

# Eyre Peninsula Landscape Board

## PEST SPECIES REGIONAL MANAGEMENT PLAN

### *Eragrostis curvula* *African Lovegrass*

This plan has a five year life period and will be reviewed in 2027.



# INTRODUCTION

## Synonyms

*Eragrostis capillifolia* Nees, *Eragrostis chloromelas* Steudel, *Eragrostis jeffreysii* Hack., *Eragrostis procerior* Rendle, *Eragrostis robusta* Stent, *Eragrostis subulata* Nees, *Eragrostis thunbergiana* Steud., *Poa capensis* Steudel, *Poa filiformis* Thunb., *Poa curvula* Schrad.

Bergsoetgras, Boer lovegrass, fyngras (South Africa) and weeping lovegrass, blue lovegrass, Ermelo lovegrass, weeping grass, wire grass, pasto llorón (Peru), Boer lovegrass (Conferta type), and oulandsgras (Africa).

## Biology

*Eragrostis curvula* (Schrad.) Nees (1841) is a member of the Poaceae family. Closely related genera include *Cynodon*, *Sporobolus* and *Spartina*. There are approximately 300 recognised species of *Eragrostis* worldwide, mainly in tropical and subtropical regions [1]. There are 69 species of *Eragrostis* in Australia, with 52 of these native and the remainder introduced [1]. *E. curvula* is often referred to as a species 'complex' as there are several 'agronomic types' evident within the species, each with slightly different morphological features [2]. Such genetic variation has caused considerable taxonomic uncertainty and confusion [2-5]. Adding to the confusion is the existence of several closely related species that may hybridise with this complex e.g. *E. lehmanniana*, *E. compotonii*, and *E. paniciformis* [3].

Despite African lovegrass being morphologically variable, it can be distinguished by [6]:

- the absence of short, knotty rhizomes, the presence of which is relatively rare in the genus *Eragrostis*;
- the absence of micro hairs on lower leaf surfaces;
- black colouration on young seed heads;
- prominent nodes on flowering stems;
- the hollow crown phenomenon;
- sericeous (covered with soft silky hairs) cataphylls (early form of leaves) and basal sheaths;
- filiform-capillary blades;
- a scaberulous, weakly flexuose rachillas;
- a dividing palea;
- unequal glume; and
- partly naked panicle branches.

A greyish-green tufted perennial to 1.2 m high, with long erect to arching stems [7]. The drooping or weeping leaves are said to be a well-known and easily recognised feature of this grass. However, this feature is sometimes less apparent in smaller specimens that tend to have sparse or thin leaf blades. The sericeous basal sheaths and scabrous leaf blades are easy characteristics to identify in the field, by respectively separating the leaf blades gently at their bases and running the fingers along the leaf blades in a downwards direction.

Genetic studies suggest the existence of specific genetic groups within the *E. curvula* complex [5]. The taxonomic types (forms) have been named 'curvula', 'robusta green', 'tall chloromelas', 'short chloromelas', 'robusta blue', 'robusta intermediate' [2] and 'conferta' [4]. The first four forms are naturalised in Australia [8]. The types differ in their invasiveness, with different tolerances to environmental conditions and control methods [6].

Distinguishing between the numerous agronomic types of African lovegrass can be very difficult [9]. The differences between these types are based on leaf colour and size, plant height, stalkiness, habit, inflorescence characteristics, chromosome number [10] and palatability [11]. Two similar Australian native grasses, *Poa labillardieri* (poa or silver tussock) and *E. parviflora* (a lovegrass), may be confused with African lovegrass [6].

Seeds germinate in autumn or spring if sufficient moisture is available, when temperatures exceed 10°C [12]. Seedlings grow slowly for the first six weeks (to the five leaf stage), growth rate increases thereafter [12]. Growth of autumn-germinated seedlings, however slows or ceases in winter, the plants re-sprouting the following spring. Flowering begins in early summer and the plant continues to produce new stems and set seeds while growth conditions are satisfactory. Ripe seeds are present from January to March. Growth slows or ceases in winter and recommences as temperatures rise in the following spring [12].

In Australia, African lovegrass appears to prefer disturbed sites, especially roadsides and pastures that have been overgrazed for some time. It is generally associated with light textured (sandy) soil types, especially granitic sands, and is often abundant along sandy riverbanks and beach dunes. In some places, it grows on fertile, acidic red soils.

Its characteristics of high seed production, vigorous seedling growth and drought tolerance are desirable in a pasture plant, but the low palatability

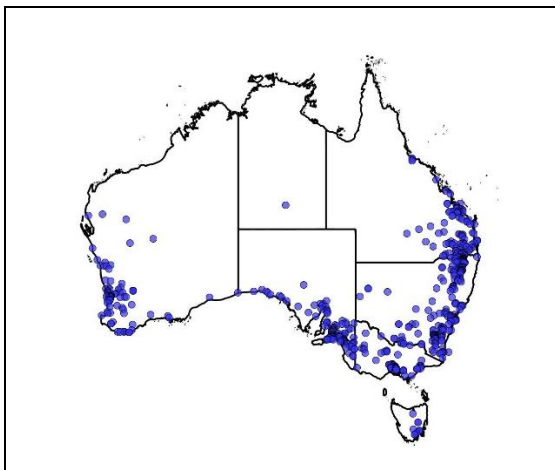
of some strains makes them weedy. It has been sown throughout Australia for pasture improvement and soil conservation [13]

## Origin

African lovegrass is native of southern Africa [12]. It was introduced to Australia by accident prior to 1900 as a seed contaminant [12] and also planted as a pasture species in the early 20<sup>th</sup> century, being specifically imported more than 115 times for experimental assessment [12, 13]. It was noted as spreading in the late 1970's in the Tintinara-Coonalpyn area, and in 1985 was declared an agricultural pest plant for the whole of South Australia under the *Pest Plants Act 1975*. It has naturalised on Eyre Peninsula [12].

## Distribution

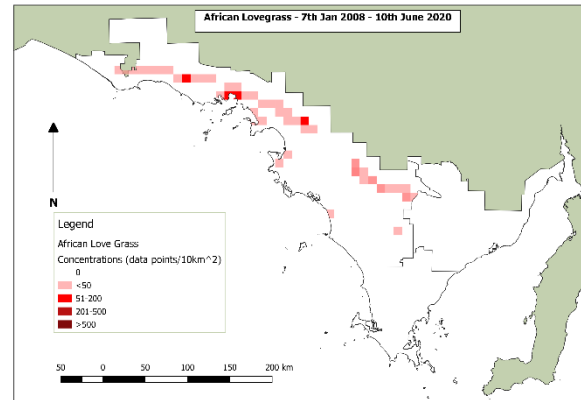
African lovegrass has been recorded in all Australian states and mainland territories (Figure 1) and its range extends across subtropical and temperate areas where annual rainfall is 400–1000 mm [14]. Data collected during treatment indicates the species persists extensively along highways on the Eyre Peninsula (Figure 2).



**Figure 1: Australian distribution of *Eragrostis curvula* (2015).** Source: [<http://avh.ala.org.au/>]

In South Australia, African lovegrass is scattered in parts of the Eyre Peninsula, Yorke Peninsula, southern Mount Lofty Ranges, Fleurieu Peninsula, Murray Mallee and Upper South-East. It is most abundant on cleared roadsides along major highways such as sections of the Dukes Highway, the Eyre Highway and on roadsides in the southern Mt Lofty Ranges. It invades permanent pastures receiving at least 450 mm annual rainfall. It is prominent on acid sandy soils but occurs in a wide soil pH range (4.5 to 8.5). As it is already present in

marginal country on the West Coast, it may be expected to grow anywhere in the agricultural zone of SA. It is far from reaching its ecological limit.



**Figure 2: Distribution of African Lovegrass on Eyre Peninsula using BDBSA data and EPLB control data.**

## RISK ASSESSMENT

### Pest risk

African lovegrass is a highly persistent, summer growing, C<sub>4</sub> tussock grass [12]. It is an undesirable pasture plant and although some cultivars may be beneficial for soil conservation purposes, the weedy forms established in South Australia are aggressive competitors with other perennial pasture grasses. The young growth, before production of seed heads, is generally palatable and nutritious to stock, but is produced at times when feed is generally available from more palatable species [12]. Older growth has low palatability and is low in crude protein concentration. It is avoided by animals and eaten only when other pasture has been consumed. The distribution of African lovegrass, is associated with selective grazing because of its low palatability when grown in unproductive regions [10, 13].

As it can readily escape and establish, particularly within disturbed and / or degraded pastures and grasslands [10, 15, 16], African lovegrass presents a social, environmental and economic conflict [13]. Although it is seen mainly as a weed of disturbed neglected areas, it can also be highly invasive in heathlands, woodlands, forests, grasslands and riverine environments and is capable of dominating ground flora causing major displacement of native species. It has invaded pasture communities, woodlands, riparian areas and roadsides [10]. It is largely unpalatable to native animals and therefore may have a minor negative impact on food sources for non-threatened fauna.

It can spread and dominate sparse overgrazed pastures where there is a lack of competition from other pasture plants, forming pure, dense swards. Dense growth of unpalatable forms is accused of reducing pasture productivity, primarily on sandy soils. The species is generally not suited to clay soils.

African lovegrass produces a very large numbers of tiny seeds; most strains do not require pollination, forming seeds that are identical to the parent. It can develop a large soil seed bank, but individual seeds are relatively short-lived, remaining viable for one to five years. As the seedlings are tiny, they are only likely to establish when conditions are favourable.

Seeds are not adapted in any way to aid natural spread [12], but can be dispersed by water, animals and on livestock, earthwork machinery and on vehicles. One of the more important means of spread is as a contaminant of various materials such soils and gravels used in road making, and in grain, soil and fodder. There is no evidence that the weed causes contamination of grass seed crops, but movement of pasture hay is a known vector for spread. Roadside slashing equipment is commonly blamed for spreading seeds.

The plant is mainly found in disturbed soils on roadsides, railway tracks, river banks and other neglected sites. It presents a low nuisance value to humans and is unlikely to restrict access to land.

In New South Wales, some cultivars are promoted for soil stabilisation purposes.

African lovegrass can also pose a fire threat in some environments. Burning can increase the density of tillers by 61%, stimulate flowering and increase seed production [17].

## Feasibility of control

Control of African lovegrass is largely a management problem [12], with cultivation, cropping or the establishment of an improved perennial pasture in arable areas giving good control. The weedy forms have low palatability and will therefore tend to increase in abundance under grazing, but there is evidence to show that heavy grazing and fertiliser use, especially nitrogen, improve both pasture and animal productivity [12, 13]. It is not a weed of annual pastures or cropping but may invade degraded native vegetation such as road reserves. Naturalised African lovegrass is generally unpalatable to livestock for most of the year, although a more palatable cultivar 'consol' has been developed through selective breeding. Alternatively in non-arable areas it may be better to utilise the plant as a pasture species. Establish such a programme, initially by removing all dried

and unpalatable material in the area. Burn in autumn or spring, but not in winter as this encourages seed head development, and graze heavily in early summer [12]. Oversow the area with either subterranean clover or white clover the following autumn. The next summer, when the love grass grows through the newly established clover, commence heavy rotational grazing. Firm (2009) [13] thoroughly reviewed research within Australia and overseas on the risks and possible management strategies for African lovegrass.

There are no easy or cheap control methods for African lovegrass. Excluding African lovegrass from un-infested areas, via property-level quarantine and early detection, is perhaps the best control method. However, this requires constant vigilance and a clear means of identification to enable early detection. Recommendations for preventing seed spread include [13]

for small populations:

- not mowing or slashing utility verges when plants are in seed;
- chipping tussocks out before flowering, and if plants are already in seed; and
- cutting seed-heads and bagging them before chipping.

for large populations:

- buffer zones between infected paddocks and uninfected paddocks; and
- confining livestock that have grazed in an infected pasture for more than 10 days so that seeds which are passed in dung can be controlled more readily following germination.

African lovegrass is difficult to destroy with herbicides but non-selective herbicides can be used on roadsides and spot infestations. For large infestations, reasonable control can be achieved using flupropanate-based herbicides [18, 19], but effective long-term management generally involves integration of herbicides with some form of pasture renovation, involving ploughing and re-sowing better quality pasture species [6]. Control in pasture depends on management of grazing pressures and appropriate use of herbicides. One of the few published studies within Australia that has investigated possible control measures for African lovegrass found that the herbicides tetrapion, glyphosate and 2,2-DPA were effective when applied selectively [20].

## Status

Within the EP Landscape region a risk management assessment using the Biosecurity SA Weed Risk

Management System [21] shows African lovegrass merits (

**Table 1):** Manage sites on Southern perennial pasture land and Destroy infestations on Northern perennial pasture land.

**Table 1: Regional Assessment**

Land use	Weed Risk	Feasibility of control	Response at State Level
Southern Perennial Pasture	medium	medium	Manage sites
Northern Perennial Pasture	high	very high	Destroy infestations

Risk assessment indicates managing sites as an 'average' action across the whole State to protect grazing lands from African lovegrass, as a species with medium risk that is already widely dispersed; in practice this is implemented according to the level of infestation in each region.

## REGIONAL RESPONSE

### Outcome

To reduce the impact of African lovegrass on key environmental, social and productive sites/assets and prevent spread into unaffected areas.

### Objectives

To:

- destroy new African lovegrass incursions;
- minimise seed production and spread from established large infestations; and
- increase community awareness in identification and threat of African Lovegrass.

### Area/s to be protected

Key sites/assets to be protected are:

- EPBC listed vegetation communities.
- Areas containing EPBC listed plant and animal species.
- Agricultural areas where community interest is large enough to warrant a coordinated approach.

### Actions

**Land managers to:**

1. survey and control infestations near key sites/assets annually and supply survey and control information on request to Landscape Board staff; and
2. prevent the spread of African lovegrass by searching annually for outlier infestations near known infestations.

#### Landscape Board staff to:

3. facilitate, encourage, compel (develop action plans) control on private land to protect key sites/assets;
4. facilitate, encourage, compel or undertake control on public land, including roadsides, to protect key sites/assets (costs may be recovered from land managers);
5. carry out opportunistic monitoring for sale of African lovegrass plants at markets and community events;
6. develop localised annual action plans to achieve the objectives and actions of this management plan;
7. undertake systematic data collection (control and survey numbers, location and date information) and storage in a central spatial database; and
8. work with DTEI and councils to ensure obligations within the *Landscape Act South Australia 2019* to prevent spread of weeds by plant and equipment are met.

### Evaluation

Evaluation of success will be based on:

- annual analysis in November of monitoring and control data to evaluate the success of pest plan actions (including the update of spatial layers);
- identify any gaps in delivery and action as soon as possible; and
- review of this pest management plan every five years.

### Declarations

African lovegrass *Eragrostis curvula* (excluding the cultivar 'Consol') is declared weed under Schedule 2 (CLASS 34 – Provisions: 186 (2), 188 (1)(2), 192 (2), 194) under the *Landscape South Australia Act 2019* throughout the whole of the State of South Australia (Table 2). This means that the movement or transport of the plant on a public road, by itself or as a contaminant, or the sale by itself or as a contaminant is prohibited. Landscape authorities

may require land owners to control African lovegrass plants growing on their land. Landscape authorities are required to control plants on road reserves, and may recover costs from the adjoining land owners. African lovegrass 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 Landscape Board pursuant to section 188. Under the *Landscape South Australia (General) Regulations 2020*, the transport or movement of grain for milling or wool for cleaning is exempt from the operation of sections 186 and the sale of wool or grain is exempt from section 188 (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.

**Table 2: Relevant sections of the *Landscape Act South Australia 2019* and provisions for the whole of state for African lovegrass - *Eragrostis curvula*.**

Section	How the section applies
186 (2)	Cannot transport the plant or anything with the plant in it in the state
188 (1) (2)	Cannot sell the plant Cannot sell any produce/goods carrying the plant
192 (2)	Land owner must control the plant on their land
194	Landscape board may recover costs for control of weeds on road reserves from adjoining land owners

## More information

Contact your local Eyre Peninsula Landscape Board office

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