

An enemy of an enemy is a friend of mine: the tri-trophic interactions between a predator-parasite-host assemblage in New Zealand.

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Eligible for student prize

The Pūriri moth (*Aenetus virescens*) is New Zealand's largest endemic moth. During their 4-6 year larval stage, caterpillars' parasitise host trees by excavating a "7" shaped tunnel, feeding on living tissue at the entrance. Silk and frass webbing covers the tunnel entrance, perhaps concealing larvae from predators such as North Island Kaka (*Nestor meridionalis septentrionalis*), that predate Pūriri moth larvae by excavating bark and wood from trees. I hypothesise that Pūriri moth larvae select host trees based on wood density and that Kaka attack rate is correlated with parasite load. Furthermore, I hypothesise that host tree fitness is affected by both Pūriri moth parasitism and Kaka attacks. Preliminary results indicate Pūriri moth larvae preferentially select particular tree species and that Kaka visually locate tunnels excavated by the larvae. I propose a trade-off exists between the ability of Pūriri moth to parasitise host trees and protection host trees provide from predating Kaka. This tri-trophic system presents a unique and novel predator-parasite-host relationship whereby predators directly influence parasites and their hosts. Understanding the drivers and outcomes of this complex relationship will provide important missing elements in tri-trophic predator-parasite-host research.

