Questions for Paper 3

1) In their abstract the authors mention the results of previous observational studies that support the predictions of life history theory. What is the additional type of study that they conduct and report in this article that provides a strong test of the life history theory predictions? Give a few different reasons for why you think their approach in this article is stronger than their original observational studies, and a few ideas for how their approach could be made even stronger.

2) First, explain what the predictions of life history theory, and how they compare to the predictions that the authors make regarding their experimental treatments. Then, explain the results from this study that are reported in Table 1 (middle two columns) and how each of the results support or refute the predictions made by life history theory.

3) In their experiment the authors transplanted about 200 guppies to a new location where the type of predator was different. Why do the authors think that the actual founding population size was > 200? Why were they worried about potential founder effects, and do you think that their founding population size is big enough to avoid these founder effects? Why were the authors also concerned about genetic drift and how did they argue that drift should not be an influence in their study?

4) After two years of the study the phenotypes of the females in the introduction (transplant) site were different from the phenotypes of the females in the control (origin) site. What factor(s) caused these differences in phenotype to develop? Why? Could other factors have been responsible for these differences in phenotype? What additional experiments could the authors do to make their test even stronger?

5) In past lectures we have discussed what the different components are of the process of natural selection, and how we need to study each of these components to demonstrate that an organism is undergoing natural selection in the wild. What are these components of natural selection, and how did the authors of this study gather data on each of them? Why was this study an even stronger test of natural selection than the Grants’ study on Galapagos finches that we discussed in class?