A study of codling moth (*Cydia pomonella*) parasitism by *Ascogaster quadridentata* in a derelict apple orchard

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Ascogaster quadridentata (Hymenoptera: Braconidae) is a codling moth parasitoid native to Europe and established in New Zealand following introductions from the UK in the 1930s. *Ascogaster quadridentata* parasitises the eggs of codling moth and develops and overwinters throughout the larval period of the host, finally emerging from the host larval cocoon in spring. As a result of its slow development, the parasitoid does not protect the fruit from larval feeding damage. Codling moth larvae in overwintering cocoons concealed under bark on apple trees were collected from a derelict orchard in Upper Moutere, Nelson. Larvae (n=117) were carefully extracted from their cocoons and introduced into rolls of corrugated cardboard to complete their development. Eighty-eight larvae were successfully reared and 37 of these (42%) were parasitized by *A. quadridentata*. This result is similar to a limited number of other records for this parasitoid in New Zealand and indicates that *A. quadridentata* assists in reducing high populations of codling moth in derelict orchards or wild apple trees, which are the main source for codling moth infestations in nearby commercial orchards.

Effect of temperature on flight initiation in *Mastrus ridens*

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Mastrus ridens (Horstmann) (Hymenoptera: Ichneumonidae) is a gregarious ectoparasitoid of cocooned larvae of codling moth *Cydia pomonella* (L.) (Lepidoptera: Tortricidae). This host stage is available for parasitism by *M. ridens* (which is not known to diapause) throughout winter and early spring. A study was conducted at ambient field temperatures during this period to investigate the minimum temperature required for flight initiation by *M. ridens*. Ten female and 10 male adults (3-7 days old) from the laboratory were transferred into two containers and placed in an apple orchard for 1 h for temperatures to equilibrate. The container was then opened inside a large net cage, and the numbers of parasitoids that flew into the cage at different temperatures were recorded. The experiment was repeated 25 times. Neither males nor females flew at temperatures below 14°C. The minimum temperatures required for male and female flight initiation were ca 15°C and 17°C respectively, with 50% flight from the container at 15.5°C and 18.5°C respectively. These data will help to (1) delimit the release periods while establishing the parasitoid throughout New Zealand and (2) determine when the females are first active in spring, before the codling moth larvae pupate.