

Term Paper

Bayesian Hierarchical Modeling in Ecology
OCS 7001

October 15, 2019

Introduction

Individually, you will write a scientific manuscript that uses a hierarchical model coded in JAGS. The skills you use will be drawn from lecture (though you are not prohibited from using models beyond what we discussed in class—just make sure they are used correctly and see me with questions.) The topic of your manuscript should have to do with marine science, ecology, or similar fields, though you are encouraged to use data from your own research. If you do not have data, please see me. **This assignment accounts for 30% of your course grade.**

Contents

1. Introduction

- (a) After a 1-page title page that includes the title of your manuscript, the author(s) and their affiliation(s), and the journal to which you have formatted your manuscript, please include (starting on line 1) up to one page of introductory material. I don't mind going onto page 2 for a few lines, but please attempt to keep your introduction brief. Aim to explain the study system (or species, etc.), the current state of knowledge about the topic you are interested in, and clearly state your question or hypothesis.

2. Methods

- (a) Within a few pages, explain how the data were collected (feel free to reference a thesis or other document if it were to get lengthy and detailed). Focus on how the data are analyzed—what

model(s) were considered, what models were eventually selected, how model fit was considered, etc. Rely on lecture notes (and/or talk to me) if you need ideas for analysis. Include the BUGS model/JAGS code as a referenced supplement.

3. Results

- (a) Briefly (about one page) discuss your results. What did the models produce? Was there any summary information that helps describe the dataset? Do not interpret your results—that is for the discussion. Reference any tables or figures that you have made.

4. Discussion

- (a) Within a page or two, interpret your results. Don't rehash what you found, but interpret why you saw the patterns you did? How do your results compare to previous work? What might be the next steps for your research question?

5. References

- (a) Include whatever references you may have used, most likely in the introduction and discussion sections.

6. Tables and Figures

- (a) You are not required to have any tables (though you certainly can). You are required to have at least 2 figures, one of which should be different from the others. Use the figure making guidelines and suggestions that we covered in lecture to make clear, informative figures.

Deliverable

Please provide a report following the content and formatting guidelines specified above in each section. Please format your manuscript based on a journal in which you might find this study. All submissions should be PDF'd and emailed by the deadline. **This assignment is due by 5pm on 6 December 2019.**