

How to enjoy writing papers

Introduction: 4-5 paragraphs

1. Very short intro to your topic. You should get to the topic within 3-4 sentences.
2. Knowledge gap, what is the question, what information is missing
3. Why is it important to fill in this knowledge gap? Why is it important from practical, theoretical, applied aspects?
4. How are you going to do it? Introduce your study system, why this is a good system to answer a broader question.
5. Finish with main questions and hypotheses. It is always good to have hypotheses if you can.

Methods

1. Use examples from a few other papers that you really like (you **must** have such papers!)
2. Be very clear, avoid complex language, write to a non-specialist as much as possible and explain a lot (use supplements).
3. Write you methods while you are doing your field work, data collection and analyses. You will forget details later.
4. Clear and traceable documentation is essential. You **must** be able to reproduce your work 10 years after it has been published.
5. R markdown, R notebooks, GitHub. Or at least a very clear structure in Word/Excel (see project template example).

Results

1. Make nice and clear figures and tables and write your text around them.
2. Each Results section answers one question or hypothesis from your introduction.
3. You should explain the main results, both with statistics and in plain language. E.g. “the coefficients are -1.2 ($p = 0.002$), which means that higher temperature results in smaller size of 3 year old perch”

Discussion

1. How does your study compare to other similar studies? Are your findings similar or different from those what others found? This means – you **must** read lots of papers.
2. Discuss your findings relative to your hypotheses. Are they rejected or supported. Why?
3. How can other people use your findings? How it might be useful for practical applications?
4. Limitations of the study, what should be improved in the future?
5. But do not forget the strengths of your study.

GENERAL IDEAS

1. Code and data must be available publicly.
2. Submit to preprint (Authorea, BioXriv or others) upon submission
3. Very clear documentation and structure of all your work. All analyses steps are clearly documented, data files stored in the same folder, everything fully reproducible after 10 years.
4. Data back up!!!!!! Every day. Working from a cloud.
5. Invest 1-2 days in learning how to use GitHub and keep version control of your analyses and code.
6. Learn to use R for statistical analyses and plots.
7. Learn and keep learning statistical analyses.