

Do the aims of weed management programs align with the objectives of weed policy?

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Summary There are more than 3000 naturalised plants in Australia – a number that grows annually. Given the scale of the problem a range of weed policies has been developed to assist and target management. But how do these policies align with the actual management and research being undertaken? For example, in recent years weed policy has significantly focused on early detection and eradication of new weed species, based on the cost-benefit outcomes of early intervention. Whilst this argument is sound both economically and strategically, has such a policy focus led to large numbers of weed eradication programs being undertaken and reported on? Alternatively how has the Weeds of National Significance initiative (WoNS) and broader actions under the National Weeds Strategy for established widespread weeds influenced policy and on-ground management? Here I present an initial evaluation of these questions, based on a review of the papers published over a 10 year period in the proceedings of the Australian Weeds Conferences and the Australian journal Plant Protection Quarterly. The majority of papers covered established widespread weed species, of which the vast majority focused on their management, control and/or research. Few papers covered topics associated with prevention, eradication or containment of new species, of which a similar percentage (8%) focused on their management, control and/or research. Of papers that contained weed policy, about one-third focused on widespread species and less than 20% on prevention, containment or eradication. These results highlight a potential mismatch between weed management aims and weed policy objectives, in that many weed programs are addressing established widespread weed species and not new incursions.

Keywords Policy, management, widespread weeds, new incursions, eradication.

METHODS

I reviewed all the papers and abstracts published in the proceedings of the last five Australian Weeds Conferences spanning the period 1999 to 2008, being in Bishop *et al.* (1999), Spafford Jacob *et al.* (2001), Sindel and Johnson (2004), Preston *et al.* (2006) and

van Klinken *et al.* (2008). I also reviewed all papers published in the Australian-based journal Plant Protection Quarterly (PPQ) over the same 10 year period. Firstly I excluded all papers that were not focused on Australia and in PPQ were not weed-focused. Then I assigned each paper into one or more categories based on their content, using three broad themes: (1) the management focus, being: (a) prevention, (b) eradication, (c) containment, (d) asset-protection (i.e. biodiversity conservation), (e) widespread weed species, (f) emerging species or (g) other; (2) weed type, being agricultural, environmental or both, and; (3) content area, being policy, management, control, research, review, ecology/biology, planning/strategies, spread, monitoring, education, or other (e.g. economics). In addition I recorded the main weed species examined.

RESULTS AND DISCUSSION

In total, 1348 papers/abstracts were reviewed for the 10 year period, being, 1041 from the conference proceedings and 307 from PPQ (Table 1). Almost two-thirds of the papers examined covered widespread weed species. The vast majority of which (>90%) focused on their management, control and/or research. Research was mainly focused on ecology/biology or control (e.g. herbicide trials or application methods). Papers that covered prevention, eradication or containment of new species accounted for less than 10% of all papers reviewed. A similar percentage focused on the management, control and/or research.

Weed policy papers only accounted for about 5% of all papers examined, about one-third of which were review type papers (e.g. from dedicated workshops), rather than outlining new policy initiatives. The focus of these policy papers covered a range of areas with about one-third on widespread weed species and one-fifth on prevention, containment or eradication (including weed risk assessment and weed risk management).

These results do not align with the national emphasis on early detection and eradication of new weed incursions, with the exception of the WoNS program. Possible explanations include: (i) the fact that large

Table 1. The source and number of papers reviewed.

Source	Year	No. papers examined	Reference
12th Australian Weeds Conference	1999	193	Bishop <i>et al.</i> (1999)
13th Australian Weeds Conference	2002	209	Spafford Jacob <i>et al.</i> (2001)
14th Australian Weeds Conference	2004	207	Sindel and Johnson (2004)
15th Australian Weeds Conference	2006	221	Preston <i>et al.</i> (2006)
16th Australian Weeds Conference	2008	211	van Klinken <i>et al.</i> (2008)
Total Australian Weeds Conferences		1041	
Plant Protection Quarterly Vols 14–23	1999–2008	307	
Total	10 years	1348	

numbers of land management agencies have an obligation to manage their weed species, which are typically widespread species; (ii) many widespread weed species pose significant current impacts (environmentally, economically and socially) and thus management, control and research is needed to reduce such impacts, and deliver on other targets (e.g. threatened species); (iii) a growing emphasis in weed management on bush regeneration and restoration, which mainly addresses the management of widespread weed species; (iv) reporting (and publishing results) of eradication programs may be slower than that for widespread species (i.e. as they wait till the species has been eradicated), (v) those that undertake weed management (both for new weed incursions and widespread species) rarely monitor and publish the results of their efforts, with many results typically published in the grey literature, and; (vi) the number of eradication programs is very low relative to those for widespread weed species (simply as an artefact of the relative numbers of species in each group). In addition, the weeds literature has surprisingly few papers and reports on the implementation and/or effectiveness of programs targeting early detection and eradication and thus there is a potential mismatch between the management of, and policy for, weeds in Australia.

Greater emphasis thus needs to be put into reporting the effectiveness of on-ground management aimed at new incursions and eradication of new weed species, or ensuring that weed management addresses these areas. However, this must not be at the expense of managing established weed species.

For widespread weeds greater emphasis must be placed on the development of asset-protection strategies and policies, where the vast majority of work is being undertaken with limited strategic guidance.

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