

## Tips on writing Scientific Papers

1. Decide on scope of the paper – is it going to be a big picture paper or one describing specific results in a local/national context. What is your question? Draft a “working title” which will help set the focus of your paper. Make your title as short, but accurate as possible. In a title, every word does not begin with a capital!
2. Decide on a journal. Design the paper for a specific journal in mind. When starting the paper set it out in the correct journal format. This is particularly important when citing references in the text, and formatting the “References” at the end of the manuscript.
3. Read the “Instructions to Authors” for that journal. Make sure you follow them!
4. The best place to start is with the “Results”. Spend time doing a wide range of analyses, draw up a range of graphs. Do these in publication quality. Don’t waste time drawing graphs in excel and then having to re-draw them.
5. When you have decided on what graphs you will use put them into your manuscript. Immediately write a short results sentence and figure and table captions. Thus you are building up your results section as you go. Ask yourself, are all these figures and tables necessary? Do they show the data in the best possible way? Do any double-up? Do these figures/tables cover all the results I need to tell this story? In general, you should avoid presenting “raw” data, though this might be appropriate in a site description table. Many journals do not publish Appendices – these are about the only places you might put species lists. Table captions are always ABOVE the table. Figure captions are BELOW the figure, though in a manuscript figure captions are put on a “Figure legends” page (see point 7).
6. If you are not really sure how to write your paper, how much detail to put in etc then go and find 2-3 papers on a similar topic and see how those authors have structured their papers. This might also help you decide on how to present your data, and what to present.
7. Almost all journals expect submitted manuscripts to be double spaced. Number each page! Some journals require Line numbers (this helps reviewers) in the submitted manuscript. Common formats include; first page with “title”, “authors” – corresponding author first. If the corresponding author is different then this usually is noted here. “Affiliations” of authors. Keywords, usually about six of these. Some journals might ask for a suggested “running title” which appears in the header of each page in the final paper. The journal might also ask for a “disclaimer” e.g. “This manuscript has not been submitted to any other journal”. The rest of the TEXT of manuscript follows. Figures and Tables are NEVER incorporated in the text. Each figure and text will usually be on a separate page. Figure captions are usually on a separate page entitled something like “Figure legends”. When drawing figures remember that the final figure will probably be reduced. Check the journal, some journals have whole page, half page or one column wide figures. Make sure that your labels will be big enough to be read when reduced, DON’T use colour, use easy to read fonts e.g. Arial is often best. If you are going to use shading or hatching choose extremes e.g. black v. white.
8. You should not send the same manuscript to more than one journal at a time.
9. Manuscript size - Again there are no rules, but in general a manuscript with only 1-2 data figures is liable to be a “Note”, rather than a full paper. Average sized papers might include 4-6 figures, 1-2 tables and have about 8-12 pages double-sided text. Thus a typical manuscript might be 15-25 double spaced pages. If your manuscript is much longer e.g. 30+ pages you might need to prune, and/or consider if the journal publishes longer papers.

10. Co-authorship - There are NO rules for who should be a co-author and who should not. One guideline might be that most studies have about five components – coming up with the study idea, funding the project, doing the actual data collection, analysing the data, writing the manuscript. If a collaborator has made a significant contribution in two of these five components they might expect co-authorship. It is IMPORTANT to discuss co-authorship very early on in a research project and make sure that everyone is happy with this. Co-authorship order – usually the person writing the manuscript has their name first (this may NOT be the person who did most of the data collection). You should discuss this among the co-authors and get agreement. Technicians, research assistants etc who are actually paid to collect data etc may NOT necessarily be authors, this will depend on the Principal Investigators. Who is a co-author, and who isn't, and the order of authors can become a source of ill feeling between collaborators – make sure you discuss this with your co-authors. Anyone who is a co-author MUST have an opportunity to read and comment on the manuscript. It is completely inappropriate to put someone's name on a paper and not give them the opportunity to read it BEFORE it is submitted to a journal.
11. After you have the bulk of your results written write a rough Abstract. This should help you with what data to include what and what to leave out, keep the paper focussed, ensure that you have a logical order to your ideas and data, identify your key findings and conclusions.
12. Citations and References – Follow the format in the “Instructions to Authors”. Don't overdo these. When citing references in the text to back up some point you are making you will usually only need 2-3 references. Choose the “best” (most appropriate) references you can find. Always reference scientific papers in preference to grey literature, consulting reports etc. Where possible cite the original paper for an idea, method, description etc. If you can't find/get hold of a paper but read about it in another paper you can say “XYZ cited in ABC”, but in general you should avoid this.
13. When writing, remember that the main purpose of this is to tell people about your exciting study. KEEP IT SIMPLE. Don't waffle. Leave the flowery language for your next poem. Present your findings in a logical order. Ask yourself, will the reader follow this?
14. When you have written a draft of your manuscript spell-check it! Remove all the typos and minor errors. Spend some time wordsmithing it, i.e. rewording awkward sentences, trying to make points clearer. Deleting words can often make your sentences read better! Avoid words like “utilise”, this means “use”. Sometimes bridging words/phrases might be useful to link sentences e.g. However,.... In contrast, .....Consequently ....
15. Then give your draft to your co-authors to read and comment on. If you don't have co-authors give it to several colleagues to read. Try not to be offended by any critique, remember the purpose of this is to produce a better paper!
16. For many, scientific writing is not an easy task, but if you put the time into it you will produce a well crafted document which may be used and read by scientists throughout the