Reminders!

- Read “Reading primary literature: a practical guide to evaluating research articles in biology” by C.M. Gillen before coming to class.
- Bring your four preliminary questions on your Wa‘ahila Ridge project from Lab 4.

Student Learning Outcomes

After Lab 5 students will be able to:
1. find relevant primary literature on a specific science topic, specifically for their own research project in Ecology.
2. explain the format of primary scientific literature and use it in their own scientific writing.
3. read and comprehend information presented in scientific literature and discuss the concepts, results, and implications of published studies.

I. SCIENTIFIC LITERATURE & WRITING

This week’s lab is centered on scientific primary literature. You will learn how to find what you are looking for, how to get the information you need out of a publication, how are scientific publications structured, and other skills necessary to collecting relevant literature. In Science, but also applicable in other fields, you need to be able to find publications on a specific subject and you need to find the information you are looking for in that publication in an efficient way. Furthermore, during BIOL 265L you will eventually write your research project on Wa‘ahila Ridge in the form of a scientific publication. Therefore, it is important that you understand the format and the different parts of a scientific publication.

Please read all of Gillen 2007 (you can skip the exercises) for this week’s lab. You will do some of the exercises adapted to BIOL 265L in class and as part of your homework assignment. Your TA will also explain to you in more detail what your project on Wa‘ahila Ridge will entail and you will have time to revise and finalize your hypotheses.

There are two resources to help you with your project on Wa‘ahila Ridge: 1) an online Library Guide (LibGuide) on the UH Hamilton library site, designed for Biology students (“http://guides.library.manoa.hawaii.edu/biolabs”).

II. IN-CLASS EXERCISE

Please do the following exercises in class with the guidance of your TA. You can work in pairs or alone.

1. Visit the UH Hamilton library website http://library.manoa.hawaii.edu. Under “Research” use Electronic Journals/eBooks, Online Databases/Indexes links or the “OneSearch Manoa” search function to identify several (3-5) journals in ecology that publish primary research articles. Similarly, you may browse by subject -> Environmental sciences -> Ecosystems and Ecology. If browsing by subject, be sure to check mark peer reviewed journals only. A list of relevant journals will populate the bottom part of the page. Choose one (or more) and browse the table of contents of these journals and scan some of the articles. List 2-3 differences among the journals you have found.

2. Locate the journals Nature (www.nature.com) and Science (www.sciencemag.org), either online or through UH Hamilton library (Electronic Journals). Browse through an issue of one of these journals and identify primary and secondary articles. Write down the titles, authors, journal, year, volume, and page numbers of 3 primary and 3 secondary articles that interest you.

3. Consider your questions for your Wa‘ahila ridge project and develop a list of 5 search terms (or queries) that could be used to search for articles to use in your final paper for BIOL 265L.

4. Using an appropriate database within the Electronic databases on the UH Hamilton library webpage (e.g., BioOne, Web of Science), identify 5 primary research articles on your topic.
5. Pick one of the articles from question 4. Compile a list of at least 5 research articles that would help you understand the chosen article better. Look for articles cited by the chosen article, articles that cite it, and other articles by the same author(s). Also, search appropriate databases to find additional related articles.

6. Have your TA review and provide feedback for your questions about your Wa‘ahila Ridge (from Lab 4). After revising your questions, select two of those revised questions and form statistical hypotheses for each (H₀ and Hₐ).

III. ASSIGNMENT (35 pts.)

Ridge Project (15 Pts. Total)

1. Chose two of your revised questions to be used for your ridge project. Write the H₀, Hₐ and expected predictions for each. (6 Pts.)

2. Write a draft of your Material & Methods for your ridge project. Discuss the sampling techniques you will use to collect the data tested in your revised hypotheses from question 1. (6 Pts.)

3. Considering your final two hypotheses for your ridge project, choose three appropriate articles to include in your Introduction and Discussion of your final paper. You can use the ones you find during the in-class exercise. Only include primary research articles. Cite them as you would in the Reference section of your paper (format according to the journal “Ecology”. (3 Pts.)

Scientific Literature (20 Pts. Total)

To answer the following questions, you need to read the two papers dealing with Island Biogeography (Lab 7). Read all of Blackburn et al. 2004. You do not have to read all of MacArthur & Wilson 1963 (but you are welcome to): read everything BUT chapters “The form of the immigration and extinction curves” (p.378), “Prediction of a radiation zone” (p.384), “Estimating the mean dispersal distance” (p.384), “Appendix” (p.387).

4. In one or two sentences each, how would you describe the title of each of the two papers to the general public (assume that they have little to no scientific background)? (2 Pts.)

5. Briefly state the overall research goal of the two papers. (4 pts.)

6. Answer the following questions with examples:
   a) State the hypotheses (Hₐ) and predictions of Blackburn et al. (2004) in your own words. (2 Pts.)
   b) Is there an existing theory that addresses the research question in MacArthur & Wilson (1963)? If so, are there shortcomings of the existing theory? Explain in your own words using examples from the paper. (4 Pts.)

7. Choose one of the two papers. Answer the following questions with examples from the paper your chose (specify which paper you are referring to).
   a) How are the data presented in the paper? In pictures, graphs, tables, or text? (1 Pt.)
   b) Summarize three of the tables or graphs in the paper in your own words (3 sentences max. for each). (3 Pts.)
   c) Do the authors address weaknesses or possible criticisms of their methods or findings? If not, should they? Explain. (2 Pts.)
   d) What is your overall opinion of the study? (5 sentences max.) (2 Pts.)
IV. PAPERS TO READ

