

"Inferring selection on a quantitative trait in a subdivided population"

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Abstract

Evolution by natural selection is a fundamental principle in biology, yet not all changes in plant or animal populations are due to selection. A major goal in evolutionary ecology is to be able to tell whether selection is responsible for differences between two populations of the same species in different locations. We discuss a currently popular statistical test for detecting the action of selection on a quantitative trait, that is, a trait like height or weight that can vary continuously and reflects contributions from many different genes. The theoretical basis of this test turns out to be questionable in a number of settings. We also propose a test that may improve power and accuracy by taking advantage of our rapidly increasing ability to collect genome scan data from large numbers of individuals, and present preliminary results on the power and robustness of the proposed test. (Joint work with M. Hamilton, B. Wood and S. Levisyang.)