Determining sites for weed control and biodiversity conservation

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Summary Whilst there is wide acknowledgement that weeds pose a threat to biodiversity, little has been done to ensure that weed management delivers measurable biodiversity or conservation outcomes. As many weed species which pose a threat to biodiversity are widely distributed and unlikely to be eradicated, processes are needed that establish priorities for control as well as for biodiversity conservation. Ensuring that conservation outcomes are achieved through weed management is dependent on two stages: (i) knowing the species at risk, and (ii) selecting sites where control will deliver benefits to such species. There are numerous ways to determine the species at risk from weed invasions (see Downey and Grice 2008 for a review). However, few of these approaches enable information on the species at risk to be collated quickly, let alone encompass a broad cross-section of biodiversity. To address this need the Weed Impacts to Native Species (WINS) assessment tool was developed (see Downey 2006) and has now been used for several weed species, including *Lantana camara* L. (lantana) and *Chrysanthemoides monilifera* (DC.) T.Norl. (bitou bush).

As there are insufficient funds to manage widespread weeds across their entire distribution, a similar selection process that identifies sites where control programs will lead to explicit conservation outcomes is required. Here a process for selecting sites for control called the Prioritisation of Impacts for Conservation of Sites (PIC-Sites) is presented. This process is based on the one developed for the NSW Bitou Bush Threat Abatement Plan and accounts for several key factors that may influence the biodiversity outcome: (1) not all species threatened by weeds are at risk at every location; (2) weed control cannot be achieved at all sites; (3) native species recovery is not possible at all sites; (4) other threats to these species may also be active at a site and may not be abated easily; and (5) the density and health of the species at risk, and therefore their ability to recover following weed programs, will vary between sites.

The PIC-Sites process employs a triage system to rank sites based on the need for either immediate action, future action, or no action. The results of this triage approach tend to differ greatly from many of the site-led approaches currently used in Australia to determine high priorities for weed management. For example, iconic sites or sites of high biodiversity are usually given high priority, but here they fall into the lower category of *future action* when the biodiversity at the site is robust and weed threats are low. Sites ranked for *immediate action* using the PIC-Sites process have populations of native species that are currently experiencing a decline as a result of weeds and conservation can be achieved through weed control. Thereby, the PIC-Sites process ensures that conservation outcomes are achievable, rather than assumed.

The value of this two-stage process to deliver biodiversity conservation through weed management is best illustrated by the selection of Coastal Banksia Woodlands (CBW) as at risk from bitou bush in NSW and then the identification of priorities sites for control (see DEC 2006). CBW is not listed as an endangered ecological community, but is highly threatened by bitou bush, and in many locations bitou bush is the main threat. Thus control of bitou bush in CBW is likely to have significant benefits for this plant community.

The selection of sites for weed control is equally as important as selecting the biodiversity to conserve, however, site selection processes have rarely been employed. This failure may have arisen through the assumption that weed control alone will result in biodiversity conservation. There is growing evidence to disprove this assumption and thus approaches that consider the broader context of the weed threat and site are needed to deliver conservation outcomes through weed management (Downey 2008).

Keywords Biodiversity, weed impacts, site selection, prioritisation, conservation.

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