

Eyre Peninsula NRM Board

PEST SPECIES REGIONAL MANAGEMENT PLAN

Cenchrus setaceus Fountain grass



This plan has a five year life period and will be reviewed in 2023.



Natural Resources
Eyre Peninsula



Government of South Australia
Eyre Peninsula Natural Resources
Management Board

INTRODUCTION

Synonyms

Pennisetum setaceum (Forssk). *Phalaris setacea* (Forssk). [5]

Other common names include tender fountain grass, plume grass, purple fountain grass and perennial foxtail.

Biology

Fountain grass, *Cenchrus setaceus*, is an attractive, erect, densely-tufted perennial that grows to 1.0 m tall. Leaf blades are linear, rolled longitudinally (convolute)/ folded or flat and mostly 8– 30.0 cm long, but can grow up to 45.0 cm long from the base.

Flowering occurs over a prolonged period from spring through to autumn.

The small pink and purple flowers are grouped in bristly, upright and largely cream coloured inflorescences 15- 38.0 cm long. The seed head is a pink, feathery-like spike measuring 10– 25.0 cm long and 1.2– 1.6 cm wide. Fruits are small, and contain one dry seed (achene), adorned with long showy bristles. Most seeds germinate in late spring through to early summer [1].

Evidence from Hawaii, where fountain grass it is also weed, suggests that seeds may survive for more than six years in the soil seed bank [4].

Origin

Africa - Northern Africa: Algeria, Egypt, Libya, Morocco, Tunisia.

Northeast Tropical Africa: Eritrea, Ethiopia, Somalia, Sudan.

East Tropical Africa: Kenya, Tanzania.

South Tropical Africa: Zambia, Zimbabwe.

Temperate regions of Asia - Arabian Peninsula: Oman, Saudi Arabia,

Yemen.

Western Asia: Egypt – Sinai, Lebanon, Syria.

Distribution

In Australia, fountain grass is found on Cape York Peninsula and as far south as southern Tasmania, demonstrating its tolerance to a wide ecological and climatic range, inferring its potential for broad distribution (Figure 1). Fountain Grass is already broadly distributed in South Australia (Figure 2).

Fountain grass is tolerant of high temperatures, high humidity and acidic through to alkaline soils. It is considered drought tolerant and established plants can grow in areas where rainfall is less than 127mm per annum. However, it does not survive prolonged periods at low temperatures or saline conditions [2].

On Eyre Peninsula fountain grass was first evident as a weed when found spreading on roadsides near townships. It was later recorded in dry creek beds and hillsides in conjunction with small roadside infestations and can still be found growing in private gardens as an ornamental grass (2016 pers. comm. I Honan).

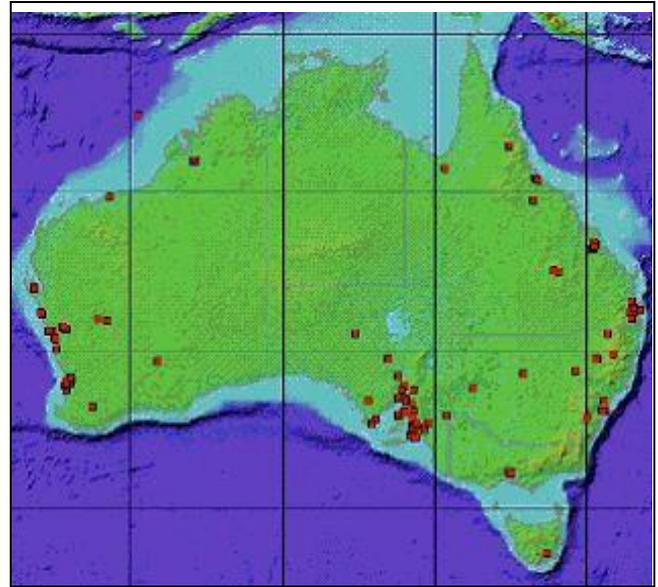


Figure 1: Distribution of fountain grass in Australia. Courtesy of Australia's virtual Herbarium.

Source:

http://avh.ala.org.au/occurrences/search?taxa=Pennisetum+setaceum#tab_mapView

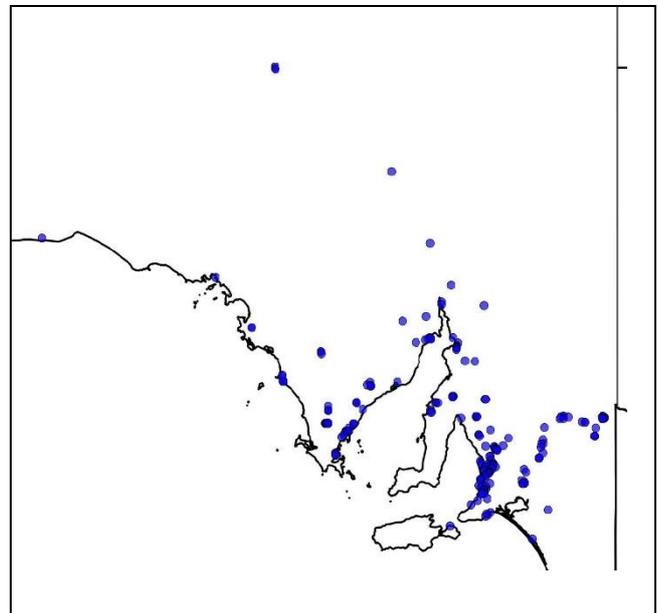


Figure 2: Distribution of fountain grass across South Australia. Source: Atlas of Living Australia.



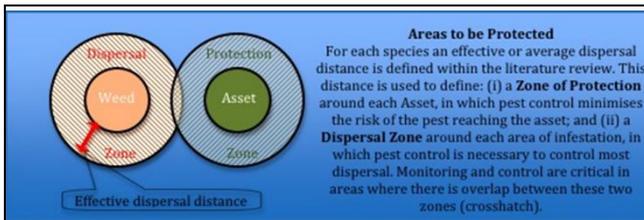
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RISK ASSESSMENT

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a national framework for environmental management (including the recognition of nationally threatened species and ecological communities), thereby directing resources towards the delivery of improved environmental protection. The EPBC Act applies where declared pest species threaten any listed species or ecological community or where its control may have adverse effects on matters of national environmental significance on Commonwealth land.



South Australian weed risk assessment process

The Primary Industries and Regions SA (PIRSA) Biosecurity SA division, in cooperation with Natural Resources Management Boards developed the Biosecurity SA Weed Risk Management System [6] to rank the importance of pest plants, standardise the prioritising of these plants for control programs and to assess weed species for declaration.

The Biosecurity SA Weed Risk Management System uses a series of questions to determine weed risk and feasibility of control for a species within a specific land use type. The result of the assessment is used to determine and prioritise weed management actions within each land use type.

Weed risk characteristics assessed include; invasiveness (i.e. its rate of spread); economic, environmental and social impacts, and potential distribution (total area) of the weed.

Appropriate management objectives are determined and can be prioritised using a risk matrix which compares weed risk scores against feasibility of control scores. Pest plants that have both high weed risk and are feasible to control have higher priority management objectives e.g. eradication. Conversely, species that are not feasible to control will not rank as a high priority, monitoring or limited management action may be the most appropriate management objective.

The risk matrix categorises each weed species into one of nine risk categories for regional management:

1. **ALERT:** to prevent species which pose a significant threat arriving and establishing in a management area.
2. **ERADICATE:** remove from a management area.
3. **DESTROY INFESTATIONS:** significantly reduce the extent in a management area.

4. **CONTAIN SPREAD:** prevent the ongoing spread in a management area.
5. **PROTECT SITES:** prevent spread to key sites/assets of high economic, environmental and/or social value.
6. **MANAGE WEED:** reduce the overall economic, environmental and/or social impacts through targeted management.
7. **MANAGE SITES:** maintain the overall economic, environmental and/or social value of key sites/assets through improved general weed management.
8. **MONITOR:** detect any significant changes in the species' weed risk.
9. **LIMITED ACTION:** species would only be targeted for coordinated control if its presence makes it likely to spread to land uses where it ranks as a higher priority.

Pest risk

Fountain grass, *Cenchrus setaceus*, grows well in a relatively wide range of climatic conditions and already has an extensive distribution in Australia. It is widely naturalised in coastal and agricultural regions, generally spreads from household gardens to roadsides, rail corridors and water courses. It has been recorded in more arid regions, generally around towns [3].

The seed is dispersed by the wind, flowing water and are transported on animals and vehicles [4].

Fountain grass is invasive in both native vegetation and farmland situations.

Fountain grass;

- Outcompetes native plants in drier habitats including coastal dunes and mallee.
- Can increase fuel loads to affect intensity and spread of fires.
- Has high seed production, and long-lived seeds, making it difficult to control.
- Is unpalatable to livestock [4].

Feasibility of control

Management options for the control include:

Manual control - hand pull small plants before flowering is only effective for new incursions or isolated plants.

Chemical control - Glyphosate herbicides are effective on both seedlings and mature plants. There are herbicides with flupropanate which are suited to tussock grasses and give more effective control, although a much slower kill which may allow seed-set.

Fire - Local experience has shown that burning plants prior to winter and treating with herbicides in late spring, when the plant is <25cm high, gives best results (2016 pers. comm. I Honan).

Biological controls - are unknown at this stage. However, seedlings are susceptible to grazing.



Integrated control, combining a number of control options usually results in longer term control outcomes.

Management calendar

	J	F	M	A	M	J	J	A	S	O	N	D
Flowering	O	O	O	O	O	O	O	O	Y	Y	Y	Y
Fruiting	Y	Y	O					O	O	Y	Y	Y
Active growth					O	Y	Y	Y	Y	Y	O	
Optimum treatment						Y	Y	Y	Y	Y	Y	

Legend: Y = Yes, regularly, O = Occasionally

Status

The Natural Resources Eyre Peninsula risk management assessment rates fountain grass as 'contain spread' in native vegetation systems on Eyre Peninsula (Table 1).

Table 1: Regional Assessment

Land Use	Pest Risk	Feasibility of Control	Management Action
Pasture	39 Medium	3 Very High	Protect sites
Cropping	17 Low	2 Very High	Protect sites
Native vegetation	45 Medium	3 Very High	Contain spread
Urban residential	45 Medium	2 Very High	Contain spread

REGIONAL RESPONSE

Special considerations / Board position

A State level Declared Plant Policy and Management Plan [5] exists for fountain grass (*Cenchrus setaceus*). The policy provides State level outcomes, objectives and implementation actions for regional NRM authorities.

The Natural Resources Eyre Peninsula (NREP) pest management response supports the State fountain grass policy.

This plant is seen by many in the community as being a new-age garden plant that fits the category of 'no or low care'. As a result community attitudes vary from dismay at its spread in creek lines and townships, to it being viewed as an acceptable and attractive modern garden plant.

The species has been observed forming dense stands in an unmanaged state, where it suppresses native vegetation and deprives many native mammals and insects of habitat.

Of particular concern is the plants ability to out-compete native vegetation in drainage lines where it could threaten the likes of the nationally endangered Eyre Peninsula blue gum (*Eucalyptus petiolaris*) woodland threatened ecological community and populations of native orchids.

Fountain grass produces an abundance of flammable biomass, its presence can alter the natural fire frequency in an area posing a significant fire hazard to the environment and property [2].

Aim

To contain the spread of fountain grass on Eyre Peninsula.

Objectives

1. Protect high value conservation and farm sites
2. Implement community education program on the status of fountain grass as a proclaimed plant and voluntary landholder responsibilities

Priority area/s to be protected

High value conservation areas including conservation parks, reserves, heritage sites, watercourses and high quality/intact native vegetation.

Actions

1. Develop localised annual action plans to achieve the aim and implement the objectives and actions of the Eyre Peninsula regional fountain grass management plan;
2. Educate local communities of the risk posed by fountain grass;
3. Survey and map the extent of distribution on EP and monitor control sites to ensure control actions are effective;
4. Encourage, facilitate or compel control;; and
5. Ensure that sales of the plant are prohibited.

Evaluation

Evaluation will be based on

- Changes in the distribution of fountain grass on Eyre Peninsula during the lifetime of this plan.

Declarations

To implement this policy, fountain grass is declared under the *Natural Resources Management (NRM) Act 2004* throughout the whole of the State of South Australia so that further spread can be prevented. The movement or transport of the plant on a public road by itself or as a contaminant, its entry to South Australia, or its sale by itself or as a contaminant are prohibited [5].



In the Alinytjara Wilurara, Eyre Peninsula, South Australian Murray-Darling Basin, Adelaide and Mount Lofty Ranges and South East NRM Regions, NRM authorities may require land owners to control fountain grass plants growing on their land. NRM authorities in these regions are required to control plants on road reserves and may recover costs from the adjoining land owners [5].

Fountain grass is declared in Category 3 under the Act for the purpose of setting maximum penalties and for other purposes. Any permit to allow its movement or sale can only be issued by the regional NRM Board pursuant to section 188. Under the Natural Resources Management (General) Regulations 2005, the transport or movement of grain for milling or wool for cleaning is exempt from the operation of sections 175 and the sale of wool or grain is exempt from section 177(2) if at the time of the sale the person believes on reasonable grounds that the purchaser will remove the plant from the wool or grain before any re-sale [5].

Table 2: Relevant sections of the Natural Resource Management Act 2004, which apply to fountain grass. [5]

Section	How the section applies
175 (1)	Prohibiting entry to area
175 (2)	Prohibiting movement on public roads
177 (1)	Prohibiting sale of the plant
177 (2)	Prohibiting sale of contaminated goods
182 (2)	Landowners to destroy the plant on their properties
185	Recovery of control costs on adjoining road reserves

References

1. Biosecurity SA. 2015. *Factsheet, Declared plant, Fountain grass.* Retrieved from www.pir.sa.gov.au/_data/assets/pdf_file/0012/240042/fountain_grass_fsheetsheet.pdf. 2015.
2. Weed Management Guide. 2008. *Managing weeds for biodiversity.* (2008) Retrieved from www.aabr.org.au/images/stories/resources/ManagementGuides/WeedGuides/wmg_pennisetum.pdf. 2008.
3. Department of Agriculture and Fisheries. and B. Queensland. 2016. *African Fountain Grass,* Retrieved from www.daf.qld.gov.au/data/assets/pdf_file/0005/62177/IPA-African-Fountain-Grass-PP146.pdf 2016.
4. Tunison, J.T., 1992, *Fountain grass control in Hawaii Volcanoes National Park: management considerations and strategies,* in *Alien Plants Invasions in Native Ecosystems of Hawaii,* C.P. Stone, C.W. Smoth, and J.T. Tunison, Editors. Cooperative National Park Resources Studies Unit: University of Hawaii, Honolulu.

5. Declared Plant Policy, Fountain Grass. Primary Industries and Regions South Australia. Accessed online at www.pir.sa.gov.au/_data/assets/pdf_file/0008/234593/fountain_grass.pdf January 2015.
6. Virtue, J.G., 2008, *SA Weed Risk Management Guide* February 2008. Adelaide: Department of Water Land and Biodiversity Conservation - South Australia. 22

Useful links

www.cabi.org/isc/datasheet/116202

