

Vine-Feeding Insects of Old Man's Beard, *Clematis vitalba*, in New Zealand

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The insect fauna now found on old man's beard in New Zealand was surveyed to see if there were any candidate, locally present species for use as biological control agents. Feeding by 14 species was recorded. These comprised 13 Australasian species and 1 endemic leaf-miner. Four of the species were oligophagous and 9 are polyphagous pests. Only *Stathmopoda* sp. seems to offer any prospect as a locally present insect.

Introduction

Old man's beard (OMB), *Clematis vitalba* (Ranunculaceae), is a rampant weed most common in bush, riversides and urban areas. It smothers native bush and trees planted for erosion control and it threatens replanted exotic forests. Inspection and control of inaccessible sites by helicopter and boat is costly. Eradication can be difficult and hazards to native bush, adjacent crops and home gardens complicates control.

A survey of insects found on OMB in New Zealand in 1990-1 and 1991-2 was aimed at exploring the prospects for biological control among those insects. This would contribute to the choice available from the best European candidates for introduction and evaluate native New Zealand insects with potential for redistribution.

Methods

At 28 sites, 200 leaflets on the eighth to fourth nodes were inspected for damage and leaf mines. Where possible, the causal agent was identified.

Results and Discussion

Insect damage to vines of OMB was not significant. Four of the 14 species found feeding on OMB are oligophagous and 9 are polyphagous pests. Thirteen are Australasian species and 1 is an endemic leaf-miner.

Between October and January, an average of 19% (range 1.8-42%) of the leaflets were defoliated before seed formation. On average, 1.2% (range >0.5-5.7%) of the leaflets had 25% or more of the surface removed. Leafroller caterpillars of *Ctenopseustis obliquana* Walker, *Epiphyas postvittana* Walker, *Planotortrix* spp. and *Pyrgotis plagiatana* Walker (Lepidoptera: Tortricidae) fed on leaves and green seeds of OMB. Leaf-rollers attacked, on average, 1.4% (range >0.5-(.5 %) of the leaflets inspected. The passionvine hopper, *Scolypopa australis* (Walker) (Hemiptera: Ricaniidae) was common on stems and leaves but only caused minor spotting of the leaves. The oligophagous endemic leafminer *Phytomyza clematadi* (Diptera: Agromyzidae) was found at 39% of the sites and affected an average of 2.6% (range >0.5-27%) of OMB leaflets. Often there was only 1 mine/leaf. In April and May, 0.2-19% of OMB green seedheads had up to 30% of seeds damaged. Up to 18% of ripe seed was destroyed. The green vegetable bug, *Nezara viridula* (L.) (Hemiptera: Pentatomidae), from Europe and already in New Zealand, feeds on seeds. Generally, sucking bugs cause much less loss of seeds than chewing insects.

In Europe, 40 monophagous and oligophagous species feed on OMB (Groppe 1991). The bark-boring scolytid *Xylocleptes bispinus* and leaf-feeding *Monophagous spinolae* (Hymenoptera: Tenthredinidae), *Thyris fenestrella* (Thyrididae) and *Phytomyza vitalbae* (Diptera: Agromyzidae) are destined for further

European studies (Wittenberg and Groppe 1991). Parasitoids of New Zealand leaf-rollers may attack the leaf-roll-forming *T. fenestrella*. Any parasitoid reared from *P. clematadi* could well attack introduced leaf-miners.

Conclusions

New Zealand would benefit most from insects that damage stems and roots and, to a lesser extent, foliage and seed. The opportunity to redistribute New Zealand insects seems to be limited to species of *Stathmopoda*.

References

- Groppe, K. 1991. Literature review and preliminary survey of biotic agents associated with old man's beard *Clematis vitalba* L. in Europe. Progress Report. International Institute of Biological Control, Delémont, 27 pp.
- Wittenberg, R. and K. Groppe. 1991. Search for potential biocontrol agents of old man's beard *Clematis vitalba*. Annual Report. International Institute for Biological Control, Delémont, 11 p.