Effects of vegetative ground cover on seedling establishment of the invasive liana old man’s beard (*Clematis vitalba*)

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**Abstract**

Opportunistic use of limited resources is often attributed to invasive species, and as a mature vine, old man’s beard (Clematis vitalba L.) is known to have devastating negative impacts on the trees it colonizes. No previous experimental studies have been published on how easily *C. vitalba* seedlings can colonize ground covered by other established vegetation. This species has had an increasing presence in forestry blocks and riparian zones in New Zealand, both of which usually maintain some grass cover. To determine the importance of vegetative ground cover for preventing ingress of new *C. vitalba* plants, this study looked at seedling emergence through the soil and establishment of *C. vitalba* within four different levels of grassy cover at three sites: (1) ground kept bare after vegetation removal; (2) ground bare at *C. vitalba* seed sowing, but thereafter allowed to recover; (3) vegetative cover trimmed to 4 cm high at *C. vitalba* sowing, and then allowed to recover; and (4) unmanaged vegetation. At the highest level of vegetation density (unmanaged vegetation), no *C. vitalba* seedlings were ever detected throughout a 1-yr monitoring period. At lower ground cover densities, poor seedling emergence was observed, with a maximum of 36% of seeds sown in bare plots producing a seedling. Also, seedlings did not survive past 1 yr, except in bare plots or in plots where vegetation grew sparsely. However, seedlings that did survive began producing multiple stems within 6 mo of emergence. These results indicate that obstacles to seedling emergence and poor development at the young seedling stage when vegetative cover is dense severely limit *C. vitalba’s* chances to invade new sites via seed. Yet some successful seedling recruitment does occur due to the magnitude of the propagule pressure on the landscape and the difficulty of maintaining high-density ground cover across large areas throughout the year.

***Key words***: Grass cover; invasive species; resource limitation