

The arrival in Australia of *Hippodamia variegata*: consequences for insect communities and pest management

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This paper explores the effects arising from the recent arrival in Australia of the ladybird beetle, *Hippodamia variegata* (Goeze) (Coleoptera: Coccinellidae). Monthly surveys of various habitats on vegetable farms in the Central West of New South Wales, Australia showed it to have become an important numerical component of the natural enemy fauna and the most common coccinellid. Predator densities in non-crop habitats were relatively high in the period leading up to brassica crop planting and may be an important source of natural enemies. A mark-capture technique study showed that adult *H. variegata* move into crops from the adjacent non-crop habitats. In-crop sampling demonstrated that marked predators were recovered even at the farthest point of the crop transect, 100m from the non-crop vegetation, though catch declined with distance from the field margin, showing biological is likely to be influenced by edge effects. A second experiment investigated repopulation of an insecticide sprayed field over time and further demonstrated the significance of non-crop habitats as source habitat. DNA gut analysis of field collected predators was carried out to examine the diet of *H. variegata* and a second common predator, the brown lacewing, *Micromus tasmaniae*. Both were generalist predators of the primary brassica pests: *P. xylostella*, *B. brassicae* and *P. rapae* but intraguild predation was common; highly asymmetrical and in favour of *H. variegata* consuming the lacewing.

