



Declared Plant Policy

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.

black willow, crack willows, goat willows and hybrid willows (*Salix* spp.)

Willows are deciduous trees and shrubs from the northern hemisphere. There are about 400 species of willow and many of these are cultivated in Australia. They are dioecious, meaning that male and female flowers are always on separate plants. Four groups of willows are regarded as high risk in South Australia, and are the subject of this policy; other willows are the subject of a separate policy.

black willow	<i>Salix nigra</i>
crack willows	<i>Salix fragilis</i> <i>Salix x rubens</i>
goat willows	<i>Salix x calodendron</i> <i>Salix caprea</i> <i>Salix cinerea</i> <i>Salix x reichardtii</i>
matsudana hybrids	<i>Salix matsudana x Salix alba</i>

Black willow *Salix nigra* is a medium-sized tree from North America. Both male and female forms are naturalised in Victoria and New South Wales, where regeneration from seed occurs. Unlike most other willows, it does not need wet ground as a seedbed to establish.

Crack willows are medium-sized trees from Europe with brittle branches that easily take root and form new trees.

Salix fragilis (crack willow) is apparently all male in Australia so does not produce seeds. It spreads downstream by broken-off branches. Branches can also take root while still attached to the parent tree, so thickets can readily establish into the stream. Infestations occur on the River Murray, mainly downstream from Murray Bridge.

Salix x rubens (basket willow or goldcrack willow) is a natural F₁ hybrid of *S. alba* and *S. fragilis* that is found in quantity along rivers in Victoria and NSW, and may also occur in South Australia.

Goat willows are large shrubs or small multi-trunked trees from Europe that form thickets along streams. They have been cultivated as garden ornamentals and cut flowers for their large male catkins (“pussies”).

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Salix cinerea (common or grey willow) was widely planted in the 19th century. Males and female plants are naturalised in South Australia, Victoria, New South Wales and Tasmania.

Salix × *reichardtii* (true pussy willow) is also naturalised in the Hills and Fleurieu and Limestone Coast regions. It is often called *Salix caprea* in Australia, but is probably a hybrid of this species with *Salix cinerea*.

Salix × *calodendron* is three-way hybrid between *Salix caprea*, *Salix cinerea* and *Salix viminalis*.

Matsudana hybrid willows Two decades ago concern was triggered by the importation of the hybrids of *Salix matsudana* × *Salix alba* bred in New Zealand. They are upright, fast-growing trees that were seen as potentially valuable for shelter on farms. However, they include male forms that could start the weeping willows along the Murray River producing seed (these being all female).

Management Plan for Black Willow, Crack Willows, Goat Willows and Hybrid Willows

Outcomes

- Waterways and riparian native vegetation protected from degradation by willows.

Objectives

- Prevent the establishment of new infestations.
- Discourage the planting of invasive types of willows.
- Implement control programs to control infestations as necessary within the Hills and Fleurieu and Limestone Coast regions.

Best Practice Implementation

- Regional landscape boards in regions where willows are declared for enforced control to identify infested sites.
- Regional landscape boards and Green Adelaide to organise control within priority affected areas.
- Regional landscape boards and Green Adelaide to prevent the sale and road transport of willows in their regions.

Regional Implementation

Refer to regional management plans for further details.

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Region	Actions
Alinytjara Wilurara	Limited action
Eyre Peninsula	Monitor
Green Adelaide	Protect sites
Hills and Fleurieu	Protect sites
Kangaroo Island	Contain spread
Limestone Coast	Protect sites
Murraylands and Riverland	Contain spread
Northern and Yorke	Protect sites
South Australian Arid Lands	Limited action

Declaration

To implement this policy, crack willow, black willow, goat willows and hybrids of *Salix matsudana* × *Salix alba* are declared under the *Landscape South Australia Act 2019* the whole of the State of South Australia. Sale and transport on public roads are prohibited throughout the State. The Hills and Fleurieu, Limestone Coast, and Murraylands and Riverland landscape boards and Green Adelaide may require land owners to control willows growing on their land. These three regional landscape boards and Green Adelaide are required to control plants on road reserves and may recover costs from the adjoining land owners.

These species of willows are declared in category 3 under the Act, for the purpose of setting maximum penalties and for other purposes. Any permit to allow their entry, road transport or sale 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 these willows on public roads, or bring them into the State. 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 these willows. Note that certain produce or goods may be excluded from these general movement and sale exemptions by Gazettal Notice of the Chief Executive of the Department for Environment and Water.

The following sections of the Act apply to these species of willows throughout each of the regions noted below:

Sections of Act	Region								
	AW	EP	GA	HF	KI	LC	MR	NY	SAAL
186(1) Prohibiting entry to area	X	X	X	X	X	X	X	X	X
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									
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		
194 Recovery of control costs on adjoining road reserves			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 willows.

Weed Risk

Invasiveness

So far there has been little spread of willows by seed in South Australia because most species are represented by single clones that are either male or female and there are few opportunities for cross pollination between species. Pollination of willows is mainly by insects, and hybridisation can only occur when the two species are flowering simultaneously and bees or other pollinating insects are present.

Willow seeds are tiny, wind-dispersed and produced in large numbers. They only live for a month or two, but if they find suitable conditions can germinate in large numbers and establish rapidly. Most species need bare ground with the water table at the surface from November to midsummer. Black willow is an exception in being able to establish on relatively dry ground, which increases its weed risk rating.

Their ability to grow very easily from cuttings of any size made willows popular as quick-establishing farm trees. However, this also enables them to spread from branches swept downstream by floods. Branches can also take root while still attached to the parent tree, so thickets can 'walk' out into the stream.

The four groups of willows covered in this policy have demonstrated their ability to establish and spread in Australia.

Impacts

Willows are long-lived trees that exclude native regeneration on river banks; their root system is both deep and wide, enabling them to tap both underground and surface water sources. Consequently, many species are weeds of waterways where they can displace native vegetation, hinder access, create erosion or slow the movement of floodwater.

Potential distribution

Willows tend to be restricted to the cooler regions of the State and generally to sites along streams or beside bodies of water. Apart from the River Murray willows grow within the 400 mm annual isohyet. Their competitiveness depends on their ability to exploit these habitats.

Feasibility of Containment

Control costs

Removal of established willow trees is very expensive, requiring felling and removal of timber, herbicide treatment of the stump to prevent regrowth, and immediate revegetation. Where the willows were the dominant vegetation on a stream bank, additional work may be necessary to stabilise the bank from erosion.

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Persistence

Willows maintain themselves indefinitely, with dense growth that excludes competing plants. Individual trunks may live for less than a century, but a clone persists by vegetative propagation.

Current distribution

Black willow is not yet naturalised in South Australia.

Crack willows form dense infestations lining the lowest reaches of the River Murray downstream from Tailem Bend.

Of the goat willows, *Salix cinerea* is common along streams in the southern Mount Lofty Ranges. *Salix x reichardtii* is naturalised in the same area and at some sites in the Limestone Coast. *Salix x calodendron* has been found growing wild at Clare.

Matusdana hybrid willows are located on farms in the Limestone Coast and other agricultural regions.

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
Native riparian vegetation	126	22	Contain spread

Considerations

Willows are Weeds of National Significance with the exception of *Salix babylonica*, *S. x calodendron* and *S. x reichardtii*.

Risk assessment indicates a management action at State level of containment in native riparian vegetation. However, the local weed risk of willows is higher in high rainfall areas, with a strategy of protecting high priority sites in the Hills and Fleurieu and Limestone Coast regions.

In the Murraylands and Riverland region, willows are managed in Riverland riparian zones and native vegetation to contain spread, as part of broader wetland management and weed projects. These projects are in priority areas where the willows are most likely to impede the flow of water in the narrow river tributaries. Limited action or monitoring is required in other regions where there is little or no vulnerable habitat.

Synonymy

Salix × *calodendron* Wimm., Salic. Eur. 187 (1866).

Salix caprea L., Sp. Pl. 1020 (1753) includes the male clonal cultivar 'Kilmarnock'.

Salix cinerea L., Sp. Pl. 1021 (1753).

Salix fragilis L., Sp. Pl. 1017 (1753) includes the clonal cultivar 'Russelliana', which is the common form in the United Kingdom and may be present in Australia.

Salix nigra Marshall, Arbust. Amer. 139 (1785).

Salix × *rubens* Schrank, Baier. Fl. 1: 226 (1789).

Salix × *reichardtii* A.Kern, Verh. K. K. Zool.-Bot. Ges. Wien 10: 249 (1860).

Hybrids of *Salix matsudana* × *Salix alba* including the clonal cultivars 'Adair', 'Aokautere', 'Cannock', 'Makara', 'Hiwinui', 'Moutere', 'Te Awa', 'Tangoio' and 'Wairakei'.

Reference

Baker, M. (2009) The willows (*Salix* – Salicaceae) in Tasmania. *Muelleria* 27: 127-148.

Hon David Speirs MP
Minister for Environment and Water

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