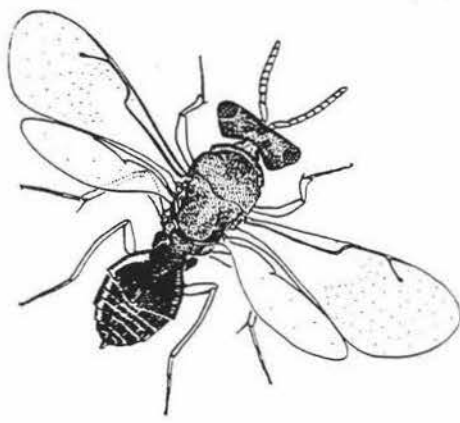
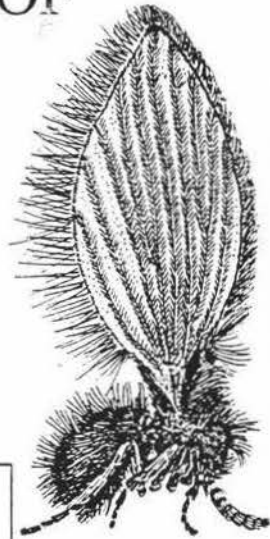


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TERRESTRIAL INVERTEBRATE
COMMUNITIES: THE EFFECTS OF
SUCCESSIONAL AGE,
HABITAT STRUCTURE AND
SEASONALITY.



A THESIS PRESENTED IN PARTIAL FULFILMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF SCIENCE
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VANESSA. M. W. MUNRO
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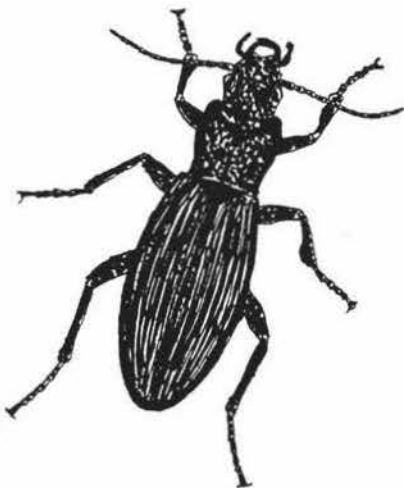


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ABSTRACT

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Ground dwelling invertebrate communities at five sites of successional vegetation of increasing age, were sampled with pitfall traps between December 1992 and January 1994. Species richness peaked in mid successional manuka and late successional broadleaf/podocarp habitats. Individual abundance was highest in early and mid sere sites. Increased habitat heterogeneity and complexity in mid succession may have elevated species richness above that of early sere sites. Furthermore, as manuka is a native plant with a wide geographical range, this may also have contributed to the higher species richness at the Manuka and Broadleaf/Podocarp forest sites. In contrast, the number of guilds per site was highest in the climax forest, and again probably relates to high habitat heterogeneity, complexity and plant diversity at these sites.

Invertebrate faunae associated with wooden block refuges placed in the five successional habitats were collected in late November 1993 after nine months. The invertebrate assemblages associated with these blocks yielded similar patterns to those collected with pitfall sampling, with highest diversity and abundance in mid succession. Availability and spacing of alternative natural refuges again seems most likely to have influenced these patterns.

Predator abundance was highest in the Pasture and declined as habitat age increased. However, predator diversity peaked in mid and late succession, declining again in the climax Podocarp forest. Competitive exclusion in the climax forest and an inability for native species to colonise exotic pasture, seem most likely to have limited predator species richness at these sites. In contrast, predation pressure, as assessed with caterpillar (*Galleria mellonella*) baits, increased along the successional gradient. Peak predation intensity in late succession is attributed to the larger size and greater effectiveness of predators occurring in these habitats.

In summary, invertebrate community structure clearly changed along the successional gradient; species richness peaked in habitats of intermediate age, the number of guilds increased to peak in late succession, while the number of invertebrates declined. Predation intensity also increased with successional age, however, there was no clear relationship between predation levels, predator abundance or predator diversity.