



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

Salvation Jane

(*Echium plantagineum*)

Biocontrol agent: pollen beetle
(*Meligethes planiusculus*)

BACKGROUND

Salvation Jane is a Mediterranean winter annual which has become a dominant pasture weed of temperate Australia. It is considered a resource for apiarists, but is toxic to most grazing animals.

In 1985 salvation Jane was estimated to occur on over 30 million hectares in Australia. By 2002 it had cost the wool and meat industries \$125 million each year.

A single plant produces over 10,000 seeds. Seedlings grow quickly and develop a large taproot making them resistant to drought. They also form a flat rosette, out-competing other germinating plant species.

Salvation Jane 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.

HOW THIS BIOCONTROL WORKS

Salvation Jane biocontrol in South Australia involves a suite of agents that attack various parts of the plant: leaf-mining moth (leaves), crown weevil (rosettes), flea beetle (roots), root weevil (roots) and pollen beetle (flowers and seed). The pollen beetle feeds on the flowers and developing seed of the plant reducing additions to the seed bank.

On average a female beetle lays around 90 eggs over 31 days which take up to 6 days to hatch. The larvae then bore through the calyx and petal to feed on anthers, pollen and ovules within the unopened flower bud.

RELEASE OF AGENT IN SOUTH AUSTRALIA

The salvation Jane pollen beetle was first released in South Australia in 1999 at Happy Valley in the Adelaide and Mt Lofty Ranges NRM Region. It is now widespread with some sites suitable for mass field collections for redistribution. Once established in this region it spread 5-10 km per year and agents have been distributed to other NRM Boards and interstate. It has been released in the SA Murray Darling Basin Region, but monitoring reveals no significant populations though some sites have established.

The beetle has established at three release sites in the South East Region; one at Robe (2006) and two at Naracoorte (2009). It has been released on the Eyre Peninsula and the Northern and Yorke Regions but establishment beyond release sites are not known. On Kangaroo Island it has been released on the south coast at a site abutting Murray Lagoon Conservation Park where there is evidence of establishment.

OTHER AGENTS USED ON SALVATION JANE

The **leaf-mining moth** (*Dialectica scariella*) was first released in South



Salvation Jane infestation
Image courtesy of C Wilson



Close up of a pollen beetle on salvation Jane
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Salvation Jane infestations across SA NRM Boards

- > Adelaide & Mt Lofty Ranges: widespread
- > Kangaroo Island: two distinct sites
- > SA Murray Darling Basin: widespread
- > Northern & Yorke: widespread
- > South East: widespread in north, scattered in south
- > Arid Lands; Alinytjara Wilurara: very common in Flinders Ranges, along roadsides elsewhere in the Arid Lands
- > Eyre Peninsula: isolated roadside and paddock infestations

Australia in 1989 at Chandlers Hill and is now widespread in all South Australian NRM Regions, apart from the Arid Lands where establishment is localised. Leaf damage is generally not severe enough to achieve control by itself but may augment damage caused by other agents.

The **crown weevil** (*Mogulones larvatus*) was first released in 1995 in South Australia at Stirling. It lays eggs on leaf stalks and larvae feed in the central crown of rosettes. It is one of the success stories for most of the higher rainfall areas of the SA Murray Darling Basin Region and is extensive in most of the ranges adjacent to the Adelaide Hills and as far north as Burra. It is widespread in the Adelaide and Mt Lofty Ranges, Eyre Peninsula, South East, and Northern and Yorke Regions, which also have collection sites.

Localised establishments of the agent can be found in the Kangaroo Island and Arid Lands Regions. The crown weevil has been so successful within the Adelaide and Mt Lofty Ranges and South East Regions that collection sites are now being lost due to insufficient host plants to sustain high agent populations.

The **flea beetle** (*Longitarsus echii*) was first released in South Australia in the SA Murray Darling Basin Region in 1997. In the Northern and Yorke Region it has been distributed mainly in the higher rainfall areas around Clare. It is widespread in the Adelaide and Mt Lofty Ranges, Eyre Peninsula and South East Regions and locally established on Kangaroo Island and Arid Lands Regions. Well established sites can be found in the SA Murray Darling Basin, Northern and Yorke, South East, Adelaide, Mt Lofty Ranges and Eyre Peninsula Regions.

The **root weevil** (*Mogulones geographicus*) was first released in South Australia in 1997 at Mt Bold in the Adelaide and Mt Lofty Ranges Region. It is now widespread though numbers are not obviously high. Nursery sites in this region, particularly Mt Bold, are used to distribute this weevil across the state and interstate.

It has been released in the SA Murray Darling Basin Region, but monitoring reveals no significant populations. In the South East it has established at limited release sites, and locally in the Northern and Yorke Region.

The root weevil has been released but is not yet established on Kangaroo Island, and distribution beyond its release site on the Eyre Peninsula is unknown.

The root weevil and flea beetle larvae bore into the roots reducing the uptake of water and nutrients. Their underground activities make them tolerant to grazing.

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.

Some salvation Jane biocontrol agents have been shown to work well with managed grazing and slashing to reduce flowering and the soil seed reserve.

In inaccessible locations, or where there is a risk of damage to sensitive native vegetation, conventional control methods may be difficult or impossible to implement. In such cases biocontrol may be the only feasible management option, but alone, it will not eradicate the weed. The likely effect is to reduce the growth and rate of spread of the weed, allowing more time for control by other means.

REFERENCES / LINKS

[Declared Plants of South Australia](#)

[Integrated Weed Management](#)

[Salvation Jane Weed Identification Notes](#)

[Salvation Jane Biocontrol Agents](#)

[Paterson's Curse: The Problem](#)

[Biological Control of Paterson's Curse with the Flower Feeding Beetle](#)

A Practical Guide to Biological Control of Paterson's Curse in Australia 2nd edition – CD ROM

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