

Fisheries Management Plan Assignment

The purpose of this assignment is to develop a management plan for that fishery that will direct activities for the next ten years. A fishery management plan falls into three major tasks. First, you will design and lead the sampling on a water body. Second, you will analyze the data you collect, including performing a number of statistical and fisheries related quantitative analyses. This includes reviewing the literature to find possible problems and actions. Third, you will develop your management plan, which you will present orally during a stake-holder meeting and in a written report.

You will be assigned to a team of 3-4 students. Your team will be assigned a particular lake or river we are sampling this fall. The team will work together in preparing for sampling, data analysis, and developing a management plan, and presenting the plan to the class. Be sure to listen to your team! Some people might have different ideas, and all might be correct. Team members should explore all options, with some members playing “Devil’s Advocate” to consider all possibilities.

General procedure

Sampling:

- You will be assigned to a group and each group will be responsible for a water body.
- With my help, you will design a sampling protocol and determine what equipment is required. You will be responsible for obtaining all the equipment and getting it ready for our field trip.
- In addition, you will be required to clean and return all equipment when sampling is finished.
- You will be in charge of the sampling. Watch and make sure you think it is being done correctly!

Data analysis:

- Your team will enter all the data into an Excel spreadsheet. You must follow the format provided in the spreadsheet. You can sub-divide the data so each person enters only a portion, but you will need to put it all together into one file in the end.
- You should generate data summaries, trends, graphs, and statistics documenting the change (or lack of change) in the lake. Play around with the data – make lots of graphs to help you find interesting trends. Making graphs also is a good way to find errors in the data – look for outliers and try to determine if there was an error or if it is the correct value.
- Make sure to use appropriate statistics and metrics from class (e.g., mortality, comparison with statewide averages, predator to prey ratios, etc.)!
- Find out what you can about your water body: look at topo maps (topozone.com) and/or aerial photography (e.g., maps.google.com) to characterize the surroundings of the water body.

The plan:

- Decide on your management objectives, considering all users and what is realistic. This is where you may discuss things as a group, but different people might have different ideas.
- As a group, you will give an oral presentation (20 pts.) of your plan in a mock stakeholder meeting.
- Individually, you will write a draft management report (20 pts.) that will be peer reviewed (20 pts.) before the final version is submitted (100 pts.).
- In total, this assignment is worth >15% of your grade for the class. Take the assignment seriously and do a complete and thoughtful job on your management plan. **I cannot emphasize the importance of following format instructions and including statistics and metrics** discussed in your book and in class.

The management report

- Your report must be at least 5 pages of text (more likely it will be longer), double-spaced, in 12 pt. times or times new roman, with 1” margins. A title page (optional), figures, tables, and literature cited **do not** count toward the total page count.
- You must include **at least five peer-review references** in your paper. **No web references!** Agency reports may be cited, but they do not count towards your five references. Look for papers about the problem in your lake (e.g., introduced predators), potential solutions (e.g., liming), or the requirements for the species you are managing for (e.g., habitat requirements).
- You **MUST** have at least TWO unique references from your teammates.
- See the guide to authors for Transactions of the American Fisheries Society for correct formatting of citations, references, and various abbreviations. It is posted on my web site (under "Classes").
- **DO NOT** use English units. Convert everything to metric (unless you mention a length limit, in which case you should use both English and metric units).

Your paper must include these sections (sections in italics, with descriptions in regular text):

- a) *Goal* - a long-range vision of the future management goals for the water body.
- b) *Analysis of Resources* – physical, chemical, biological, and social attributes
- c) *Diagnosis of Problems and of Potentials* – identify the problems and present potential solutions
- d) *Management Objectives and Actions*
 - i) Set **quantifiable** objectives (i.e., what value or range are you shooting for?).
 - ii) Each objective should relate to a resource problem identified in the previous step.
 - iii) Prescribe one or more management actions to achieve each objective.
- e) *Evaluation and maintenance*
 - i) Describe how will you assess the success of your actions
 - ii) Include any plans for revisions or additional actions
- f) *Management Timeline* – brief summary of the timing of actions, evaluation, and maintenance – can use figures and/or text.
- g) *Resources required* – briefly describe the needs for effort and resources
- h) *Literature cited*

Your management report will be graded on format, grammar, and clarity (30 pts.), following the management process and making logical recommendations (30 pts.), and using data to support your plan (40 pts.).

Tables and figures

- Tables and Figures must come at the end of the text and should be referred to by number (Figure 1, Figure 2, Table 1, etc.). **DO NOT** embed figures or tables in the text!
- **DO NOT** use color in your figures.
- Label all axes with a suitable title, including units of measurement (where appropriate).
- Include a descriptive caption with each table or figure. **DO NOT** write a caption like: “Figure showing the number of largemouth bass.” Instead, the caption should read “Figure 1. Largemouth bass abundance in Mud Lake, Luce County, Michigan, from 1985-1992.”
- If you use abbreviations in the table or figure, make sure to explain them in the caption.

Draft report and peer review

- If you follow the format and make a reasonable effort, you should earn all the points.
- Each student will review another students draft management report. You will be graded on how thorough your peer review is regarding spelling, grammar, format, and content. You should offer constructive criticism and suggestions for improvement.
- The peer review form **MUST** be turned in with your final or you and the reviewer will lose 20 pts.

- I also will review the drafts, but for content more than grammar or spelling.
- See the peer review form to get an idea of what a peer reviewer should look for (i.e., what your report should contain).

Oral presentation

- You will give an oral presentation about one agreed-upon management plan.
- Each person in the group must contribute equally to the presentation and answering of questions.
- You should use visual aids (the board, power point, etc.) to make your point.
- The rest of the class will act as various interest and user groups and ask questions about your plan.
- Your presentation should be 15 minutes long, with about 20 minutes for questions.
- Your talk should follow a similar format to your written reports.
- Remember, you are trying to sell your plan to a broad range of users, so convince us why it is the right choice and why it will work!
- Show us the data, but make sure to think about speaking to a broad audience.
- You will be graded on content (10 pts.), presentation (5 pts.), and answering questions (5 pts.)

Management plan groups:

Three Mile Pond – Lake contains stocked brown and rainbow trout, sticklebacks and minnows.

Perceived problem: lower than expected catch rates because trout may be leaving the system or being eaten by predators.

Jordan Maeder

Ben Turschak

Nick Steimel

Cranberry Lake – Lake contains yellow perch, central mudminnow, and recently introduced northern pike. Perceived problems: possible stunting of yellow perch, low pH.

Andrew Briggs

John Jacques

Luke McManus

Laura Neuenfeldt

Ken Schwab

Elbow Lake – Lake contains sunfish, yellow perch, and bass. Perceived problem: low abundance and small sizes.

Tyler Buchinger

Greg McClure

Dave Montgomery

Aaron Ohrn

Joel Wils

These three lakes will be sampled during our trip to the Hiawatha Sportsmen's Club. The HSC is very interested in having us prepare management plans for these lakes, so take your assignment seriously!

We have two other field trips (Soldier Lake and Pendills Creek) that will be used to collect data for analysis in class. We will plan these sampling trips together and you will be assigned to help collect and prepare equipment for these trips.