

Pathogens for weed biological control: a solid past towards a rosy future?

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Summary Biological control (biocontrol) using plant pathogens has delivered exciting solutions for weed management in Australia. Interest in pathogens has steadily increased since the deliberate introduction of the rust fungus *Puccinia chondrillina* Bubak & Syd. in 1971, which has had a spectacular impact on the widespread form of skeleton weed (*Chondrilla juncea* L.). Another highlight has been the impact of the rust fungus *Puccinia myrsiphylli*, introduced from South Africa in 2000, on coastal populations of bridal creeper (*Asparagus asparagoides* (L.) Druce) in temperate Australia. More recent observations of the impact of the white-smut fungus *Entyloma ageratinae* R.W.Barreto & H.C.Evans on mistflower (*Ageratina riparia* (Regel) R.King & H.Robinson) have further increased interest in pathogens as biocontrol agents. Current projects using exotic pathogens are expected to deliver similar levels of impact on targeted weeds. The rust fungus *Baeodromus eupatorii* (Arthur) Arthur was released in 2014 for the biocontrol of Crofton weed (*Ageratina*

adenophora (Spreng.) R.King & H.Robinson), and all signs so far are that this agent will provide a sustainable tool to reduce populations of this weed. An application to release the leaf-smut fungus *Kordyana brasiliensis* D.M.Macedo, O.L.Pereira & R.W.Barreto for the biocontrol of wandering trad (*Tradescantia fluminensis* Vell.) has just been submitted following completion of host-specificity testing. A new project is underway to explore prospects of developing as a biocontrol tool the key organism (*Phytophthora bilorbang* S.Aghighi, G.E.S.J.Hardy, J.K.Scott & T.I.Burgess) identified as a contributor to the extensive decline of invasive blackberry (*Rubus anglocandicans* A.Newton) observed in riparian areas in south-east Western Australia. Whilst not all pathogens investigated for weed biocontrol lead to novel tools for land managers, past successes are sufficiently significant to promote continued investments in this area of research.

Keywords Biological control, pathogens, impact, research investments.