

## **LITERATURE REVIEW PAPER**

A literature review paper reviews and synthesizes the current understanding of a particular topic. It is a very useful way to become up to date on the state of knowledge and the research that has been done in a particular research area. Writing a review paper is good practice for synthesizing and organizing a lot of information into a concise product (i.e. a short written document). Reviewing and summarizing the literature is a critical skill for successful scientists. In particular, this skill is an important component of identifying research questions and writing research proposals. When writing such a paper, scientists rarely, if ever, just sit down and write a first draft and turn it in. Rather, they write outlines and multiple drafts, editing each draft themselves, in addition to having others edit their papers. You will practice this process with your paper.

You must do library research to collect journal articles (and books) to write your paper. Information from the Internet will not be accepted, unless it is from a journal that is published or available on the web. You should write your paper for an audience that is relatively familiar with limnology (such as a peer in this class; i.e., you do not have to define epilimnion). However you should **not** assume that the reader has read the papers that you have read. In addition, you should define any new terms or jargon that have not been discussed in class or course readings.

There will be three main steps involved in writing this paper (each graded separately):

- |  |            |                                     |
|--|------------|-------------------------------------|
| (1)  | [ 10 pts]  | TOPIC CHOICE                        |
| (2)  | [ 70 pts]  | PAPER OUTLINE and ARTICLE SUMMARIES |
| (3)  | [ 100 pts] | FINAL PAPER                         |
| [ 180 pts] Total (36% of your total grade in the course) |            |                                     |

### **DESCRIPTION OF THE THREE MAIN STEPS:**

**(1) Topic choice** = You will be given a list of ~20 possible paper topics. You must rank your top five choices from this list and turn it into me. I will then assign topics to students based on their choices while avoiding excessive overlap among students.

**(2) Paper outline and article summaries**= Prior to writing the outline, you will search the literature, and identify the articles that you will review. Using these articles, you will: (1) write an outline of your paper; and (2) write a summary of the main points from each individual article and an explanation of why you think each article will help address your topic. At this point, you **MUST** have all of the citations that you are going to use for the paper (at least 7 articles). Thus, you must have planned on doing most of your literature searching and journal article reading **BEFORE** this assignment is due.

**(3) Final paper** = I will assume that you have revised and edited your paper already yourself – several times! This **SHOULD NOT BE A FIRST DRAFT**. I also encourage you to ask a friend/ classmate to read over your paper and give you feedback before you turn it in (see format below). The final paper should be 5-6 double spaced text pages.

### **DUE DATES:**

- |  |   |
|--|---|
| <p><b>(1) Topics due:</b><br/>- <i>Topics assigned</i></p>                               | <p><b>Thurs, February 3</b><br/><i>Tues, February 8</i></p> |
| <p><b>(2) Paper outlines and article summaries due:</b><br/>- <i>returned to you</i></p> | <p><b>Thurs, March 3</b><br/><i>Thurs, March 17</i></p>     |
| <p><b>(3) Final paper due:</b><br/>- <i>returned to you</i></p>                          | <p><b>Thurs, April 14</b><br/><i>Thurs, April 28</i></p>    |

## **ASSIGNMENT #2 – Paper Outline and article summaries**

*Due March 3*

Choose the journal articles that you will use to write your paper. Write a summary of the main points for each article and why you think each article will help address your topic. At this point, you **MUST** have all of the citations that you are going to be using for the paper. Thus, you must have planned on doing most of your literature searching and reading of journal articles **BEFORE** this assignment is due. Note that to produce a quality paper, you can not simply select the first seven articles that you find on your topic. Therefore, you must schedule enough time so that you can review sufficient literature in order to identify the articles most appropriate to your specific topic. After summarizing the articles that you have chosen for your review, you should prepare a paper outline that organizes the topics that you will include in your paper.

### **Features of this assignment:**

1. Your paper title: Provide a title for the paper (it can be slightly different from the titles that I provided and should reflect the content of your paper)
2. You paper objectives: In one paragraph, clearly state your objectives of the paper and give a brief description of the topics to be covered.
3. Paper outline: Provide the overall outline of the paper including the subheadings that you will use. Please read over your paper assignment for an idea of the final paper. ***In addition, you need to provide the citations that you will cite in each paragraph (see example on the next page).***
4. Summaries of the articles that you will use for your paper: For each of your articles, please answer the following questions:

**Article #1: Write out the full journal citation here** (*see example on the next page*)

- (a) What were the main research questions/objectives of this paper?
- (b) What were the main results/answers to the above questions?
- (c) Why is this paper relevant to your overall topic?

Etc... for all 7 (or more) citations that you will use.

### **Format:**

Typed answers only. Please use single space for this component. Number your pages, and use 11-12 pt font. You should plan on writing about a quarter to a third of a page per article summary. Please see the next page for an example format for this assignment.

### **Some major limnological journals:**

*Limnology and Oceanography*

*Canadian Journal of Fisheries and Aquatic Science*

*Journal of Paleolimnology*

*Journal of Freshwater Ecology*

*Aquatic Botany*

*Journal of the North American Benthological Society*

*Freshwater Biology*

*Archiv für Hydrobiologie*

*Hydrobiologia*

*Journal of Plankton Research*

*Aquatic Entomology*

*Wetlands*

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**EXAMPLE FORMAT for PAPER OUTLINE AND ARTICLE SUMMARIES --****NAME:** *Your name***DATE:** March 3, 2011**PAPER TITLE:** The effect of landscape features on stream fish communities

**PAPER OBJECTIVES:** In this paper I will explore the effect of landscape features on stream fish communities. I will examine not only the effects of local landscape features, but also features at a wide range of spatial scales. To synthesize this research area, I will discuss the following topics: xxx, xxxx, xxxx and xxxx. [NOTE, the more information you provide here, the more opportunity that you give me to give you constructive feedback and advice on your paper, so feel free to write a long paragraph here explaining the objectives of your paper]

**PAPER OUTLINE**

- I. Introduction – *The points here should provide background information that introduce the relevance of your topic within limnology. They should lead logically to the specific objectives of your review.***
  - A. first point (Hill 1987)
  - B. second point (Brown et al. 2001; Hilton et al. 1998)
  - C. paper objectives
  - D. *At the end of the introduction, the reader should have a sense of the structure of the overall review. In other words, you can briefly mention the major sections of the paper.*
  
- II. Section 1 (put subtitle here)**
  - A. First point (Cheruvilil et al. 2000)
  - B. Second point (Carpenter et al. 1984; Pace et al. 1987)
  - C. etc. *Note that the key to a successful review is to integrate the findings of several papers. You should not simply summarize one paper at a time. Rather, you should synthesize the findings to the extent possible, by determining where there is agreement among papers versus where there are contrasting findings, etc.*
  
- III. Section 2 (put subtitle here)**
  - A. First point (Davis 1978)
  - B. Second point (Hilton et al. 1998)
  - C. etc.
  
- IV. Section 3 (put subtitle here)**
  - A. First point (Brown et al. 2001)
  - B. Second point (Carpenter et al. 1984)
  - C. etc.
  
- V. Conclusion/future research**
  - A. Major conclusions include....
  - B. Future research needs include....
  - C. etc.

**ARTICLE SUMMARIES - Please use complete sentences. Do not simply provide a bulleted list of phrases.**

**(1) Carpenter, S.R., M.L. Pace and J.J. Cole. 1984. Catchment-scale analysis of aquatic ecosystems. *Freshwater Biology* 37: 107-111.**

- a) The objectives/research questions of this paper were ...
- b) The main results and conclusions were ....
- c) This paper is relevant to my topic because it shows that .....

**(2) Hilton, P.J, M.P. Case and E.R. Chassen. 1998. Local vs. regional influences on local diversity in stream fish communities of Virginia. *Ecology* 79(3):334-347.**

- a) The objectives/research questions of this paper were ...
- b) The main results and conclusions were ....
- c) This paper is relevant to my topic because it shows that .....

**... do the same for the 5 or more remaining articles.**

**\*\* Please note that you should have more text than I have provided here for both the outline and the article summaries....**

## ASSIGNMENT #3: Final paper

Due April 14

### SOURCES TO USE FOR YOUR PAPER:

- **You must cite at least 7 journal articles** (you may use more of course) of primary research (publications that are original research, rather than summaries/reviews of multiple studies). For your sources, you may also use books, book chapters, government documents, and M.S. and Ph.D. dissertations -- but only 2 of the total 7 citations may be from this latter group.
- Articles from popular press sources such as Discover magazine, Time magazine, National Geographic or newspaper articles **do not** count as 'journal articles'. Articles from scientific journals such as Limnology and Oceanography, Hydrobiologia, Freshwater Biology, Water Resources Bulletin, BioScience, Science, Nature, Canadian Journal of Fisheries and Aquatic Sciences, etc. **do** count. If you have ANY doubt about what counts, please contact me BEFORE submitting your assignment! Your grade will suffer if I discover that you misinterpreted something after you turn it in.
- Information from the Internet also may not be used for this paper, unless it is from an e-journal (a peer-reviewed journal that is published on the web). Again, if you are unsure, please contact me before you turn in anything.

### LITERATURE REVIEW PAPER GUIDELINES

**Please use the following format when writing your paper.**

**\* please attach the grade sheet from your outline to the back of your paper when you turn it in!**

- **Format:** Typed, double spaced, 1" margins (please check the default on your word-processing software - usually the default is set to 1.25" instead of 1"), single-sided, stapled, 11 to 12 pt font. **PLEASE be sure to put page numbers on each page.**
- **Length:** **5 pages** of text (not counting title page or the literature cited section; and NOT greater than 6 pages – I will stop reading beginning on page 7!).
- **Sections:** You must include the following sections to receive full credit:

- **Title page** (Title, name, date, course number)
- **Introduction**  
Brief introduction to the topic for a general scientific audience – why is the topic important? What is the main purpose/objective of this paper?
- **Multiple sections summarizing the main points (2-3 additional sections, based on your synthesis)**  
It is a good idea to split your paper up into different sections (with subtitles) that break the paper up for the reader. For a 5 page paper, you may want to think about having anywhere from 2-3 sections in addition to the introduction and conclusion. The number of sections depends *entirely* on the subject matter and what you choose to include in the paper.
- **Conclusions AND future research**  
Summarize the overall findings and make conclusions in your own words! Then, you must explain what 'we don't know' about the topic and what needs to be done in the future to better understand the issue. For example, you could suggest future studies that can be conducted to improve our understanding.
- **Literature Cited**  
Alphabetical order by author (use single space for this part of your paper, but separate each citation by 2 spaces). Use the standard scientific citation format (see *Citing Information* handout).

**PAPER OUTLINE -- EVALUATION CRITERIA**

Spring 2011

**OUTLINE****Content**

Paper objectives clearly stated	_____ (5)
Content is appropriate and well-chosen for topic	_____ (10)
Content is well organized into sections	_____ (10)

**Format/technical style**

Clearly written statements	_____ (5)
Citation format	_____ (5)

**ARTICLE SUMMARIES****Content**

Each summary has the correct information	_____ (21)
Good choice of articles	_____ (5)

**Format/technical style**

Each summary is well written, organized	_____ (4)
Citation format	_____ (5)

**TOTAL: \_\_\_\_\_ (/70)****LITERATURE PAPER -- EVALUATION CRITERIA**

Spring 2011

**Content**

Background information/introduction	_____ (8)
Paper objectives clearly stated	_____ (4)
Content/quality of the summary/synthesis	_____ (24)
Conclusions	_____ (7)
Future research	_____ (7)

**Organization**

Organization of the sections	_____ (10)
Proper use of sources	
- Proper NUMBER of citations	_____ (8)
- References correctly cited WITHIN the paper	_____ (8)
- Correctness of literature cited section	_____ (4)

**Format/technical style**

Sentence/paragraph structure	_____ (12)
Correct paper format	_____ (8)

**TOTAL: \_\_\_\_\_ (/100)**