

Role of olfaction in host-habitat and host finding of *Cotesia urabae* (Hymenoptera: Braconidae)

Gonzalo Avila ^{*1}, Toni Withers ², Gregory Holwell ¹

¹ University of Auckland

² Scion

Eligible for student prize

Olfaction is acknowledged as the primary mechanism used by parasitic wasps to detect and locate a number of resources (e.g. a food source, hosts, mates), where they make use of chemical cues to orient first towards a host habitat and secondly towards their host. *Cotesia urabae* is solitary larval endoparasitoid that was introduced into New Zealand as a biological control against the gum leaf skeletoniser, *Uraba lugens*. A series of bioassays using Y-shaped and four-arm olfactometers were conducted to investigate the response of *C. urabae* to volatiles emitted by its host-plant, host, host by-products and male and female conspecifics. In a Y-tube olfactometer, males exhibited a significant positive response only to conspecific females. Mated females exhibited a significant positive response to *E. fastigata* leaves, *E. fastigata* leaves with feeding damage caused by *U. lugens* larvae, *U. lugens* larvae, *U. lugens* larvae feeding on *E. fastigata* leaves, but not to *U. lugens* frass on its own nor conspecific males. The multiple comparison bioassay conducted in a four-arm olfactometer clearly shows that *C. urabae* females were significantly more attracted to *U. lugens* host larvae feeding on *E. fastigata* leaves than any other of the odours tested. This study made it clear that *C. urabae* respond only to chemical cues with a high reliability of what they are searching for, for males it is a female, for females it is cues closely associated with their target host. Frass is not a chemical cue used by foraging *C. urabae* females as it is generally shed from the plant, and therefore does not reliably indicate the presence of host larvae.

