

Pheromone trapping for monitoring the establishment and spread of *Eueupithecia cisplatensis* and *E. vallonoides*, biological control agents for *Parkinsonia aculeata*.

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Summary The accurate evaluation of the establishment and spread of a biological control agent is integral to monitoring the efficacy of weed management programs. Traditional monitoring techniques, such as in-person active sampling, while effective, are often labour intensive and expensive to conduct routinely. We are developing a pheromone trapping system that can be used to monitor agent establishment and spread, both spatially and temporally, for the biological control agents of *Parkinsonia aculeata*, *Eueupithecia cisplatensis* and *E. vallonoides*. Delta traps baited with live virgin females or lures made up of pheromone gland extracts were tested as monitoring tools for the presence of *Eueupithecia* in *Parkinsonia* infestations. The attractiveness of the pheromones across species was also tested, and trapping data revealed males were responsive to the pheromone profile of heterospecific females, although the rate of catch relative to that of

conspecific females has yet to be quantified. Gas chromatography was used to determine the major chemical compounds (and their relative concentrations) in the pheromone profile of each species, and both laboratory and field assays were conducted to determine which compounds are behaviorally active. The most active compounds have now been prioritized as candidates for the development of synthetic lures. Trap data from North Queensland demonstrates that pheromone lures are a viable option for monitoring *Eueupithecia* populations in *Parkinsonia* infestations and that the development of a single synthetic lure for both species should be possible because the males are attracted to the pheromones of both species. Alternatively, combinations of the pheromones may be more effective.

Keywords Biological control, Chemical ecology, pheromones, lure monitoring