

Implementation of strategic weed management for biodiversity conservation in protected areas of New South Wales

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Extended Summary There are over 340 weed species thought to be impacting biodiversity in New South Wales (NSW) and many of these species are listed as Key Threatening Processes under the NSW *Threatened Species Conservation Act 1995* (TSC Act) (DPI and OEH 2011). The threat posed by weeds is second only to land clearing and associated habitat loss (Coutts-Smith and Downey 2006). There is a recognition that the eradication of many weeds over large areas is rarely, if ever, possible and resources must be directed to those localities where the benefits of control are likely to be greatest (Williams *et al.* 2009). As such, weed management in NSW is prioritised in a strategic manner across all land tenures.

The Office of Environment and Heritage (OEH) has an important role in weed management in NSW. This includes the development and implementation of weed management strategies on lands protected and managed under the *National Parks and Wildlife Act 1974*. The OEH is also responsible for the development, coordination and reporting of state-wide strategic initiatives to reduce the impacts of invasive species on biodiversity, including for those weeds listed as Key Threatening Processes under the TSC Act. The OEH also plays an important role in the Weeds of National Significance (WoNS) initiative and, as part of this role, two National Coordinators are based at OEH.

The National Parks and Wildlife Service (NPWS) within the OEH manages protected areas of NSW, covering 8.84% of the state (7 083 609 ha) and spanning 863 reserves (as at 10 May 2012). These areas protect and conserve significant natural and cultural heritage. One of the major management challenges for the NPWS is to reduce the impacts from introduced pest animal and weed species on park values, including impacts on biodiversity, threatened species and ecological communities, cultural and historic heritage, catchment and scenic values. The NPWS approach reflects a balance between the desire to use the most effective control technique and a requirement to minimise off-target impacts.

All NPWS pest and weed programs are outlined and prioritised in 14 draft Regional Pest Management Strategies (RPMS) (OEH 2012). The draft RPMS are

based on seven principles:

1. Prevention is better than cure;
2. Evidence-based decision making and risk assessments should feature in pest program development;
3. Widespread pest programs should adopt an asset-based management approach;
4. Pest management should take an integrated approach;
5. Outcomes of pest programs must be clear, demonstrable and measurable;
6. Pest management requires on-going effort; and
7. A partnership approach should be applied.

In 2011/12, the RPMS were updated following a series of regional pest forums held with key stakeholders. NPWS is highly engaged in cross tenure weed management approaches. For example, NPWS is a member of the NSW Environmental and Aquatic Weeds Biological Control Taskforce and often NPWS works with local government and other stakeholders on implementing cross-tenure control programs. In addition, weed management on NPWS estate aligns with the NSW Invasive Species Plan (DPI 2008), with prevention, eradication, containment and/or asset protection programs developed depending on the stage of invasion, distribution and impact of the weed(s).

Prevention involves alerting each of the NPWS Regions and associated stakeholders to potential new threats. Eradication and containment programs apply to new and emerging weeds that are deemed a high risk, both to natural and cultural heritage and to neighboring land. Potential new and emerging weeds are identified by compiling information from a variety of sources and undertaking weed risk assessments. Containment programs are also applied at the edges of the core distribution of significant weeds, such as containment lines established as part of the WoNS initiative. However, the majority of weeds that are managed on NPWS estate are regionally widespread, making protecting assets at risk the focus of management programs.

In NSW, widespread weed management priorities for the conservation of biodiversity are focused on assets such as threatened species, populations and

ecological communities. These are identified using the framework outlined in the Biodiversity Priorities for Widespread Weeds (BPWW) (DPI and OEH 2011). As part of the RPMS revision, the prioritisation framework within the BPWW was used to select sites for management. Therefore, sites where widespread weeds are impacting biodiversity on NPWS reserves have been systematically identified and prioritised using the triage approach that considered the biodiversity at risk and the likelihood of achieving a positive biodiversity response.

The NPWS has recently developed the Pest and Weeds Information System (PWIS). Weed management programs will now be recorded through this system. It will record the weed species targeted for management, the method and frequency of management, any biological assets the programs are aiming to protect and the cost of management, including staff time, contractor and other expenses and volunteer input. The PWIS also records the spatial extent and density of the weed as well as recording the location where management has occurred.

Examples of current weed management programs on NPWS estate and an assessment of their success will be presented to highlight the approaches undertaken by NPWS. In addition, outcomes of the regional pest forums will be presented.

Keywords Case studies, geodatabase, monitoring, national parks, regional pest management strategies, threatened species.

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