NATURAL SELECTION AND VARIABILITY OF PARASITOID BEHAVIOR IN WILD AND CULTIVATED FORAGING HABITATS

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Parasitoids have intimate and specialized associations with their hosts. A habitat may crucially influence the ecology and evolution of parasitoids through its effect on foraging behavior since reproduction depends in part on the ability to locate hosts in a foraging environment. This dissertation addresses the influence of foraging habitat on parasitoid behavior. In North America the wasp *Cotesia glomerata* (Hymenoptera: Braconidae) forages for *Pieris rapae* (Lepidoptera: Pieridae) on cruciferous plants such as cabbage and wild mustard. In a reciprocal transplant style experiment I observed behavior of the progeny of *C. glomerata* from these two host plant environments in model habitats of each type, and measured their individual rates of parasitism.

Using multivariate analyses of variance I found behaviors that differ between the two model habitats. For example, in spite of the time spent on nonhost plants in the wild foraging habitats wasps spend equal time foraging on host plants in both model habitats.
In the cabbage test habitat, some behaviors differ genetically between wasps from cabbage and the wild host plant origins. Wasps from the wild habitat fly between plants and land on the wall of the cage more frequently, suggesting a tendency to leave.

I found that a different set of behaviors covary with parasitism rate in each model habitat, indicating that natural selection may act differently in cabbage than in the wild host plant habitat. The amount of time wasps spent on nonhost plants is not associated with parasitism rate, and contrary to expectations, wasps forage more successfully in complex wild than simple cabbage habitats. A separate experiment in which I measured *C. glomerata* response to volatile host plant odor indicated that the pattern of parasitism observed was not due to odor preference.

Though natural selection may differ between habitats and there is genetic differentiation of behavior between wasp origins, my data provide no evidence of evolution of behavior in response to natural selection and local adaptation. Possible explanations for this, due to evolution, ecology, and experimental design are discussed.