

Weed

Best Practice Manual

Besom Heath (*Erica scoparia*)

Introduction

This manual is designed to assist in the management of the weed besom heath, including; identification, planning, containment and treatment. It covers best practice at the time of writing.

Many *Erica* species (heaths, heathers or *Ericas*) have bold, floral displays that make them attractive to the horticultural sector. *Erica* species are not found naturally in Australia, but have been distributed widely as ornamentals plants, with 17 species having naturalised as weeds.

In Australia they can be confused with members of the *Epacris* genus, which are known as



Figure 1 - Current and potential distribution of besom heath (*Erica scoparia*) in Tasmania and Australia. Image courtesy NRE Tasmania, 2023.

Australian or native heaths. *Ericas* and *Epacris* are a similar shape and size with their stiff, narrow leaves. In winter and spring, they may be covered in flowers, making them popular as cut flowers.

Besom heath (*Erica scoparia*) does not possess the bold, floral display that makes other *Erica* species attractive to the horticulture industry and is generally considered to have been an accidental introduction into Australia. Globally the distribution

of besom heath as a weed is extremely rare, there is little to no literature on how to best manage the weed, and controls used for related species, such as Spanish heath are proving ineffective.

The word *besom* means a broom made of twigs, it is also used as a hedging plant in the UK.





Figure 2 - The only known besom heath infestation in Australia covers approximately 250 ha with approximately 20 outlier infestations (of less than 20 ha each) in northern Tasmania. (Photo: Chris Grose).

Regulatory Framework

Besom heath is a declared weed under the Tasmanian *Biosecurity Act 2019*. It has the potential for economic impact as it can invade agricultural land used for grazing. The potential costs of removing it from conservation areas is enormous. It is capable of completely overwhelming native vegetation communities.

The legal responsibilities of landholders and other stakeholders in dealing with Erica are laid out in the Statutory Weed Management Plan for Erica.

For details regarding distribution of Erica species, including whether your area falls in an eradication ('Zone A' municipality), or containment ('Zone B' municipality), refer to the Tables and information provided in Section 12, 'Management of Erica by municipality', in the Statutory Weed Management Plan for Erica.

Present roadside management has the potential to significantly spread this weed once it becomes established in roadside areas. Some of the current roadside infestations have come from the use of contaminated soil and road base.

The plant has the potential to infest quarries and stockpiles restricting their use for offsite work.

Besom heath is only known to have naturalised once in Australia, in the Bridgenorth-Rosevale district of northern Tasmania. It is now threatening to become a state-wide weed.

Weed risk assessment undertaken by the Department of Natural Resources and Environment Tasmanian (NRE) suggests that besom heath has invasive potential equal to its better known relative Spanish Heath (*Erica lusitanica*). The Northern Tasmanian besom heath infestation now covers approximately 250ha, plus approximately 20 outlier infestation of less than 20ha each.

Origin

The Erica genus originates from the South Africa fynbos of Western and Eastern Cape provinces with the balance of the species from Europe, the Mediterranean, United Kingdom and Madagascar, totalling over 800 species.

Besom heath is from the Western Mediterranean basin.

Ericas have been introduced for their ornamental value and suitability as cut flowers. They are adapted to acid soils and do not grow well on alluvial soils, consequently they are well adapted for Australian conditions.

Species currently known to be present in Tasmania are; Tree heath (*E. arborea*), Berry heath (*E. baccans*), Water heath (*E. caffra*), Winter heath (*E. carnea*), Dorset heath (*E. ciliaris*), Bell heather (*E. cinerea*), Bicolored heath (*E. discolor*), Irish heath (*E. erigena*), *Erica glandulosa*, *Erica holosericea*, Spanish heath (*E. lusitanica*), *Erica melanthera*, Angled heath (*E. quadrangularis*), Besom heath (*E. scoparia*), Corsican heath (*E. terminalis*), Cross-leaved heath (*E. tetralix*), and Cornish heath (*E. vagans*)



Figure 3• Besom heath is easily spread along roadsides and then into neighbouring agricultural and native vegetation areas. (Photo: Chris Grose)

Weed Problem

Distribution

Besom heath is only known to have naturalised in northern Tasmania but has the potential to invade most of temperate Australia.

Potential Australian Distribution

The ornamental sale of *Ericas* gives an indication of where besom heath could be weedy, however, the climatic adaptability of the species is unknown and will only be evident if the species becomes widespread. Suitable climatic conditions indicate that it could become widespread in temperate southern Australia and along the Great Dividing Range to the Queensland border, similar distribution to that predicted for Spanish heath.

Tasmanian Infestation

Currently only found in northern Tasmania, primarily within the West Tamar and Meander Valley

municipalities around Bridgenorth and Rosevale. The northern Tasmanian besom heath infestation now covers approximately 250 hectares with approximately 20 outlier infestations (of less than 20 hectares each).

It represents a serious threat to Tasmania and Victoria if not prevented from spreading out of the Tamar area.

Impact

The impacts of this weed could be extensive, and the existing small infestations highlight what can occur. A list of impacts follows:

- Deep root system with lignotubers and high capacity to resprout after fire, slashing, grazing and even spraying. Very competitive in nutrient poor soils, unimproved pastures, and non-arable land.
- Readily invades and takes over grassland and heathland, dominating sites and resulting in a loss of pasture and native species.
- Easily spread along roadsides and then into neighbouring agricultural and native vegetation areas.
- Invades grasslands and therefore changes habitat for species requiring grassy systems.
- Known to cause serious growth problems in crop plants, particularly grass and clover species due to allelopathic properties.
- Readily spreads into bare areas after disturbance such as clearing and fire.
- Forms thick dense monocultures.
- Not palatable by stock.
- Persistent, highly resistant to fire and waterlogging, tolerant of drought

Identification

The Royal Horticultural Society (www.rhs.org.uk/plants/6673/erica-scoparia/details) provides a general description for the species in the United Kingdom where it is used as an ornamental plant.

Growth Habit

Perennial evergreen lignotuberous shrub up to 4 metres, but usually 1.5 to 2.5 metres. Dense foliage of small stiff narrow leaves with similar shape and size to native heaths. Young stems are hairless. Forms patches of dense monoculture which out-competes native flora.

It is a multi-stemmed shrub. Small plants (less than 1m) can have up to 30 stems growing from the lignotuber. The number of stems reduces as the plant gets bigger reducing to less than 15 stems as the plant matures.

Flowers

Tiny non-descript white/green bell-shaped flowers that turn red-brown with age. Flowers are bell-shaped drooping flowers, 1-2mm long, borne in clusters at the ends of its shoots. It is highly unlikely that this species would be cultivated as an ornamental plant. Flowers in spring to summer.

Fruit/Seed Spread

A mature besom heath plant can produce millions of seeds. Seeds are small, borne in a dry brown globose capsule. Seeds are distributed only a short distance by gravity, wind and water. The greater risk of long-distance seed

distribution is from animal movement and mechanised equipment.

To date, the contribution of besom heath seed spread by animal has been greatly underestimated. The seed is small and light, it sticks to the wet fur of wildlife and livestock such that animal movement from weed infested areas spreads seed to uninfested land.

It is common for wallaby to move a few hundred meters depending on food availability and will move up to 2 km in a night on occasions. While deer will commonly move 5-10km in a night, particularly when disturbed by hunters.

During recent survey work individual plants were found up to 5kms from known infestations. It is believed this is most likely to be caused by the movement of deer.

Roadside slashing is generally regarded as a major contributor to the spread of besom heath. Tractors and slashers catch large volumes of slashed vegetation and weed seed as they work along roadways. When machinery is driven or transported to a new location they are capable of moving weeds hundreds of kilometres. This is how Spanish heath is thought to have spread throughout Australia.

Excavators cleaning drains and graders maintaining roads could also contribute to the spread of besom heath seed, by moving and carrying contaminated soil. The potential for contaminated soil and plant equipment to transfer seeds to other locations means good



What is a lignotuber?

A lignotuber is a large woody growth that grows at the junction between the above and below-ground parts of some trees and shrubs. It is an energy storage organ that has evolved as an adaptation to fire. Plants with a lignotuber have an advantage in fire-prone ecosystems, recovering more quickly post-fire when compared with plants that do not have similar adaptations.

Why do we need to know about the lignotuber?

The lignotuber is an organ used to store the plant's energy when the plant is burnt, slashed or mulched it is able to use this stored energy to recover after the disturbance.

While a lignotuber has evolved to respond to disturbance it gives it the additional advantage of making it more difficult to kill with herbicide. Besom heath with its large lignotuber is proving more difficult to kill with herbicide than other *Erica* weeds.

planning and hygiene are required when working around besom heath.

Growth Cycle

Commences rapid spring growth in late September/early October, growing strongly through summer when flowering occurs.

Seed falls to the ground in February/March, being exacerbated by disturbance from wind and stock. Seedlings emerge over the autumn to grow and compete with established plants. The species form monoculture thickets over time with the growth of lignotubers which make mature plants robust and drought tolerant.

Related species

Spanish heath (E. lusitanica): Larger flowers 4-5 mm. Leaves long, narrow and generally crowded in whorls of four. Young stems have unbranched hairs 1mm long. Flowers winter to spring.

Tree heath (E. arborea): Not yet in the Tamar. Tall shrub to 5 metres. Slightly larger white flowers 2-3 mm long. Leaves long, narrow and generally crowded in whorls of four. Young stems with branched hairs 1 mm long.

Berry heath (E. baccans): Not known to be in the Tamar. Flowers are bright pink (magenta), globular, approx. 5 mm long, in bunches at stem tips. Leaves up to 9 mm long in whorls of four. Young stems are hairless.

Figure 4 - Besom heath has stiff narrow leaves, tricussate in well-spaced nodes (whorls of three, alternating). Photo: Chris Grose



Species Identification

Besom Heath

Spanish Heath

Size/Habit

Perennial evergreen lignotuberous shrub up to 4 m, but usually 1.5 to 2.5 m. Young stems are hairless. Photo: Chris Grose

Shrub to 2.5 m tall; resprouts after fire. Photo: © Forest and Kim Starr



Foliage

Dense foliage of small stiff narrow leaves with similar shape and size to native heaths. Leaves are 3.5-7mm long, and tricusate in well-spaced nodes (whorls of three, alternating). Photo: Matthew Baker, Tasmanian Herbarium

Leaves 4-7 mm long, narrow, crowded, generally in whorls of four. Young stems with unbranched hairs 1 mm long. Photo: © Forest and Kim Starr



Flowers

Flowers are bell-shaped drooping flowers, 1-2mm long, borne in clusters at the ends of its shoots. Photo: © Svetlana Kourova

White, pinkish in bud, tubular, 4-5 mm long; in winter to spring. Photo: Matthew Baker, Tasmanian Herbarium



Seeds/Fruit

A mature besom heath plant can produce millions of seeds. Seeds are small, borne in a dry brown globose capsule. Photo: Chris Grose

A Spanish heath plant can also produce millions of seeds. Seeds are small, borne in a dry brown capsule. Photo: © Forest and Kim Starr



What To Do About It

Develop a site action plan which recognises the current and possible distribution of besom heath, potential for spread, control zones and actions, and surveillance for short and long-distance spread.

- Prioritise and target outlier sites.
- Reduce established infestations with a methodical approach that reduces patch size, ensures regular follow up and contains seed and plants within the infested area.
- Cropping and cultivated land including improved pastures do not present a problem for control as routine cultivation will kill the lignotubers and prevent seedlings from becoming established. However, machinery should be cleaned according to standard hygiene practices to minimise the risk of seed translocation to other areas. The NRE Tasmania has

developed Weed and Disease Planning and Hygiene Guidelines

(<https://nre.tas.gov.au/invasive-species/weeds/weed-hygiene/weed-and-disease-planning-and-hygiene-guidelines>) which should be followed when in besom heath infested areas.

- Control/prevent establishment in fence lines and along roads and tracks.
- Prevent the establishment in native pasture by monitoring incursions and spot control of infestations.
- Forests and native heathlands should be managed similarly to native pastures, pending the approval of a selective herbicide which could be used for spot spraying.
- Wetlands and Riparian Zones provide corridors for spread along water courses. The weed has been observed to withstand waterlogged

conditions (disused quarry) and can be expected to increase plant density because of seed drop and surface water movement.

- Consider wallaby/native animal exclusion fencing as this will reduce the spread by animals (feral and native).
- Implement the action plan.
- Monitor and evaluate outcomes and modify the plan.
- Follow up.

Control Methods

Fire

Information on besom heath's response to fire comes largely from its behaviour in its native habitat in the Mediterranean.

Besom heath is well adapted to fire and is not killed by burning, it responds to fire by reshooting from its lignotuber. Regrowth occurs quickly and is vigorous, being the first plant to recover from wildfire in its native habitat.

Fire does **not** cause a mass germination of besom heath seed, the seed is generally destroyed in fire. However, where seed bearing plants are not completely burnt, scorched earth and ash accompanied by reduced plant competition may provide a seed bed for besom heath to germinate.

Whilst fire won't kill besom heath, burning can be a cost-effective way of reducing plant biomass on land infested with the weed as the primary treatment method,



Figure 5 - Bridgenorth Herbicide Trial showing two treatments with spectacular results from two adjacent plots, the herbicide on the left was highly effective. (Photo: John Thorp)

reducing the amount of herbicide required. As it reshoots from the lignotuber it is important to follow up with a secondary treatment method such as cultivation or chemical spraying.

There is a knowledge gap on how effective herbicide treatment of besom heath is post fire, but it should be allowed to grow a reasonable canopy to allow herbicides to be applied during vigorous growth and enable translocation to the root system.

Mechanical Removal

Clearing – Dozer, excavator, slashers and mulchers

Mechanical clearing as a weed control technique works in a similar way to burning. Mechanical clearing removes the above ground parts of the plant, forcing the plant to use stored energy to recover and facilitating access for secondary treatment.

In the control of besom heath, mechanical clearing of the above ground parts of the plant provides an effective primary control method. Mechanical clearing does not kill the plant as besom heath will grow back from its lignotuber, in the same way as with fire. The aim of mechanical removal should be to facilitate a secondary treatment such as cultivation or spraying.

There is a knowledge gap on how effective herbicide treatment of besom heath is post mechanical clearing.

Cultivating, Grubbing and root raking

Besom heath seed is small and young seedlings do not compete in cropping situations or well-managed, rotationally grazed pastures. Landowners in the

current distribution area that are using these techniques have successfully excluded besom heath.

Where large stands of besom heath are present, mechanical clearing or burning is undertaken as the primary treatment. This is followed by the secondary treatment of cultivation with a disc or mould board plough. This method requires repeat cultivation with 3 to 4 crops and/or the establishment of vigorous improved pasture, such as cocksfoot.

Where cultivation is undertaken only once or where vigorous crops and pasture are not successfully established, this method is unlikely to have the desired result with besom heath.

Cultivation is not considered to be an effective method of controlling besom heath in a bushland situation. Bushland regrowth is unlikely to provide sufficient competition to suppress seedling regrowth. The other methods of control are preferred in a bushland setting.

Herbicides for Control of Besom Heath

In 2021-23 an extensive herbicide trial was conducted at Bridgenorth from which the chemical control recommendations referred to in this document have been derived. Excellent control was achieved, although it is not possible to fully observe how the treatments affect regrowth in subsequent years.

Generally, landholders have reported poor chemical control, but it is considered that timing,

application technique and possibly the use of incorrect wetting agents may be the cause.

The recommended method of application is to use high volume commercial hand lances to thoroughly cover the foliage with spray.

A number of herbicides are approved for use on besom heath in Tasmania under APVMA permit. See *Herbicides for Besom Heath Control* for more information, available online at: tamarnrm.com.au/documents



Figure 5, 6 & 7 - A herbicide trial determined an appropriate control method for besom heath. (Photos: Chris Grose)

Legislation

Besom heath is a declared weed under the Biosecurity Act 2019 in Tasmania due to its potential to invade agricultural land used for grazing and impact financially.

The costs of removing besom heath from conservation areas where it is capable of completely overwhelming the native vegetation could be prohibitive.

Poor roadside management has the potential to significantly spread this weed once it becomes established in these areas. Some of the current roadside infestations of besom heath have come from the use of contaminated soil and road base.

Knowledge Gaps

There is still much to be learned about besom heath and how to manage it. Hopefully this document has hopefully provided some answers, but important questions remain.

- What is the realistic or potential distribution?
- What is the best herbicide treatment suitable for forestry and bushland?
- Can fire be used to aid control?
- Reaction to fire and ongoing fire regimes?
- What is the most effective post fire herbicide treatment?
- Need to quantify ecological impacts?

Case Study

There is no definitive case study that points the way to best practice commercial control. Hence these notes have been based on overseas and local

experimentation, combined with what has been observed with managing Spanish heath in Tasmania.

Acknowledgments

This Best Practice Manual was written by Denis Giasli, Land Management North and John Thorp, Chair of Tamar NRM's Tamar Valley Weeds Working Group based on extensive field observations, the herbicide trial and comments and observations of other interested parties.

Funding for the herbicide trial, development of advisory documents and operation of the Bridgenorth management area has been provided by the Tasmanian Government's Weeds Action Fund and Tamar Natural Resource Management (TNRM). The trial and on groundwork were carried out by Land Management North on a commercial basis.

Many hours of volunteer work have been undertaken by Tamar NRM members with support from NRE Tasmania staff on technical issues particularly those relating to chemical use.

The cooperation of Tom Jones on whose land the trial was conducted was vital to the success of the project.

References

Department of Natural Resources Tasmania, Invasive Species Erica
<https://nre.tas.gov.au/invasive-species/weeds/weeds-index/declared-weeds-index/erica>

Department of Natural Resources Tasmania, Weeds Index - Declared Weeds, Besom Heath

CRC Weed Management, weed management guide, Spanish heath (*Erica lusitanica*) and other Erica species
<https://cdn.environment.sa.gov.au/landscape/docs/ny/spanish-heath-weed-crc-management-guide-fact.pdf>

Agriculture Victoria, Invasive Plants Victorian resources online - Besom Heath
https://vro.agriculture.vic.gov.au/dpi/vro/vrosite.nsf/pages/weeds_besom-heath



WEEDS ACTION FUND

