

## WRITING ASSIGNMENT 2 - GENETIC BASIS OF ADAPTATION

10 POINTS – DUE NOV 1<sup>ST</sup>, 2017

The goal of this assignment is to find an example of a study that illustrates the genetic basis of adaptation or speciation and that applies the evolutionary principles we have been studying in class.

Over the first part of this semester we have discussed the general principles of population genetics and more recently quantitative genetics. Chapter 8 in the book highlights a number of great empirical studies where the principles of population and quantitative genetics have been used to study adaptation. Many of these studies take advantage of recent developments in DNA sequencing to use a QTL or genome scan approach to identify gene(s) involved in adaptation or speciation. Your task is to find additional examples and discuss them. Do not use the exact examples from the book. It is fine to build off of them, for example, there may be more recent papers on the beach mouse system that would be interesting and certainly there are many interesting recent stickleback studies.

- Conduct a literature search to identify at least **ONE** original paper that illustrates the application of the concepts we discussed in class to make inferences about the genetic basis of adaptation or speciation. The paper(s) you chose should be data papers from the primary literature, **not** reviews, and they should be published within the last 10 years. Any system is fair game. If you find an interesting paper, but you are not sure it is appropriate ask me. If you have any trouble finding a paper I can help.

**In your paper cover the following points and questions for full credit:**

- Summarize the main hypothesis(es) of the paper. What evolutionary puzzle are the authors trying to solve? Why is this issue an important topic in evolutionary biology?
- Describe the study system and the methodological and analytical approaches used to test these hypotheses. Why is this system ideal for this study?
- How does this study help us understand the process of adaptive evolution?
- What future research do you think should be done to further advance our understanding in this area?
- How does this study relate to the concepts we have been learning in class?

### Guidelines:

**Length:** Two-page limit. (1- inch margins, 10-12 pt font, 1.5 or double space is fine)

**Submission:** Submit your paper electronically via email along with a pdf copy of the paper you are using.

**Due Date:** ~~October 30<sup>st</sup> 2017~~ November 1<sup>st</sup> (by end of day)

Include appropriate in text citations for the paper(s) you are working from (e.g., Hendry et al. 2011) and add a reference list at the end in this format:

Hendry, A. P., M. T. Kinnison, M. Heino, T. Day, T. B. Smith, G. Fitt, C. T. Bergstrom, J. Okeshott, P. S. Jorgensen, M. P. Zalucki, G. Gilchrist, S. Southerton, A. Sih, S. Strauss, R. F. Denison, S. P. Carroll. 2011. Evolutionary principles and their practical application. *Evolutionary Applications* 4:159-183.