"TURN THE TAP OFF BEFORE YOU MOP UP THE SPILL" – PREVENTING THE SALE AND NATURALISATION OF ADDITIONAL WEED SPECIES IN QUEENSLAND

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ABSTRACT

At least half of Queensland's major weed species are escaped garden ornamentals. Hence, statutory restrictions on the import and post-border sale of potentially invasive plant species are an integral part of the fight against weeds. While a substantial number of weed species have naturalised in Queensland, a significant number of species that are major weeds overseas are currently absent. Many of these 'high-risk' species are traded as garden ornamentals overseas and are climatically well-suited to Queensland. The Queensland Department of Agriculture, Fisheries and Forestry has assessed thousands of potentially invasive weed species from around the world and has put in place pre-emptive regulations to prohibit the sale of more than 900 species of plants considered to have the potential to become major weeds in Queensland. These post-border restrictions complement import restrictions applied at the national border to effectively remove the commercial incentive to smuggle the seeds of high-risk species into Queensland. Moreover, these restrictions block a primary invasion pathway for new weed species into Queensland.

Keywords: invasive plants, garden, pest risk assessment.

INTRODUCTION

The number of naturalised plant species in Queensland is increasing at around 10-15 species per annum. At least half of Queensland's worst weeds are escaped garden ornamentals and at least 80% of recently naturalised species are garden ornamentals. Hence, the trade in garden ornamentals is clearly the primary invasion pathway for weeds. While there are numerous initiatives in place to minimise the problems caused by well established weeds ("the spill"), programs to "turn the tap off" tend to go un-noticed.

The pen is mightier than the spray rig

Statutory restrictions on the import and post-border sale of potentially invasive plant species are an invisible but vital part of the war on weeds. The Queensland Department of Agriculture, Fisheries and Forestry has assessed more than 8,000 potentially invasive weed species from around the world and has put in place pre-emptive regulations that prohibit the sale of more than 900 species that appear to pose the greatest threat. With the "stroke of a pen" there is a significant legislative barrier in place that will delay or prevent these species from adding to existing weed problems. Compared to the high cost of controlling widely naturalised weeds, pre-emptive legislation is cheap, provided it is supported by a modest surveillance and compliance effort. The majority of nurseries are keen to avoid high-risk species.

Evidence-based selection of targets

In 1991-2, one of the first examples of evidence-based pest risk assessment was applied to select a top-priority list of more than 900 potential weeds, from a much larger list of candidate species published by Holm *et al*. (1979) (Csurhes unpublished). High-risk taxa were selected for restriction if they had three key traits: (1) a documented history as a major weed overseas or interstate (2) well-suited to tropical and subtropical climates in Queensland and (3) absent from Queensland (at the time of assessment). The initial list comprised seven genera and 20 species (totalling more than 900 species). A decision was made to include entire genera if those genera contained multiple high-impact species, numerous biologically similar species and if there were significant taxonomic problems associated with identifying species within those genera. The process of target selection started in 1991 but has been ongoing as new information is collected from overseas and interstate literature. As such, the list of restricted species is dynamic. High-risk species are listed as Class 1 pest plants under the Queensland *Land Protection (Pest and Stock Route Management) Act* 2002 (and associated regulation), as below:

- *Acacia spp. (all non-native species except A. nilotica*, *A. farnesiana* and *Senegalia albizioides*) (syn. *Acaciella* spp. and *Senegalia* spp.)
- *Alternanthera philoxeroides* (alligator weed)
- *Asparagus asparagoides* (bridal creeper)
- *Bassia scoparia* (syn. *Kochia scoparia*) (kochia)
- *Cabomba* spp. (other than *C. caroliniana*) (cabomba)
- *Cecropia* spp. (Mexican bean tree)
- *Chromolaena* spp. (Siam weed and congeners)
- *Chrysanthemoides monilifera* subsp*. rotundata* (bitou bush)
- *Clidemia hirta* (Koster's curse)
- *Cylindropuntia* spp. and hybrids (other than *C. spinosior*, *C. fulgida* and *C. imbricata*) (cholla cactus)
- *Eichhornia azurea* (anchored water hyacinth)
- *Equisetum* spp. (horsetails)
- *Gleditsia* spp. (including all cultivars and varieties) (honey locust tree and congeners)
- *Gmelina elliptica* (Badhara bush)
- *Gymnocoronis spilanthoides* (Senegal tea plant)
- *Harrisia* spp. (syn. *Eriocereus* spp.) (other than *H. martinii*, *H. tortuosa*, and *H. pomanensis*) (harrisia cactus)
- *Hedychium flavescens* (yellow ginger)
- *Hygrophila costata* (hygrophila)
- *Lagarosiphon major* (lagarosiphon)
- *Limnocharis flava* (limnocharis)
- *Ludwigia peruviana* (Peruvian primrose)
- *Miconia* spp. (miconia)
- *Mikania* spp. (mikania vine, mile-a-minute)
- *Mimosa pigra* (mimosa pigra)
- *Myrica faya* (candleberry myrth)
- *Myriophyllum spicatum* (Eurasian water milfoil)
- *Nassella neesiana* (Chilean needle grass)
- *Nassella tenuissima* (Mexican feather grass)
- *Nassella trichotoma* (serrated tussock)
- *Neptunia oleracea* and *N. plena* (water mimosa)

- *Opuntia* spp. (other than *O. ficus-indica*, *O. stricta*, *O. aurantiaca*, *O. monacantha*, *O. tomentosa* and *O. streptacantha*) (various cacti)
- *Pithecellobium dulce* (Madras thorn)
- *Prosopis* spp. and hybrids (other than *P. glandulosa*, *P. pallida* and *P. velutina*) (mesquites)
- *Salix* spp. (except *S. babylonica*, *S. humboldtiana*, *S. matsudana*, *S. x calodendron* and *S. x reichardtii*) (willows)
- *Salvinia* spp. (except *S. molesta*) (salvinia)
- *Sesbania punicea* (red sesbania)
- *Stratiotes aloides* (water soldiers)
- *Striga* spp. (non-native species only) (parasitic witchweeds)
- *Thunbergia annua*, *T. fragrans* and *T. laurifolia* (thunbergias)
- *Trapa* spp. (floating water chestnuts)
- *Ulex europaeus* (gorse)
- *Ziziphus spina-christi* (Christ's thorn)

Approximately, 75% of Class 1 species are currently used and promoted on various overseas web-sites as "desirable" garden ornamentals. In the absence of restrictions, these species would have soon found their way into Queensland.

Post-border restrictions support import restrictions applied at the national border and effectively remove the commercial incentive to smuggle the seeds of high-risk species into Queensland. It is important to realise that, to be most effective, restrictions need to be applied uniformly in states and territories across Australia.

Early detection and eradication: "win some, lose some"

Despite restrictions imposed on the sale of Class 1 pests, about 41 species have subsequently been detected in Queensland over the past 20 years (Csurhes *et al*. unpublished). Some species have been detected in nurseries, private gardens and botanic gardens (e.g. *Sesbania punicea*, *Acacia karroo*, *Eichhornia azurea* and *Equisetum hyemale*), whereas others have been detected as small populations. Some species have been successfully eradicated, whereas others are current targets for longer-term eradication and/or high-level population suppression. While some eradication programs may be perceived as "failures", it is highly likely that expenditure directed at the early stages of invasion is generating an outstanding return on investment, possibly in the order of 38:1 (AEC 2006).

CONCLUSION

The spread of invasive species in our landscape is somewhat analogous to the spread of cancer in the human body. The best way to combat both problems is prevention and early detection/eradication. In the past, preventative weed management did not receive the attention it deserved and many opportunities for early control were lost. Hopefully, pre-emptive action to block the sale of taxa mentioned in this paper will deliver outstanding benefits for agriculture and the environment in Queensland.

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REFERENCES

AEC (2006). Economic impact of state and local government expenditure on weed and pest animal management in Queensland. Update prepared for the Local Government Association of Queensland, Brisbane.

Csurhes, S.M. (unpublished). Review of proclamation 86P quarantine legislation - plant species of which importation represents a threat to the Australian economy and environment. Research report prepared under contract to the Australian Quarantine and Inspection Service, Department of Primary Industries and Energy, Canberra 1991.

Csurhes, S.M., Hannan-Jones, M and Markula, A. (unpublished). Estimating the cost of eradication of 41 Class 1 weeds in Queensland, internal report, Biosecurity Queensland, Brisbane.

Holm, L.G., Pancho, J.V., Herberger, J.P. and Plucknett, D.L. (1979). 'A Geographical Atlas of World Weeds' (Krieger Publishing Company, Florida).