

The invasive coccinellid *Harmonia axyridis* as an intra-guild predator of the aphid-specific fungus *Pandora neoaphidis*

Baverstock J¹, Roy HE^{2,3}, Brown PM^{2,3}, Ware RL⁴, Majerus MEN⁴ and Pell JK¹

¹Plant and Invertebrate Ecology Division, Rothamsted Research, Harpenden, Hertfordshire, AL5 2JQ, UK; ²Department of Life Sciences, Anglia Ruskin University, East Road, Cambridge CB1 1PT, UK; ³Biological Records Centre, Centre for Ecology and Hydrology-Monks Wood, Abbots Ripton, Huntingdon, Cambridgeshire, PE28 2LS, UK; ⁴Department of Genetics, Cambridge University, Downing Street, Cambridge, CB2 3EH, UK

The ladybird *Harmonia axyridis* is an invasive alien species in many countries and is predicted to have a negative impact on native biodiversity. Intraguild-predation of *Pandora neoaphidis* by *H. axyridis* collected from the UK (an invasive population) and Japan (a native population) relative to that of *Coccinella septempunctata* and *C. septempunctata brucki* was assessed. *Pandora neoaphidis*-infected and uninfected *Acyrtosiphon pisum* were presented as single or choice prey treatments in Petri dish arenas to adult and larval coccinellids that were either starved or unstarved. Overall, predation of uninfected aphids was greater than infected aphids and, when given a choice, a preference for aphids was shown. However, *H. axyridis* (UK) consumed a greater quantity of fungal cadavers than *C. septempunctata*, *C. septempunctata brucki* and *H. axyridis* (Japan) and showed little preference for uninfected aphids over infected aphids. *Harmonia axyridis* (UK) is a stronger intraguild predator of *P. neoaphidis* cadavers than the other coccinellid species and, therefore, may have an impact on the occurrence and persistence of *P. neoaphidis*. The differences in intraguild predation by *H. axyridis* collected in the UK and those from Japan suggests that the coccinellids that invaded the UK could have undergone micro-evolution.