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.*

mesquite (*Prosopis* spp.)

Mesquites, several species of the genus *Prosopis*, are large thorny shrubs or small trees with the potential to form extensive, impenetrable thickets. They are present in South Australia only as small scattered patches in the pastoral zone.

Management Plan for Mesquite

Outcomes

- Maintain production from semiarid pastoral lands and protect the integrity of native vegetation.

Objectives

- Destroy mesquite infestations as found
- Prevent any further distribution and planting of mesquite.

Best Practice Implementation

- Prohibition of the sale of mesquite to prevent any further planting as an amenity tree or for timber, and prohibition of its transport on public roads.
- Destruction of mesquite infestations as found in accordance with regional management plans.
- Infestation sites recorded on *Prickle Bush Management Register* and re-inspected at least every two years for seedling regrowth.

Regional Implementation

Refer to regional management plans for further details.

Region	Actions
Alinytjara Wilurara	Destroy infestations
Eyre Peninsula	Prevent entry, destroy if detected
Green Adelaide	Prevent entry, destroy if detected
Hills and Fleurieu	Prevent entry, destroy if detected
Kangaroo Island	Prevent entry, destroy if detected
Limestone Coast	Prevent entry, destroy if detected
Murraylands and Riverland	Prevent entry, destroy if detected
Northern and Yorke	Prevent entry, destroy if detected
South Australian Arid Lands	Destroy infestations

Declaration

To implement this policy, mesquite is declared under the *Landscape South Australia Act 2019* throughout the whole of the State of South Australia. Its entry to South Australia, movement or transport on a public road by itself or as a contaminant, or sale by itself or as a contaminant are prohibited. Notification of infestations is necessary to ensure these are destroyed. Land owners are required to destroy any mesquite plants growing on their land. Landscape Boards and Green Adelaide are required to destroy mesquite on road reserves in their regions, and may recover costs from the adjoining land owners.

Mesquite is declared in category 1 under the Act, for the purpose of setting maximum penalties and for other purposes. Any permit to allow its entry, road transport or sale can only be issued by the Chief Executive of the Department for Environment and Water or their delgate 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 mesquite 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 mesquite. 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 mesquite 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	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	X	X	X	X	X	X	X	X	X
192(1) Land owners to destroy the plant on their properties	X	X	X	X	X	X	X	X	X
192(2) Land owners to control the plant on their properties									
194 Recovery of control costs on adjoining road reserves	X	X	X	X	X	X	X	X	X

Seasoned dry timber from mesquite plants is explicitly excluded from the declaration.

Review

This policy is to be reviewed by 2025 or in the event of a change in one or more regional management plans for mesquite, or in the event of any change in the status of mesquite as a Weed of National Significance.

Weed Risk

Invasiveness

Domestic and feral animals disperse mesquite seeds effectively and rapidly, as do floodwaters. Feral pigs are another vector of mesquite along river systems. Established mesquite plants survive drought by a mixed strategy: reduced transpiration and exploitation of soil water reserves by a deep root system. As they rely on high water tables, which are typically found in heavy soil types, rising water tables would create new potential habitats for mesquite invasion.

However, experience has shown that mesquite does not spread rapidly in South Australia, compared to its rapid spread in the monsoonal climates of northern Australia. Mesquite seedlings are not highly competitive with grasses, and their invasion of plant communities with a grassy ground layer appears to depend on gaps such as caused by disturbance, grazing or previous drought conditions. Together with the effects of grazing and fire, this accounts for the rarity of seedlings in mesquite stands despite their high seed production.

Impacts

Established mesquites have been shown to reduce the density of perennial grasses in the range by competition, with a consequent increase in water runoff and erosion. They also produce alkaloids that inhibit pasture regeneration under their canopy.

Potential distribution

Most of the semiarid to subhumid tropical areas of Australia are climatically suitable for mesquites, which are adapted to a warm growing season. Their native range extends to 37^0 north, but populations in higher latitudes are more dependent on long-day conditions for shoot growth, ensuring that growth occurs in summer only. In Australia, mesquites have naturalised in areas with mean annual daily temperatures as low as 10^0 C and median annual rainfall as low as 150 mm.

Feasibility of Containment

Control costs

Triclopyr and triclopyr/picloram herbicides are registered for mesquite control in South Australia. Clopyralid has also been used to control mesquite, and control was improved by the synergistic action of clopyralid/triclopyr mixtures.

Mesquite foliage has a waxy cuticle that reduces herbicide penetration, and under dry conditions the plants may be leafless for many months. For this reason, and to destroy basal buds, basal bark application of herbicide is preferred to a foliar spray.

The seedling may be the weakest link in the life cycle of mesquite. The seeds are hard, remaining dormant for many years in the soil, but require temperatures around 30^0C with

adequate moisture to germinate and establish. Seedling recruitment occurs after high summer rainfall events with follow-up rain to allow seedlings to establish deep root systems. Spraying of regrowth or seedlings is best done while they are small, as taller plants are less easily killed by herbicide.

Burning, or biological control using agents including the moth *Evippe* and the seed-eating beetle *Algarobius* are effective for controlling large mesquite stands, but are not viable in the tiny remnant populations in South Australia.

Persistence

As well as forming a seed bank of long lived seeds, mesquites regenerate vigorously from basal buds.

Current distribution

The largest infestations in South Australia were at Woomera (over 1000 plants) and Wallerberdinna Station (over 200 plants). These have now been greatly reduced in size.

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 - rangeland	high 114	very high 2	destroy infestations alert
Native vegetation	low 35	high 16	monitor

Considerations

The genus *Prosopis* contains 44 species, only a few of which have been introduced to Australia. The most widespread is *Prosopis juliflora.* The honey mesquite and the velvet mesquite are closely related, intergrade where their native ranges overlap, and readily hybridise; they have been variously treated as varieties of *P. juliflora* or as the separate species *P. glandulosa* and *P. velutina* respectively. All *Prosopis* are now prohibited imports under the Commonwealth Quarantine Act and are treated as Weeds of National Significance.

Mesquites were introduced into South Australia as fodder, amenity and shade trees around 1900. They were planted at towns and stations in the pastoral zone, where escapes followed surface water along drains, creeks and dune swales.

Destruction programs had largely eliminated mesquites from the State by 1990 with the eradication of isolated planted mesquites and the containment of larger patches remaining at Woomera, Port Augusta, Cockburn and Wallerberdinna Station.

Due to its high weed risk, limited distribution within the State and very high feasibility of control, mesquite is regarded as a State Alert Weed and a high priority surveillance target to increase the likelihood of early detection.

Synonymy

Prosopis L., all species.

Species known to occur in Australia include:

Prosopis glandulosa Torrey, Ann. Lyceum Nat. Hist. New York 2: 192-193 (1827)
Prosopis juliflora (Sw.)DC., Prodr. 2: 447 (1825)
Prosopis pallida (Willd.)Kunth., Nov. Gen. Sp. 6: 309 (1824)
Prosopis velutina Wooton, Bull. Torrey Bot. Club 25: 456-457 (1898)

References

Agriculture & Resource Management Council of Australia & New Zealand, Australia & New Zealand Environment & Conservation Council and Forestry Ministers (2001) Weeds of National Significance Mesquite (*Prosopis* spp.) Strategic Plan. 25 pp. (National Weeds Strategy Executive Committee: Launceston).

Osmond, R. (2003) Mesquite: Control and management options for mesquite (*Prosopis* spp.) in Australia. 90 pp. (Queensland Department of Natural Resources and Mines: Cloncurry).

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