

BIOL 122
Homework #1
Fall 2019
35 pts

Reading: Excerpt from Weiner, J. 1994. *The Beak of the Finch*. Vintage Books. New York.
Available from the class web page (<http://ww2.coastal.edu/jjhutche/bio122.htm>).

Evolution by natural selection is the primary process underlying biology. Much of the theory of natural selection originated from the work of Charles Darwin who (among other things) compared organisms, such as finches, in South America with those in the Galapagos Islands. One of my favorite books on biology and evolution, *The Beak of the Finch*, describes the research of Drs. Peter and Rosemary Grant and their students on the evolution of Darwin's finches. Besides being a well-written description of evolution by natural selection, the book provides a first-hand account of how science is done in the field.

After reading the paper, please answer the questions below. **Some rules to follow:**

- Answers must be typed.
- You do **not** need to include the questions; just provide the answers.
- If you refer to organisms using their scientific name, you **must** italicize the genus and species names (e.g., *Homo sapiens*, not Homo sapiens).
- Points also will be taken away for errors in spelling and grammar, so proofread!
- When writing your answers, **USE YOUR OWN WORDS**.
- Your answers must be your own. You can talk to other students about the assignment but you must write all answers by yourself.

This assignment is **due Friday 30 August 2019**; turn in a printed copy (you'll give a job to a tree planter!).

Questions:

- 1) Describe (not list) three reasons why beaks were thought to be so useful for testing Darwin's theory of natural selection.
- 2) Were Darwin's finches always considered a good example of natural selection? Why or why not?
- 3) Explain what Peter Boag's experiment with eggs on Daphne Major was supposed to test and how he was going to do the experiment. Did he do the experiment? Why or why not?
- 4) Explain how drought influenced *fortis*. Be specific about what led to the changes in the species. How much variation in beak size was relevant for *fortis* survivorship? Be specific (i.e., include an actual value for the beak size difference).
- 5) What happened to *fortis* in the year after the drought (i.e., in 1978)? How did these events relate to evolution and to natural selection (note that these are two distinct topics)?