Sucking the lifeblood out of major invasive weeds in Australia

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Summary Major invasive weeds cost Australians around four billion dollars annually in addition to incalculable costs to biodiversity. Native parasitic plants may have detrimental effects on performance of invasive weedy hosts by removing resources via 'suckers' called haustoria and thus contribute to their demise. Glasshouse studies have documented severe effects of parasites on invasive species, but the effects of parasites may be highly variable depending on environmental conditions.

We conducted physiological measurements to investigate the effects of the native parasitic vine *Cassytha pubescens* R.Br. on the major invasive weed *Ulex europaeus* L. (gorse) across three field sites in the Mt. Lofty Ranges of South Australia. Photosynthetic performance and nitrogen of gorse were strongly decreased by *C. pubescens* consistently across sites. In addition, at two of the three sites, the parasite had a negative effect on the long-term water-status of gorse and there was also evidence of breakdown in the photosynthetic apparatus of the host in response to infection.

The data indicate that the native parasite negatively affects photosynthesis of gorse by removing large amounts of nitrogen and likely water from the host. Thus, *C. pubescens* shows promise as an effective native biocontrol against major invasive weeds in Australia and if successful, may be used to help restore our native biodiversity.

Keywords Native biocontrol, *Cassytha pubescens*, gorse, nitrogen, parasitic plant-host association, photosynthesis, *Ulex europaeus*, water, Weed of National Significance.