

Abstract

The invasion of *Harmonia axyridis* has had negative consequences on coccinellid assemblages, with a decline in abundance and diversity, but the coexistence of invasive and resident species may depend on the strength of intra- and interspecific exploitative competitive interactions. These antagonistic interactions have been scarcely studied in coccinellids. Through a laboratory study we assessed aphid consumption, weight gain and reproduction when the invasive *Harmonia axyridis*, the alien *Hippodamia variegata* and the native *Eriopis chilensis* were alone, in conspecific and heterospecific groups, at low and high aphid densities. Under intraspecific competition, coccinellids were more voracious than when they were alone, particularly *H. axyridis* and *H. variegata* at high aphid density; *H. axyridis* and *H. variegata* gained more weight than *E. chilensis*, and *H. axyridis* barely reproduced at low aphid densities, even when alone, while in the other two species reproduction was not affected by the presence of conspecifics. Under interspecific competition, weight gain and reproduction results suggest that *H. axyridis* was responsible for most aphid consumption; *H. variegata* gained less weight and barely reproduced in heterospecific groups, but its reproduction was not affected. *Eriopis chilensis* weight gain and reproduction was low but not affected by the presence of the other species. The lack of negative effects of intraspecific competition on *H. axyridis* and its better performance in heterospecific groups suggests that this species is the stronger competitor, negatively affecting *H. variegata*, but not *E. chilensis*. Thus, exploitative interspecific competition is an important mechanism explaining the dominance of *H. axyridis* and the decline of some species following its invasion. Therefore, this interaction deserves more attention than what has been paid up to now.

Graphical abstract

