

The Life History of the Lepidopteran Seed Predator *Cryptaspasma querula* and its Relationship with Potential Host Plants

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Eligible for student prize

Cryptaspasma querula is a polyphagous obligate seed predator endemic to New Zealand. Related species (*Cryptaspasma*) have attracted attention overseas because these lepidoptera can have significant effects on natural and economic seed populations. Field experiments investigating infection rates, host survivability (germination/establishment), advantages of seed dispersal (seeds were cleaned of flesh to simulate pigeon seed dispersal) and potential host suitability were conducted over a number of different sites in the North Island of New Zealand including transect and monthly surveys of host plant infections. Laboratory experiments investigated host suitability, host preferences, and life history in *Cryptaspasma querula*. *C. querula* infection rates of tawa (*Beilschmiedia tawa*) reached over 90% for most sites surveyed. Seeds were shown to have reduced germination/establishment rates if they were infected with *C. querula* but some seeds were still able to establish despite damage. Seeds that were cleaned and taken away from the parental canopy to simulate dispersion still suffered drilling from *C. querula* yet many sites showed increased numbers of establishing seeds potentially due to seeds given time to germinate before they are attacked. Seeds of tarairi (*Beilschmiedia tarairi*) and oak (*Quercus spp.*) were utilized by *C. querula* in the field. Karaka (*Corynocarpus laevigatus*) and Miro (*Prumnopitys ferruginea*) suffered little damage to the endosperm from the seed predator and is likely not a host in nature. Miro and Hinau (*Elaeocarpus dentatus*) were shown in laboratory experiments to be inadequate hosts and Tarairi and Tawa were preferred hosts. *C. querula* has a high infection rate on *B. tawa* than expected ultimately having a strong impact on germination and establishment in the seeds. Coupled with reduced natural seed dispersers (kereru), there may be major consequences for tawa demography and regeneration.

