



FACTSHEET

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For more information on weeds, including use of biocontrol agents contact:

Your local NRM Board
www.nrm.sa.gov.au

Visit the Biosecurity SA web page:
www.pir.sa.gov.au/biosecurity/nrm_biosecurity/weeds

Ph 08 8303 9620

Or Weeds Australia:
www.weeds.org.au

BIOLOGICAL CONTROL OF

Horehound

(*Marrubium vulgare*)

Biocontrol agent: Horehound plume moth (*Pterophorus spilodactylus*)

BACKGROUND

Horehound is a perennial weed native to temperate Eurasia, Europe, the Middle East and the Mediterranean region including North Africa. It was first recorded as naturalised in Australia by the 1840s. In South Australia it is estimated to occur on 20 million hectares of land.

Horehound is a declared plant in South Australia. Landowners have a legal responsibility to control it under the South Australian *Natural Resources Management Act 2004*. Regional NRM Boards coordinate and enforce local and regional control programs for declared plants.

Horehound thrives on poor soil and in waste places. It invades poor pastures where there is little competition, and is unpalatable for livestock. It is also an important environmental weed because of its ability to invade disturbed native vegetation.

Horehound is an erect or spreading bushy, aromatic perennial herb, similar in shape and form to lavender. It is 0.30 m high and 0.75 m wide but can be up to 0.6 m high and 0.9 m wide in favourable conditions.

Horehound spreads by seed, primarily dispersed by animals, as the fruit or burr readily attaches to wool, fur, clothing and similar materials. Water also disperses seed, and horses are known to pass seeds in a viable condition after ingestion.

Mature plants can produce in excess of 20,000 seeds per year, although the more numerous and smaller plants produce about half this number.

Anecdotal evidence indicates that seeds can survive in the soil for 7-10 years.

HOW THIS BIOCONTROL WORKS

Plume moth larvae are small green caterpillars that severely damage the plant's growing tips as they feed. This weakens the plant and reduces the number of flowers and seeds produced.

Large numbers of plume moths may limit the spread and density of horehound infestations and enable the establishment or reintroduction of more desirable plants.

The plume moth is released at the larval and pupal stage as this is the easiest stage to collect, handle and transport.

RELEASE OF AGENT IN SOUTH AUSTRALIA

Preliminary releases of the horehound plume moth were made in 1994 at the Murray Bridge Army Firing Range in Port Lincoln, and in Ceduna.

During spring and summer 1997/1998, the insects were released at 51 sites across South Australia (Wilpena Pound, Warooka, Dublin, Adelaide Hills, Willunga, Waikerie, Monarto, Narrung and Robe) and were later found to have established at 37.

Today it is established and widespread in all NRM Regions except for Kangaroo Island where it is localised.



Horehound plume moth caterpillars
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Adult horehound plume moth (length 10 mm)
Image courtesy of W Chatterton TIAR

Horehound infestations across SA NRM Boards

- > Eyre Peninsula: widespread
- > Northern & Yorke: widespread
- > SA Murray Darling Basin: widespread
- > Arid Lands; Alinytjara Wilurara: scattered infestations in the southern part of the region
- > South East: small, localised infestations
- > Adelaide & Mt Lofty Ranges: scattered infestations
- > Kangaroo Island: scattered infestations

Collection sites are present on the Eyre Peninsula, Northern and Yorke, SA Murray Darling Basin and South East Regions.

In 2010, the plume moth is abundant in Robe where it is often collected for other areas of South Australia.

It works well in areas not grazed in the South-East, where there are hardly any plants left and those that remain are of a reduced vigour and size. In the Northern and Yorke Region this biocontrol is used on infested scrub or hard to reach sites.

The plume moth is abundant in higher rainfall areas of the SA Murray Darling Basin Region. On its own, this agent reduces the impact and seed bank that horehound would normally produce.

On Kangaroo Island there is evidence of the moth around horehound infestations, but these do not appear to destroy the plants and herbicide spraying is the main control method.

OTHER AGENTS USED ON HOREHOUND

The larva of the **clear wing moth** (*Chamaesphecia mysiniiformis*) develops and feeds inside the roots and stems of horehound which protect them against dry conditions. The moth emerges in early to mid summer when daily temperatures exceed 30°C.

It was first released in South Australia at Cambrai in 1997. No insects were recovered, possibly due to insufficient release numbers or because the plants were too old and woody.

Mass rearing in 1999 enabled egg releases to be made at Nurrung, Monarto and Wilpena.

Distribution beyond its release site in the Arid Lands Region is not known. It has established locally in the SA Murray Darling Basin Region but it is difficult to determine how pervasive it is, though larvae were found in 2004 and 2008.

The brightly coloured, orange and black native **horehound bug**, *Agonoscelis rutila*, is often seen on the weed in great numbers, but does not have any significant impact.

Potential agents undergoing testing include the **horehound pollen beetle** (*Meligethes rottroui*) and the **stem-boring beetle** (*Phytoecia* sp.).

INTEGRATED CONTROL

Integrated weed management aims to maintain or reduce weed densities to manageable levels by utilising a variety of control practices, including biocontrol where appropriate.

Although biocontrol alone will not eradicate the weed, it will slow its rate of spread and allow more time for control by other measures.

Biocontrol is a long-term program that is best applied to infestations that are difficult to control by other means.

The integration of various control techniques coupled with good pasture management is likely to give the best long-term control of horehound.

Other control options include cultivation, burning and grazing, and chemical control.

REFERENCES / LINKS

[Declared Plants of South Australia](#)

[Integrated Weed Management](#)

[Horehound Information Note](#)

[Horehound Workshop Proceedings, 1999](#)

[Horehound Best Practice Management Guide for Environmental Weeds](#)

[Horehound Suppression with the Horehound Plume Moth](#)

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