Research Paper (100 pts)
Conservation Biology
Spring 2011

Purpose of Paper: I want to encourage you to read the recent primary literature and synthesize what you learn there with what you have learned in this and other courses. I also want to give you the chance to take "ownership" of part of the course instead of simply studying the topics I have deigned important.

Assignment: You will write an original 8-10 page paper (see technical specifications at the end of this document). The paper will be on a **topic of your choosing**[1] with the following restrictions –

- It must be on conservation biology (not politics or economics or sociology or religion or philosophy nor a broader environmental science topic.
- If you choose to feature a particular restoration project, please make a critical analysis – don't just summarize the project. I must approve the topic, general outline, and main sources (see below).

It is important to get an early start on this – I would encourage you to start out looking over topics in the rest of the textbook and other sources. Come to me for advice/validation sooner rather than later.

Your paper must rely almost entirely on the primary literature and not review articles, and/or popular accounts. Specialized books (not texts – but edited volumes or scholarly treatises) are also appropriate. Internet sources may be used if they are appropriate, rigorous, and if used sparingly. You should expect to use about 10 sources, if not more. **I do not want papers that are essentially summaries of a small number of these articles or that rely heavily on single review articles.**

The paper must contain a significant synthetic discussion (see below). Papers that are nothing more than literature reviews or whose synthesis relies entirely of what is presented in articles will receive a sharply lower grade.

I don't think I need to tell you this, but, just to be sure, **you may not turn in a paper that is from another class.**

Deadlines: Deadlines are given on the class website.
Topic submission: You must **submit a title and brief outline with at least 7 sources by the date on the website – DO THIS ELECTRONICALLY Failure to do so on time means that you will forfeit**

[1] Please do not ask me to suggest topics. Look over your text, the syllabus, and the literature in deciding your topic. I will make concrete suggestions only when I see a well-formed idea.

the 5 pts for the proposal. I will let you know if the project is suitable by the start of the next week at the latest. **NOTE: YOU ARE STRONGLY ENCOURAGED TO SUBMIT EARLIER, IF POSSIBLE.**

FIRST DRAFT: You will turn in your first draft no later than the start of class on the date indicated on the website. Note that first drafts are graded and are worth 60% of your final grade. My comments will be general about organization, content, and style. I may give you some examples of how to re-write your paper but I will not do it for you. I will not make extensive corrections of grammar -- my purpose is not to be your copy editor (and I am a pretty poor one anyway). Nevertheless, the suggestions should help you substantially improve your paper, if it needs to be. Clearly, it is in your interest to turn in the best possible paper you can – there is nothing better than "fine as is" or only minor suggestions. My comments will be on the paper copy you give me, not on the electronic (but you must submit both. **Late first drafts are penalized by 3 pts. per day including weekend days.**

FINAL DRAFT: Submission has two parts. The entire paper must be **submitted electronically by the time indicated on the class website**.

Papers will be marked down 3 pts each day they are late, including weekends and days when we do not have class. Late means anytime after the deadline.

Technical Instructions:

- The entire paper should be **1.5 spaced** with **1" margins top and bottom, 1.25" right and left**. **Use 12-point "Times" face font** throughout **except where symbols are needed,** if at all.
- **Length of paper**: The text must be about 8 pages. Papers that are shorter or significantly longer will be penalized.
- Getting the length correct, including an appropriate amount of information (for instance, not stretching out a small amount), and writing clearly, succinctly and in an organized manner are important parts of the assignment. Sometimes this will involve altering the scope and/or refocusing the paper.
- Please note that the **length of the paper does not include the title page nor does it include figures or the literature cited.**

Sources: Do not rely primarily on journal articles from journals that are available on line when there are other good sources. For example, PNAS articles are freely available and are generally excellent – but they should not be your only sources just because they are easy to get. Good scholarship demands you look for relevant articles, even when they are relatively hard to find. Hint – start early so you can get relevant articles. Use Google Scholar to look for old articles in various archives or on investigators personal websites. On the other hand, avoid using websites

as information sources as they are not peer-reviewed. This is not to say that you cannot use such sources – just that such use should be extremely restricted. Also take a look at supplementary data when it is available. Good sources for conservation articles include the following journals:
Conservation Biology
Biological Conservation
Restoration Ecology
Animal Conservation
Marine Mammal Science
Diversity and Distributions
Fish and Fisheries
PNAS
Nature
Science
Ecology
Taxon-based specialty journals (e.g., *Journal of Mammalogy, Copeia, The Auk, Condor*, etc.)

Organization: The paper must have the following sections:

- **Title page** with title and your name and the course name and year.
- **Abstract** – a concise summary of the paper without references included. No more than 150 words. No citations.
- **Introduction** – a short section that outlines your project – the question you are addressing and how you intend to answer it. You should use citations.
- **Literature review** –an organized presentation of the literature that you have reviewed, all aimed carefully at your main question. No quotes may be used; everything should be paraphrased into your own words. All material summarized from articles must be footnoted (see format below). Good scientific writing is not typically a paragraph with a citation at the end. Nor is it useful neither to rely primarily on one article nor to use that article to find earlier ones and then cite what you have just read in the first one. You will see plenty of examples of how to write in the articles you read. Pay particularly close attention to the writing in the introduction and discussions of those articles.
- **Discussion** – Please try to confine your synthesis and ideas to this section. It typically will be 2-3 pages at the most. It is OK to put forth some of your ideas in earlier in the literature review as long as it is clear that is what you are doing and it makes the most sense to do so. Try to minimize restating material from earlier except with very brief summaries or references to earlier material. Making judgments about the weakness of strengths of studies you have previously discussed is a valid thing to do in the Discussion.

Please number pages.

Citations:
In text, cite papers by number (see *Nature*) as an example. These numbers should then be given with each source in the "literature cited" section. The sources should be listed in the order that they first appear in the article (use the same number if they appear again later in the article). **DO NOT ALPHABETIZE THE SOURCES.** See a *Nature* article to get some insight into how this is done.
FORMAT OF CITATIONS (these are slightly different from the *Nature* format – please use the style below.
Journal articles should be cited as:
Bailey, W. J., P. C. Withers, M. Endersby & K. Gaull. 1993. The energetic cost of calling in the bushcricket *Requena verticalis* (Orthoptera: Tettigoniidae: Listroscelidinae). Journal of Experimental Biology 178, 21-37.
Books should be cited as:
Fletcher, N. H. 1992. *Acoustic Systems in Biology*. Oxford: Oxford University Press. 333pp.
Articles or chapters in edited books should be cited as:
Bennet-Clark, H. C. 1995. Insect sound production: transduction mechanisms and impedance matching. In *Biological Fluid Dynamics* (ed. C. P. Ellington and T. J. Pedley), pp. 199-218. Cambridge: The Company of Biologists Ltd.
Webpages should be cited as:
Walker, T. J. &T. E. Moore. 2004. Singing Insects of North America. http:// buzz.ifas.ufl.edu/
(Active links need not be added – the publication year usually can be found on academic web pages).

Figures and Tables: Each figure must have its own legend. If you choose to put figures in text (I recommend this) just be certain that your text is long enough (see "length of paper", above). I would suggest writing the text first and then inserting figures. **Figure legends do not count in the paper length** so add them after you are sure the paper is long enough (if any are long). In the same regard, do not include descriptions of figures in both the text and legends and in any case, keep the descriptions as succinct as possible. Use only text and tables that are truly needed. This is not an art project.