

Managing a Weed of National Significance for the conservation of a Critically Endangered Species: challenges and trade-offs

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Summary Recently Downey (2011) suggested that weed management needed to transition to an outcome orientated management system. In order to make such a transition weed management needs to encompass the outcome of weed control actions, rather than just focusing on the action of control *per se*. An outcome orientated system is critical for managing weeds for conservation purposes. To ensure that weed management delivers conservation outcomes, information on the species at risk needs to be incorporated into the planning and management processes. Here we report on one such program which involves the management of a Weed of National Significance (WoNS) and a nationally listed Critically Endangered Species (*Environment Protection & Biodiversity Conservation Act 1999*).

Chilean needle grass (CNG) (*Nasella neesiana*) is a WoNS that has invaded significant native grasslands in southern Australia. Invasion of these grasslands by CNG poses a significant threat to biodiversity. Thus management of CNG is given priority because it is a WoNS and poses a threat. Does CNG management however result in a conservation outcome?

Golden sun moth (*Synemon plana*) is a Critically Endangered Species that is restricted to temperate grasslands. The moth larvae feed almost exclusively on the roots of several native grass species, spending the vast majority of their lifecycle in the soil. Adult moths live for only a few days.

The initial CNG management in sun moth habitat was to remove all CNG plants in order to protect the moth's native grass food supply and broader habitat. However recent studies have suggested that the moth larvae have expanded their food choices to include CNG (Gilmore *et al.* 2008). This poses an interesting ecological problem and a management dilemma, in that how do you manage CNG-invaded native grasslands for the protection of the sun moth?

If you considered the management/conservation of each species in isolation based on their management imperatives (e.g. control of a WoNS and protection and recovery of an endangered species), then you might take the same action (i.e. to control CNG, but in vastly different ways), or diabolically opposed actions, in that one possible management option for the

recovery of the moth may be to not control CNG. Thus management either from the weed perspective or the endangered species perspective needs to be holistic and outcome orientated. To achieve this outcome there are a range of challenges and trade-offs that may need to occur. The critical issue to be addressed when making decisions about trade-offs is: what the consequences are and the risks attached. In order to make such decisions, information is needed on a range of management options, which can then underpin a triage matrix or decision support tool constructed to achieve positive outcomes for both species. One outcome might be to maintain CNG at low densities.

Here we have established a range of large scale field trials on the western edge of Canberra to examine this problem for CNG and the golden sun moth. We are using best practice CNG management options (see Snell *et al.* 2007), being mowing, herbicide application and manual removal; an assessment was made of the response of both the CNG and native grasses (specifically those that are known sun moth food plants). We are also adding native grass seeds to establish how this will assist to restore the grassland.

Keywords Chilean needle grass, management, biodiversity, conservation, threatened species.

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