Scientific Publication Process

(This is my reading notes based on the handout: scientific-publication-process.pdf.)

1. Research is not complete until it is written and published. Preparing a scientific paper is not easy. It is not a literary skill, it is ORGANIZATION.

2. Five questions of scientific writing:
   (1) What was the problem studied? Introduction
   (2) How did I study it? Methods
   (3) What did I find? Results
   (4) What do the findings mean? Discussion
   (5) What is the take-home message? Conclusion

3. Organization of a scientific article (general -> particular -> general)
   (1) Introduction (4 paragraphs, general -> particular): i, ii, iii, iv – objectives (a-d).
   (2) Methods/procedures: subheading 1-4. In order to (do this), I (did this)
   (3) Results: subheadings i-v
   (4) Discussion: subheadings i-v: particular -> general
   (5) Conclusions: objectives (a-d)


5. Materials and methods
   (1) Study area
   (2) Biology of …
   (3) Experimental design
   (4) Insect and algal sampling
   (5) Statistical analysis

6. Results: A… B…

7. Discussion: Same topic outline (A+B) as in results.

8. Titles: First most important part of paper. It is label, not a sentence. Use colonic titles carefully
   Avoid waste words: studies on…, investigations of…, observations on…
9. Author

(1) Authorship: Include only those who actively contribute to the overall design and execution of the experiments. An author takes intellectual responsibility for the research results being reported.

(2) “Area” of research investigation:
   i. Conception and funding
   ii. Design of experiments
   iii. Data collection
   iv. Data analysis
   v. Manuscript preparation
   vi. Other

10. Other considerations

(1) Author sequence: establishing sequence of authors in advance

(2) Author address (where you did your research, footnote for current address)

(3) Acknowledgements: individuals, agencies

(4) Page charges

11. Abstract (Write after you’ve finished all other sections of the paper)

(1) 1-3% of article length or <= specified number of words (~150-250)

(2) Second most important part of paper after title

(3) A summary of the information that should:
   i. state the principle objectives and scope of the study
   ii. describe methods used
   iii. summarize the results
   iv. state the principle conclusions

(4) Usually too much detail is included

(5) Abstract must be able to read without referring to article it summarizes

(6) Avoid references

(7) Avoid words like discussed, presented, and summarized

Strategy: Use the topic sentences from each paragraph.
12. Introduction (4 paragraphs)

- A description of what you did
- Goes from general to specific
  - Presents the nature and scope of the problem
  - Reviews pertinent literature
  - Indicates how this study fits into the problem
  - Present goal/objectives of study and paper.
- Example:
  - A. Importance of grazing in ecosystems
  - B. Grazing in aquatic systems
  - C. Experimental studies of grazing aquatic systems
  - D. Study Objectives

13. Materials and methods

- A description of how you did it
- Add subheadings for approaches used
- In outlining use: “In order to do/determine ___, I did ____”
- Give copy of methods to colleagues, asking whether they could repeat the experiment based on what is written

14. Results

- A description of what you found in your experiment
- Separate facts from inferences (which is why results and discussion are kept separate)
- Present results in a logical sequence that corresponds to objectives
- Best if short
• Difficulties of repetitive data in Tables and figures

• Do not include material that does not relate to objectives

15. Discussion

• A description of what your experiments mean

• Show relationships among results observed

• Show how results agree or disagree with previously published research

16. Conclusions

• Most often-quoted part of the article

• State conclusion summarizing evidence

• Ideas for future research: not a call for more research, can suggest possible future research;

17. Acknowledgement

• Simple and courteous

• “I thank” not “wish to thank”

• Limited to those who contributed to study (technical, funding, editorial)

18. Figure or Table?

• if want to show trend, use figure; if the number is important, use table.

• Design tables and figures with format

19. Final thoughts

• “aging” of manuscript helps

• Pre-submission reviews

20. Literature cited
• Choice of literature: i. Based on availability;  ii. Prefer new rather than old if equally important.

• References cited should be restricted to significant journal articles, not reports if possible

• Check citations with text, original articles

• Use literature cited to determine appropriate journal for submission

• Avoid “ghosts”
  
  o 150 citations checked, 31 had errors, 10% of citations could not be found

• Cite literature correctly
  
  o 30% of citations differed from original author’s statements

  o 15% of citations do not relate to original author’s statements (did read it actually)