

Critiquing scientific papers

You are asked to review and critique scientific papers in this course. If you have little experience in reading scientific papers, then you might follow guidelines list below, which are the "Guidelines for Reviewers" of manuscripts submitted for publication in the journals of the Ecological Society of America.

COMMENTS FOR THE AUTHORS - What is the major contribution of the paper? What are its major strengths and weaknesses? Please include both general and specific comments bearing on these questions, and EMPHASIZE your most significant points.

GENERAL

- importance and interest to Ecologists (or Evolutionary Biologists for this class)
- scientific soundness
- originality
- organization and clarity
- cohesiveness of argument
- degree to which conclusions are supported by the data
- length relative to the number of new ideas and information
- conciseness and writing style

SPECIFIC:

Support your general comments with specific evidence.

- Presentation - Does the paper tell a cohesive story? Is it a tightly reasoned argument evident throughout the paper? Where does the paper wander from this argument? Do the title, abstract, key words, introduction and conclusions accurately and consistently reflect the major point(s) of the paper? Is the writing concise, easy to follow, interesting?
- Length - What portions of the paper should be expanded? condensed? combined? deleted? (PLEASE don't advise an overall shortening by X %. Be specific!)
- Methods - Are they appropriate? current? described clearly enough so that the work could be repeated by someone else?
- Data presentation - When results are stated in the text of the paper, can you easily verify them by examining tables and figures? Are any of the results counter-intuitive? Are all tables and figure clearly labeled? well planned? too complex?

- necessary?
- Statistical design and analyses - Are they appropriate and correct? Can the reader readily discern which measurements or observations are independent of which other measurements or observations? Are replicates correctly identified? Are significance statements justified?
 - Errors - Point out any errors in technique, fact, calculation, interpretation, or style. (For style, follow the CBE Style Manual, Fifth Edition, and the ASTM Standard for Metric Practice, E-380-84).
 - Citations - Are all (and only) pertinent references cited? Are they provide for all assertions of fact not supported by the article itself?
 - Overlap - Does this paper report data or conclusions already published or in press? If so, please provide details.

FAIRNESS and OBJECTIVITY - If the research reported in this paper is flawed, criticize the science, not the scientist. Harsh words in a review will cause the reader to doubt your objectivity; as a result, your criticism will be rejected, even if they are correct!

Comments directed to the author should convince the author that:

- you have read the entire paper carefully
- your criticisms are objective and correct, are not merely differences of opinion, and are intended to help the author improve his or her paper, and
- you are qualified to provide an expert opinion about the research reported in this paper
- If you fail to win the author's respect and appreciation, your efforts will have been wasted.

ANONYMITY - You may sign your review if you wish. If you choose to remain anonymous, avoid comments to the authors that might serve as clues to your identity, and do not use paper that bears the watermark of your institution.