

Research Paper Instructions

Ethology and Behavioral Ecology
Spring 2008

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 deemed 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 three restrictions –

- It must be on animal behavior with an emphasis on the approaches commonly used in ethology, behavioral ecology or neuroethology. I do not want a psychology or, for example, molecular biology paper unless it can be justified within the topics above. Nor do I want any "Our Friend the Beaver" type papers.
- I would like you to avoid papers that are centered primarily on humans. Certainly there are topics that might involve human behavior or relationships between animal and human behavior but the experiments and treatments must center on animals.
- I must approve the topic, general outline, and main sources (see below).

The approaches used may be either empirical and/or theoretical – i.e., you can write a paper based, for instance on field studies of some type of animal or you could deal with some theoretical aspect of animal behavior (most likely behavioral ecology) such as modeling processes that we did not discuss in class or some mix of the two.

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 a minimum of 10 sources – I do not want papers that are essentially summaries of a small number of articles.

You should start looking through the reserve readings for the course and the journals as soon as possible to start getting ideas as to what you would like to write about.

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:

Topic submission: You must **submit a title and brief outline with at least 7 sources by Wed. March 26 at class.** Failure to do so will result in a 3 pt. penalty on the final

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.

project. I will let you know if the project is suitable by the end of the week at the latest.
NOTE: YOU ARE STRONGLY ENCOURAGED TO SUBMIT EARLIER, IF POSSIBLE.

Help: I am happy to look over detailed outlines, lists of sources, and abstracts as long as I see these no later than Friday April 4 (unless changed on the class website). **Please do not submit complete papers for comments.** Also realize that **help is not a guarantee of a high grade**, although it certainly often helps!

Final Submission: Submission has two parts. The entire paper must be **submitted electronically** no later than **12 noon on Wednesday April 16 (unless changed on the class website)**. In class that day you should also turn in a paper copy along with all note cards and copies of sources you used for the paper. Please put them in a sturdy, closable envelope with your name on it. This is to give me an idea of the process of your work. **Papers will be marked down 1/3 rd of a grade step each day they are late (where late means that I get it after the deadline). Thus, if you handed in an A- paper Thursday afternoon at 12:30, the highest grade you could receive would be a B (two days late, two steps down).**

Of course, a Dean's excuse is acceptable for late work.

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 8 to 10 pages in length – 12,000 to 15,000 characters not including spaces. Please note that this is a change from the course information sheet (brought on by a large class size). Papers that are shorter or significantly longer will be penalized. Getting the length correct, including and 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 behavior articles include the following journals:

Animal Behaviour

Behavioral Ecology and Sociobiology

Ethology

Behavioral Ecology

PNAS
Nature
Science
Ecology

Taxon-based specialty journals (e.g., *The Journal of Arachnology*, *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 200 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, use last name of up to two authors followed by the year (no coma) (e.g., Hauser 2000 or Steward & Martin 1974). If there are two authors separate the names with the "&" – do not write out "and". For more than two authors cite the first author only followed by **et al.** and the year (e.g., Prestwich et al. 1987).
Please note that it is common to cite two or more articles as authorities for the same statement. When you do this, separate the citations for the different papers by either a comma if they are by the same author – (Prestwich 1982, 1983 or Prestwich 1982a, b for two articles by the same author the same year) – or by a semicolon if they involve different authors (Walker 1988; Forest and Raspert 1992).
 - **In the "Literature Cited"** section, alphabetize all references. Also:
 - 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: Listroselidinae). *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/](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). **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.

Examples of titles from previous classes:

- Eusociality in Insects: Driven by Kin Selection?
- Courtship behavior and the costs of copulation in *Drosophila melanogaster*.
- Good genes, honest signaling and ornamentation in female mating selection.
- The Continuum of Batesian and Müllerian Mimicry.
- The Effects of Trichromatic Color Vision on Foraging Behavior in Primates.
- Conditions of Altruism.
- The evolution of combat in ant species and the application of Lanchester's laws of combat in hostile populations.
- The development of sexual dimorphism in accordance with the handicap principle, and the environmental influence associated with secondary sex characteristic development.
- Prenatal learning and its importance in early postnatal development.
- Eusociality in African Mole-Rats.
- A Comparison of the Evolution of Altruistic Behavior: Hymenoptera versus Termites.
- Siblicide: A mechanism for increased survival.
- An Examination of Play Behaviors and Their Adaptive Significance.

- Females come first... except when mating. A look into Protandry in Birds (clever titles are fine but stay within good taste).