expectations.** In this section, you must outline your expected results for this activity. This represents your “best guess” about what we might find in the field or lab exercise. Following the sampling or data analysis, you will revisit these expectations and determine how and why the expected and observed results did or did not differ.
- **Location.** For field work, the name of the reservoir or small impoundment and its approximate location should be noted. For in-laboratory exercises (e.g., age and growth), include the origin of the data that are being analyzed.
- **Date.** Note the date and time of sampling. If this is an in-lab exercise, include the date that the data were collected and the date of analysis.
- **Site description.** Provide a description of the reservoir or pond sampled. Include approximate size, water clarity, inshore vegetation, riparian cover, wave action, water and air temperature, etc.
- **Weather.** Describe the weather at the site, if it is a field study.
- **Methods employed.** This section should be quite detailed. You must include the sampling equipment and techniques employed. Also, provide information about the sampling effort (e.g., time sampled, approximate length of seine hauls, number of electrofishing transects). If you are describing data analysis, you should explain the technique in sufficient detail that another person can repeat your work.
- **Results.** This section should also include much detail. The organization of this section should parallel that of the Methods section. Results should be presented in either tabular or graphical form. Often, we will review the main graphs or tables that should be included. This information may also be included in a formal, graded lab report assigned in class.
- **Discussion.** In this section, you must work hard to discuss the observed results relative to the goals and expected results of the study. Speculate, using information from class and the library to support you, what ecological factors are responsible for the observed results. In this section, you should also discuss the shortcomings of the study and provide ways that the research effort might be improved.
- **Management recommendation.** Using your results, provide recommendations for meeting the management goals outlined at the beginning of the study.

Neatness counts. Use a wordprocessing program to craft the notebook. This will allow you to neatly edit and add/delete text as the course continues. Each page should be numbered, with your name in the heading of each. All pages must be bound in some fashion (i.e., stapled

together). DO NOT use spiral bound paper that has been ripped from a notebook and stapled. When in doubt, see me for guidance.

Format tips. Refer to the *Transactions of the American Fisheries Society* or *North American Journal of Fisheries Management* for guidance about how to present information in the various sections. Use the formats for units as outlined in these journals. Refer to the Guide for Authors for these journals <http://www.fisheries.org/html/publications/journals/authguides.shtml> for further information.

Graphics. Most graphics for the notebook can be generated with a software package such as Excel or QuattroPro, available with most modern computers. Graphs hand-drawn with graph paper should be neat and legible.

Grading.

Organization:	20%	(Sections labeled, lab titles clear, parallel structure?)
Grammar:	20%	(Complete sentences, spelling, punctuation, correct units?)
Data Presentation:	25%	(Graphs, tables formatted correctly and clear?)
Content:	25%	(Information well considered and correct?)
Neatness:	10%	(Legible, bound, numbered, name in headings?)
Total:	100%	