

## The making of an invader: the Argentine ant (*Linepithema humile*) in southern Australia



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Native and introduced populations of invasive species often possess marked differences in their genetic structure, which can underlie behavioural, physiological, and morphological changes that affect invasiveness. Recent research on the Argentine ant (*Linepithema humile*), a worldwide invader, in southern Europe and the Americas has revealed supercolonies that have striking differences in colony structure from what is seen in its native range, Argentina. Genetic changes have been associated with a shift in colony structure from multicoloniality (intra-specific aggression between all colonies) to unicoloniality (absence of intra-specific aggression between colonies). The absence of aggression and territoriality contribute to numerical and ecological dominance and lead to successful invasions, with the resultant supercolonies in some cases extending over thousands of kilometres. *Linepithema humile* has also invaded widely across southern Australia. I investigated the genetic structure and behavioural variation of *L. humile* populations in Victoria and across Australia to elucidate their invasiveness and impacts on this continent.

To examine their genetic diversity and determine patterns of intra-specific aggression, I used a combination of 11 microsatellite loci and 1045 aggression assays respectively in an analysis of 33 *L. humile* nests at three spatial scales – ‘local’ within Mornington Peninsula National Park (3km), ‘regional’ within each of metropolitan Adelaide, Melbourne, and Perth (100km) and ‘continental’ across these three metropolitan regions in southern Australia (3000km).

At all spatial scales, no intra-specific aggression was observed. At the local and regional scales, there was no significant association between genetic differentiation and geographic distance. However, at the continental scale, genetic differentiation and geographic distance were positively associated. There also appeared to be both a recent translocation and a foreign introduction into Perth, indicating continued introductions into Australia and continued translocations among regions. These patterns conform to the notion of a single supercolony across southern Australia with some continent-wide genetic differentiation, consistent with restricted gene flow across sparse regions of unsuitable habitat but with some human-mediated movements.