

Emerging weed threats in Tasmania: what we know and what it tells us for future weed programs

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Summary Managing emerging environmental weed threats is a particular challenge to land managers both private and public. Where these weeds fall outside existing funding programs, national agreements and/or declarations under law, the challenges may be greater still. In Tasmania, several plants of concern to the Department of Primary Industries, Parks, Water and Environment's Invasive Species Branch have come to light in recent years. These include orange hawkweed (*Hieracium aurantiacum* L.), besom heath (*Erica scoparia* L.) and two species of rush; spiny rush (*Juncus acutus* L.) and heath rush (*Juncus squarrosus* L.). This paper will examine the spread of these weeds presenting a case for an early intervention, asset protection approach to weed program funding.

Keywords Weed funding, asset protection, early intervention.

INTRODUCTION

Since European settlement in Australia, selected weeds have been the subject of government action and legislation. While considerable success has been achieved in the past, we should be wary of over-reliance on and over-confidence in what can be achieved through government regulation and funding. It is not always feasible or cost-effective for government to enforce or fund the control of all currently declared weed species in the state. Simply declaring a species under the relevant legislation does not always ensure effective control, especially where resources are limited and there is a lack of community support or awareness.

The Tasmanian Herbarium's 2013 vascular plant census identifies 895 exotic species that have naturalised within the State within a total of 2777 species (Baker and de Salas 2013). Several plants of concern to the Department of Primary Industries, Parks, Water and Environment's Invasive Species Branch have received increased attention in recent years. These include orange hawkweed (*Hieracium aurantiacum* L.), besom heath (*Erica scoparia* L.) and two species of rush; spiny rush (*Juncus acutus* L.) and heath rush (*Juncus squarrosus* L.). Of these, orange hawkweed and spiny rush are known weeds in other jurisdictions, while the Tasmanian besom heath and heath

rush infestations are the only known occurrences in Australia. All of these weeds are restricted in their distribution, but threaten significant environmental values, including the Tasmanian Wilderness World Heritage Wilderness Area (TWWHA), covenanted native vegetation and nature conservation reserves.

CASE STUDIES

The weeds discussed below are a mixture of declared and non-declared species that have limited distributions in Tasmania, but have the potential to significantly impact upon important environmental values. Currently there is no clear pathway for gaining collective support nationally, or funding to deal with the threats they pose.

Besom heath (*E. scoparia*) Besom heath is a close relative of the well known weed Spanish heath (*Erica lusitanica* Rudolphi) and is almost identical to Spanish heath in its biology and ecology, including its potential to spread along roadsides as a result of roadside slashing and the ability to spread into native vegetation in relatively undisturbed condition.

Besom heath occurs mostly at a single location in the Bridgenorth area of northern Tasmania, growing amongst a mixture of remnant woodland and agricultural land. This is the only known infestation nationally and is thought to be the result of a single introduction of the plant: a remote outlier at Notley Hills is thought to be the result of seed movement by contaminated roadside slashing machinery. The infestations consist of a single main property (250 ha infestation) and approximately 20 outlier properties (with a combined area of less than 20 ha).

Without management there is a risk that this species will become more abundant throughout Tasmania within a few decades. Besom heath is a serious threat to Tasmania's unique environment and has the potential to spread throughout the state, especially into high quality native vegetation.

The current infestation is impacting on a number of State listed threatened communities and species, and communities listed under the Australian Governments' *Environment Protection and Biodiversity*

Conservation Act 1999, and has the potential to spread and transform native ecosystem understories into a monoculture of this weed.

Besom heath is currently not declared under the *Tasmanian Weed Management Act 1999*.

Orange hawkweed (*H. aurantiacum*) Orange hawkweed is native to northern and central Europe where it occurs in temperate and mountain areas. It has become a weed species in parts of Europe (including England), the United States of America, Canada, New Zealand and Australia.

Populations of orange hawkweed in Tasmania occur at Fern Tree on the lower slopes of Mount Wellington. These infestations are located on both public reserves, roadsides and in private residential properties. As a result, preventing further spread and coordinating control works is complex. Other significant populations of orange hawkweed are at Shannon, Butlers Gorge and Miena in the Central Highlands where they pose a threat to the vegetation communities of the TWWHA. Land managers, including Hydro Tasmania, Forestry Tasmania, state government agencies, local government authorities and private landowners, have all been involved in different aspects of managing these infestations.

Heath rush (*J. squarrosus*) Heath rush is native to Europe, north Africa, Iceland and Greenland. While many naturalised rushes become invasive only on disturbed or fertile ground, heath rush seems able to invade infertile habitats and intact native communities. Heath rush initially invades disturbed ground and from there is able to spread into wet areas, especially wetland environments. Rush species produce large seed banks that can persist in soil and therefore, if allowed to spread, will become extremely difficult to eradicate.

Currently, heath rush occurs in a number of locations on the west coast of Tasmania. These infestations are the only ones known nationally and are thought to have been introduced as a result of contaminated seed used for rehabilitating mine sites across the west coast. One of the major challenges in managing this weed is that it predominantly occurs on public land and therefore there are implications in relation to regulation even if the plant was to become declared.

Heath rush has become the dominant ground cover in some areas of infestation. Should it gain a foothold in natural areas, particularly in wetlands, it is likely to have a transformative effect, replacing native species and forming a monoculture. Targeted control works performed now will prevent this weed from having a significant impact in reserves and particularly the

TWWHA in the future, where it may become impossible to eradicate.

Heath rush is currently not declared under the *Tasmanian Weed Management Act 1999*.

Spiny rush (*J. acutus*) A perennial, semi-aquatic plant of erect, grass-like habit, forming large tussocks 1–1.5 m high, with sharply-pointed stems, spiny rush is commonly found on coastal flats, saline areas, mine dumps and wastelands (Parsons and Cuthbertson 2001).

Spiny rush has invaded a number of wetland and coastal areas across Tasmania's east coast and parts of the Derwent and Tamar Estuaries. Each infestation is localised but has the potential to expand and become a monoculture, replacing native species. The seed bank life is 3–4 years, and therefore there is the potential to deplete the seed bank if the parent stock is removed. Eradication will allow native species such as sea rush (*Juncus kraussii* Hocht) to re-establish and provide competition to spiny rush. Experience on the mainland has shown this species can seriously degrade wetlands and it has already affected a number of wetland communities listed under the *Environment Protection and Biodiversity Conservation Act 1999*.

Spiny rush is currently not declared under the *Tasmanian Weed Management Act 1999*.

DISCUSSION

Weed management in Tasmania is a complex issue due to the variety of landscapes, landforms, ecosystems, enterprises and administrative boundaries. Compounding this complexity is Tasmania's small, dispersed population base, which limits available resources for management. Weeds are a significant threat to the primary production, biodiversity and conservation values of the State. They increase the risk of fire, increase costs to infrastructure maintenance, and reduce the amenity of recreation areas.

Prevention and early intervention are recognised as the most cost-effective techniques for managing invasive plant species, as once weeds are established, they pose an ongoing challenge to, and financial impost upon government, industry and the wider community.

The weeds discussed herein were identified by an assessment process that identified their potential impacts on natural values. The key elements of these assessments included information on the biology and ecology of the weeds, in particular their ability to disperse and persist in the environment, and their proximity to known values such as threatened species and vegetation communities.

Regulatory actions are not necessarily the most effective means of controlling some of these weeds,

especially where they occur predominantly on public land. Rather, a better understanding of the threat these weeds pose, and a capacity at the state and national level to provide the necessary resources to contain and preferably eradicate these weeds will be a more cost effective outcome into the future.

One of the greatest challenges in managing these case study weeds is that existing funding programs, (e.g. Weeds of National Significance) or National Agreements (e.g. National Environmental Biosecurity Response Agreement) do not accommodate these types of weeds; they have not spread widely enough to be included in the first program, but have both environmental and primary production impacts, precluding them from the second program. For all intents and purposes they exist in a bit of no-mans land with regards to both funding and the policy framework that surrounds these programs, despite being significant threats. One solution to this problem is ongoing liaison between state and national jurisdictions to ensure that future policy directions and reviews provide the tools and frameworks for the effective management of emerging weed threats that impact on the environment, primary production and the community.

The lack of resources available to smaller jurisdictions is also a major challenge in managing emerging weed threats, especially when these weeds do not meet current funding priorities. Opportunities to seek funding for the aforementioned case studies existed in recent 'Caring for Our Country' funding rounds because of their potential threat to threatened and protected environmental assets. Applications for funding put forward by the Department of Primary Industries, Parks, Water and Environment were initially successful but then not funded. As many of the integrated environmental weed management programs are long term, securing long term funding commitments is a challenge.

Despite the Tasmanian Government's commitment to the management of invasive species, including emerging weeds, the ability to be able to dedicate long-term resources for such weeds is limited. Community and industry involvement is therefore vital for the control of many emerging weed species and

collective action will be necessary where the problem transcends the capacity of the individual landholder/land manager to address adequately. A stronger shared understanding of the roles and responsibilities of government, industry and community in invasive species management and also the obligations of land and water managers is essential.

Raising community awareness of invasive species issues in natural environments will help promote the role that community can play in protecting Tasmania from invasive species, including weeds. The weeds mentioned in the case studies are not well known amongst the broader community, and consequently gaining support for their control can be difficult. A wide range of new tools and approaches are now available including social media networks, to understand, involve and engage target audiences and communities. Ways to use these platforms to engage the community more proactively in invasive species issues need to be explored.

CONCLUSION

Effective management of emerging weed threats requires a partnership approach that includes levels of government, industry and the community acknowledging the importance of early action and acting in concert. Careful planning, coordination, resourcing, long-term commitment, and the availability of effective control options are also essential to achieve success. An additional component to achieve management objectives are appropriate weed declarations and policies at all levels of government that provide support to management programs and commit resources to the control of new and emerging weeds within Australia.

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