Declared Plant Policy

Government of South Australia

This policy relates to natural resources management under section 9(1)(d) of the Landscape South Australia Act 2019 *(the Act), enabling co-ordinated implementation and promotion of sound management programs and practices for the use, development or protection of natural resources of the State. Specifically, this policy provides guidance on the use and management of natural resources relating to the prevention or control of impacts caused by pest species of plants that may have an adverse effect on the environment, primary production or the community, as per object s7(1)(f) of the Act.*

salvation Jane (*Echium plantagineum*)

Salvation Jane or Paterson's curse is an annual weed of pastures, and less often of rotational broadacre crop/pasture systems. It is an opportunist that temporarily occupies disturbed ground or degraded native vegetation. It contains pyrrolizidine alkaloids, which are cumulative toxins to livestock and can cause fatal liver damage, especially in horses. However, it can be used as fodder for sheep in the short term.

Management Plan for Salvation Jane

Outcomes

- Pasture production maintained, and impacts on livestock health from salvation Jane toxicity minimised.

Objectives

- Spread of salvation Jane to clean properties prevented.
- Existing populations of salvation Jane contained within their current limits.
- Reduction in density of salvation Jane populations by improved management and biological control.

Best Practice Implementation

- Prohibition on sale and movement of contaminated produce to uninfested areas enforced by regional landscape boards, Green Adelaide and the Chief Executive of the Department for Environment and Water.
- Extent of infestations monitored by regional landscape boards and Green Adelaide.
- Control of priority infestations on properties in active control areas enforced as necessary by regional landscape boards and Green Adelaide, either on a whole property or boundary protection basis.
- Biocontrol agents released for establishment in priority areas.

Regional Implementation

Refer to regional management plans for further details.

Region	Actions
Alinytjara Wilurara	Contain spread
Eyre Peninsula	Limited action
Green Adelaide	Manage weed
Hills and Fleurieu	Manage weed
Kangaroo Island	Contain spread
Limestone Coast	Contain spread
Murraylands and Riverland	Manage weed / manage sites
Northern and Yorke	Manage sites
South Australian Arid Lands	Prohibit sale or movement, promote management by landowners

Declaration

To implement this policy, salvation Jane is declared under the *Landscape South Australia Act 2019* throughout the whole of the State of South Australia so that movement of seed in hay or grain can be prevented. Its movement or transport on a public road, by itself or as a contaminant, or sale by itself or as a contaminant, are prohibited. In the Kangaroo Island region, land owners are required to notify the landscape board of any salvation Jane plants found on their land.

Green Adelaide and the Alinytjara Wilurara, Hills and Fleurieu, Kangaroo Island, Limestone Coast, and Murraylands and Riverland Landscape Boards may require land owners to control salvation Jane plants growing on their land. These authorities are required to control plants on road reserves in their regions. Green Adelaide, and the Hills and Fleurieu, Kangaroo Island, Limestone Coast, and Murraylands and Riverland Landscape Boards may recover costs from adjoining land owners for control on road reserves.

Salvation Jane is declared in category 3 under the Act for the purpose of setting maximum penalties and for other purposes. Any permit to allow its sale or road transport can only be issued by the regional landscape board or Green Adelaide pursuant to section 197.

Under the *Landscape South Australia (General) Regulations 2020*, Regulation 27 specifies the conditions under which a person is exempt from the operation of section 186 and may transport wool, grain or other produce or goods carrying salvation Jane on public roads. Regulation 28 specifies conditions under which a person is exempt from the operation of section 188(2) and may sell wool, grain or other produce or goods carrying salvation Jane. Note that certain produce or goods may be excluded from these general movement and sale exemptions by Gazettal Notice of the Chief Executive, DEW.

The following sections of the Act apply to salvation Jane throughout each of the regions noted below:

Region / Sections of Act	AW	EP	GA	HF	KI	LC	MR	NY	SAAL
186(1) Prohibiting entry to area									
186(2) Prohibiting movement on public roads	X	X	X	X	X	X	X	X	X
188(1) Prohibiting sale of the plant	X	X	X	X	X	X	X	X	X
188(2) Prohibiting sale of contaminated goods	X	X	X	X	X	X	X	X	X
190 Requiring notification of presence					X				
192(1) Land owners to destroy the plant on their properties									
192(2) Land owners to control the plant on their properties	X		X	X	X	X	X		
194 Recovery of control costs on adjoining road reserves			X	X	X	X	X		

Review

This policy is to be reviewed by 2025, or in the event of a change in one or more regional management plans for salvation Jane.

Weed Risk

Invasiveness

Large quantities of seed are produced in dry, single-seeded fruits that have no adaptations for dispersal by wind. They have a rough surface that enables them to cling to fleeces and fur of animals. They have little ability to move rapidly and unaided between properties, but are spread in contaminated hay or grain, and are also dispersed when swallowed by grazing sheep and later dropped in uninfested pasture.

Germination occurs in several cohorts after heavy rains in late summer and autumn. Growth is rapid under favourable moisture and temperature conditions. Salvation Jane flowers and seeds in spring, usually dying in summer. In high rainfall habitats some rosettes may survive into a second year, giving an extended flowering season.

Salvation Jane has a limited ability to establish among dense herbaceous vegetation and is favoured by ground bared by disturbance, grazing or fire. The plant grows through the winter as a rosette of leaves pressed to the ground, becoming a more effective competitor as it increases in size.

Impacts

Because salvation Jane is avoided by stock as long as more palatable forage is present, it readily becomes dominant in permanent pastures subjected to heavy grazing pressure even though it is a poor competitor under other conditions. In rotational crop/pasture systems and on horticultural land it is less competitive and reaches medium densities. It encroaches into native vegetation along tracks and may temporarily spread out to wider areas in response to disturbance or grazing pressure by rabbits.

In poorly managed pastures on steep slopes, salvation Jane may reduce soil stability when it forms high density stands over winter and leaves no other vegetation to hold the soil when it dies off in summer.

Salvation Jane contains pyrrolizidine alkaloids, which are cumulative toxic to livestock and can cause fatal liver damage, especially in horses and pigs. However, it can be used as fodder for sheep in the shorter term. The stiff hairs of salvation Jane irritate the udders of dairy cows, and it can be a cause of allergies in humans.

Potential distribution

Distribution of salvation Jane is limited by high temperatures and low rainfall in the northern part of the State, and it is estimated that 30% of the rangelands are suitable for it. In the south its potential range includes 75% of the perennial pasture zone and 50% of the rotational cropping zone, where it is limited by alkaline soils and competition from other weeds in areas of high rainfall.

Feasibility of Containment

Control costs

Once established, salvation Jane can be difficult to control, with control costs high in relation to the productivity of non-arable land.

Phenoxy-acid herbicides have been used for more than half a century as a relatively cheap annual treatment for paddocks dominated by salvation Jane. This may be of use in preventing seed production in 'buffer strips' between salvation Jane paddocks and adjoining paddocks free of the weed. However, increased awareness of the risks of spray drift and vapour drift has reduced the use of the phenoxy-acids especially 2,4-D near horticulture. Other herbicides including metsulfuron-methyl are also registered for this purpose.

In productive pastures, more expensive herbicides containing diflufenican are used for selective control of salvation Jane at the seedling stage. A diflufenican/bromoxynil herbicide is registered for use close to horticultural crops where phenoxy-acid herbicides are unacceptable.

Several biological control agents have now become established. Although the most rapidly spreading agent, the moth *Dialectica scalariella*, has low impacts by itself, the two *Mogulones* weevils, the flea beetle *Longitarsus echii* and the pollen beetle *Meligethes planiusculus* are slowly increasing in their distribution and their impact. The cumulative effect of many agents is reducing the density and seedbank of salvation Jane populations, including sites where other control options are uneconomic.

Persistence

Some intractable infestations occur on steep slopes and other sites inaccessible for herbicide spraying.

The elimination of salvation Jane from a property may require careful management of grazing over many years, or pasture renovation. The technique of spray grazing, using low rates of phenoxy-acid herbicides to make the weed more palatable to sheep, is also used. Seed can survive 20 years or longer in the soil

Current distribution

At the landscape scale, salvation Jane is widespread through all regions in which it can grow. However, its distribution is discontinuous at the property scale since its presence and abundance depend on land management. It is estimated to infest no more than 20% of pastures, so there remains potential for its movement to clean properties within infested areas.

State Level Risk Assessment

Assessment using the Biosecurity SA Weed Risk Management System gave the following comparative weed risk and feasibility of containment scores by land use:

Land use	Weed Risk	Feasibility of control	Response at State Level
Grazing - southern	very high 278	negligible 145	manage weed
Grazing - rangeland	high 114	low 82	manage weed
Irrigated pastures	medium 88	high 30	protect sites
Crop/pasture rotation	medium 74	high 23	protect sites
Native vegetation	low 34	low 91	limited action
Vegetables	negligible 8	medium 45	limited action
Perennial horticulture	negligible 0	high 30	limited action

Considerations

Salvation Jane is native to the western Mediterranean. It was introduced as an ornamental in the 1850s and first noticed as naturalised in 1870 at Blanchetown. It subsequently spread rapidly during the 20th century. It was declared noxious in 1943 for the south-east, in the 1950s for parts of the Mount Lofty Ranges and later for other regions of the State.

Control in the rangelands and marginal farming areas is limited by the high cost of herbicides and application in relation to land values. Over the last two decades, biological control has reduced densities of salvation Jane.

Salvation Jane is no longer increasing its range and is not a strong competitor in arable land or well-managed pastures. However, it still has a potential to move to clean paddocks within generally infested areas, chiefly by movement of fodder or stock. Once established on neglected land it can be expensive to control, for example by pasture renovation. The management plan therefore emphasises prevention of spread at the property level and reduction in impact and density of large, intractable infestations.

Risk assessment indicates manage weed as the action in permanent grazing land, protect sites in rotational paddocks and irrigated pasture, and limited action in other land uses. While sale and movement are prohibited uniformly across the State, regional actions vary according to the land uses in each region.

In regions where it poses a significant weed risk and control is economically feasible, NRM authorities are empowered to enforce control on private land. This power is useful on unproductive land where there is little economic incentive for the owners to implement control.

In the Adelaide and Mount Lofty Ranges the weed is managed by providing control advice, and limited control actions to protect priority sites. Alinytjara Wilurara and Kangaroo Island landscape boards aim to contain spread by removing small infestations. Bioregional risk assessments in the South Australian Arid Lands range from monitor to protect sites, but the only action is promoting management by landholders. In the Eyre Peninsula region, action is limited to providing advice, and limited control actions in farming systems. In the Northern and Yorke region the weed is managed by prohibiting sale and movement only. In the Murraylands and Riverland, principles of integrated weed management including biological

control are promoted in order to manage the weed or manage sites depending on land use. The Limestone Coast landscape board contains spread by managing the weed in the northern part of the region where it is established and controlling infestations in the southern part where it is rarer.

Synonymy

Echium plantagineum L., Mant. Alt. 202 (1771)

Taxonomic synonyms:

Echium bonariense Poir., Encycl. (Lamarck) 8: 674 (1808)
Echium lycopsis L. ex Grufb., Fl. Angl. 12 (1754) pro parte
Echium violaceum L., Mant. Pl. 42 (1767)

Other common names include broadleaf, Paterson's curse, purple bugloss, Riverina bluebell.

This policy does not include the closely related plant vipers bugloss (*Echium vulgare*), which is rare and localised in South Australia.

References

Piggin, C.M. & Sheppard, A.W. (1995) *Echium plantagineum* L. In Groves, R.H. et al. (eds) *The Biology of Australian Weeds* 1: 87-110.

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