Dissecting a scientific paper about evolutionary biology III

You've reviewed several papers with help from a guide. Now it's time to dissect a paper on your own. Select a paper (or access the assigned paper) and use the outline below to dissect it.

Title

- Based on the title, what is the main point being made by the paper? In one to three sentences, explain what you think the title means.

Authors

- Was this research performed by one or a few individuals, or was the research a broad, collaborative effort across several institutions?
- What sort of topics do the first and last authors study? Does this give you any insight into the topic of the paper?

Abstract

- Try to translate the abstract into your own words line by line.

Introduction

- Are there keywords or ideas that you don't understand? If so, look them up. Would reviewing any of the references help you understand those unfamiliar concepts?
- What questions is this study trying to answer? What is the current understanding of these topics?
- Why are the authors addressing the questions that they are?
- Is there a scientific debate or controversy that this study will help address? If so, what is it?
- Try to phrase the main idea being tested in the study as a hypothesis.

Materials and methods

- Summarize the approach that the study takes to answering the main question.
- Does the study involve an experiment, modeling, some other sort of testing, or a combination of approaches?
- Are there any aspects of the study's method that you do not understand? If so, what are they?

Results

- What are the main findings of this study?
- Are there any results presented here that you do not understand? If so, what are they?

Tables

- What interpretations described in the Results section are supported by each table?
- Do any of the tables include particularly important results? If so, what are they?

Figures

- Are any of the figures designed to communicate details of the study design, as opposed to results? If so, which ones?
- What interpretations described in the Results section are supported by each figure?
- Do any of the figures include particularly important results? If so, what are they?

Discussion and conclusion

- What are the most important findings of this study? What ideas are supported or contradicted by these findings?
- Why are these findings important to the study of evolution or biology in general (i.e., outside the context of this particular study)?
- Were any of the study's findings surprising or hard to explain? If so, what were they, and why were they surprising?
- What were the strengths and weaknesses of the study's design?
- What sort of additional studies would help address the weaknesses of this study?
- What questions about the topic of this paper remain to be answered?

Supporting information

- What is included in the supporting information—additional details of the study methods, more detailed results, or something else?
- Did you examine any of the supporting information?

Acknowledgements

- Does the Acknowledgements section of this paper raise any red flags or concerns for you?