

# Native grasses of the Darling Downs

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## THE DARLING DOWNS

The area that became known as the Darling Downs was discovered by botanist and explorer Alan Cunningham during his exploratory journey north from the Hunter Valley in 1827. He described the view from Mount Dumaresq:

From the NW to W and S, the eye surveyed a vast expanse of open country... exhibiting within a range of 20 miles every feature of hill and dale, woodland and plain, to diversify the ample outstretched landscape.<sup>1</sup>

Cunningham named this area after Sir Ralph Darling, Governor of New South Wales from 1825 to 1831.

We now regard the Darling Downs as a much larger area than Cunningham envisaged: from the Bunya Mountains to the Great Dividing Range in the north and east, west to Miles, and south to the New South Wales border. It consists of open country broken up by creek lines with naturally treed banks, small ridges of slightly higher country, and eroded volcanic cores overlooking the plains.

The five major ecosystems on the Darling Downs are:

- grasslands
- eucalypt woodlands on floodplains and basalt hills
- brigalow/belah woodlands
- poplar box woodlands
- dry softwood scrub.

Grasses thrive in full sunlight, and are sparse in the scrubs because of the reduced amount of light that penetrates the canopy.

## DECLINE OF GRASSES ON THE DOWNS

The Queensland Herbarium has identified about 100 historically common species of grasses native to the Darling Downs; but what was common in 1840, when European settlement commenced there, soon ceased to be as common.

The changes that occurred in the early years stemmed from risky strategies that favoured profit over safety. Overstocking to maximise wool production ignored the ever-present impacts of the region's variable climate. Many sheep died during droughts and pastures were damaged by high grazing pressure and the lack of pasture spelling.

By the 1860s, concern was being raised about mismanagement of the grasslands, and in 1867 the Queensland Government held an inquiry. The Surveyor-General, Augustus Gregory, gave evidence that kangaroo grass and other long grasses that had originally attracted squatters had almost disappeared.<sup>2</sup>

Several ecosystems are now endangered due to cultivation, such as those on the fertile black soil

plains. This is prime agricultural land used for food and fibre cropping. The plains once supported tussock grasslands dominated by Queensland blue grass (*Dichanthium sericeum*) and woodlands of poplar box and brigalow, and the remnants of these ecosystems are now very small.

## IDENTIFICATION OF GRASSES

Just as trees and shrubs are identified by their flower and leaf characteristics, grasses are usually identified by the type of inflorescence (array of flowers). These include:

- simple spikes, with differing flower patterns;
- panicles (spikes with branches on which the flowers develop);
- digitate (finger-like) panicles, where the flowers develop on 'fingers' at the end of the stem;
- spatulate (spoon-like) panicles, where a leafy structure cups the inflorescence.

These four types of inflorescence are illustrated below.



Types of grass inflorescence:

- (a) spike; (b) panicle;  
(c) digitate panicle;  
(d) spatulate panicle



## SOME SPECIES NATIVE TO THE DARLING DOWNS

**Kangaroo grass (*Themeda triandra*)** is one of about 30 species of *Themeda* globally. It grows in Australia, Africa, Asia and the Pacific. When it was first collected in Australia, it was named *Themeda australis* and known by that name for more than 100 years. Then some South African scientists came to work here and recognised it as a species they knew well in their home country. This same grass had been collected in Egypt much earlier and named *Themeda triandra*. The earlier name had priority and was adopted for the Australian species.

Kangaroo grass usually grows to about 80 cm tall but can exceed 1.2 m. Its flower and seed arrangement is a spatulate panicle.

This grass is palatable to stock, which is the reason, together with the general loss of grasslands in its favoured woodlands, that it is now seen most often on little-grazed areas such as roadsides, cemeteries and railway reserves.

**Wild oat grass (*Themeda avenacea*)** is much taller than kangaroo grass, often growing to at least 2 m. Many a horse rider has judged its height by being able to tie two flower heads together over the horse's withers.

Oat grass grows best in slightly wetter environments than those favoured by kangaroo grass. It is highly palatable, and is now even scarcer than kangaroo grass. Historically, it grew in all five major ecosystems on the Darling Downs. The spatulate seed head carries larger seeds than kangaroo grass and resembles the seed head of oats (*Avena sativa*), hence the specific name *avenacea*.

**Queensland bluegrass (*Dichanthium sericeum*)** is now the dominant grass species in the rare remnant grasslands and lightly grazed grassy areas of the Darling Downs. It is an erect blue-grey grass growing to about 1 m tall, but more commonly about 60 cm. It has a digitate panicle with two to six branches. It is highly palatable, and continual overgrazing leads to its

replacement with less palatable species such as pitted bluegrass (*Bothriochloa decipiens*).

A handy point of differentiation when examining bluegrasses in the field is that *D. sericeum* has a tuft of hairs surrounding its stalk nodes, like a ballerina's tutu – see below.



*Dichanthium sericeum*: note the hairs fringing the nodes.



*Themeda triandra*



*Themeda avenacea*

**King bluegrass (*Dichanthium queenslandicum*)** is an erect perennial bluegrass which grows to about 80 cm tall. It is classed Vulnerable in Queensland, as only a few patches of the species have been found. These remnant patches are on the Darling Downs near Bowenville and Pittsworth, in the upper Dawson catchment, and west of Rockhampton and Mackay.

The species favours the heavy dark cracking-clay soils derived from basalt. It grows with other bluegrasses (*Bothriochloa* spp. and other *Dichanthium* spp.) and the usual cohort of cracking-clay grassland species.

King bluegrass is palatable to stock and has to be managed sensitively by graziers to survive. Essentially, it needs grazing pressure to be withdrawn over the important summer growth period.

**Windmill grass (*Chloris ventricosa*)** is a tufted grass, usually growing to about 1 m tall. It has digitate panicles, each with 2–15 flowering fingers.

This and other native *Chloris* species can be easily confused with the exotic Rhodes grass (*Chloris gayana*), which was introduced as a pasture grass for stock and has been used to breed improved cultivars. Thousands of hectares of Rhodes grass have been sown as pasture.

*Chloris* species distribute seed by allowing their heads to break off and blow away in the wind. They provide a seasonal sight of fencelines covered in seed heads.

In the past, railway cuttings would sometimes fill up with blown grass tops, and steam trains would be stopped because their wheels could not gain traction on slopes where the grass was wet from dew.



*Dichanthium queenslandicum*

**Barbed-wire grass (*Cymbopogon refractus*)** was first described in Australia in 1810. The common name is derived from the fact that the flowers and seed heads are turned back (hence *refractus*) and resemble the barbs of barbed wire.

The species is widely distributed throughout the eastern halves of Queensland, New South Wales and Victoria, also occurring in the Northern Territory. It often grows in association with kangaroo grass, but is less palatable to grazing animals.

Barbed-wire grass is 60–100 cm tall and the flowers are on panicles 40–50 cm long. The spikelets of flowers are attractive when mature in autumn, blue-grey in colour against brownish-yellow stems.

Lemongrass, commonly cultivated and widely used in Asian cooking, is also a *Cymbopogon* species.

*Cymbopogon refractus*  
(right and above right)

**Cotton panic grass (*Digitaria brownii*)** is a grass of all five major Darling Downs ecosystems, with a wide distribution over the whole of Australia except Tasmania. It is lower-growing than many other grassland species, usually about 0.5 m tall, but it can grow to 1 m tall in favourable locations.

The flower spike has seed-bearing spikelets that radiate out from the stem with white, brown or pinkish-purpose hairs, presumably accounting for the common name.

A useful identifying feature is that the lowest spikelets radiate from a single point, whereas the upper spikelets alternate up the stem.



**Black spear grass (*Heteropogon contortus*)** is found mainly on the basalt hills of the Darling Downs, especially along the east side of the Great Dividing Range, and in the poplar box woodlands.

The flower head is a single spike with the seeds closely spaced along it. Each seed has a black twisted awn 8–10 cm long, so the mature seeds hang on the grass in dark tangled bunches (hence the botanical name, which means 'twisting beard').

The twisted awns are the key to success for this species. They straighten when in contact with moisture, so when the seeds fall on damp ground the awns act like little daggers, fixing the seeds in the ground and helping them to germinate.

You can test this yourself by placing a seed in the palm of your hand, dampening it, then watching the awn straighten and try to dig the seed into your hand. Don't let it succeed!

While the test above is a fascinating bush novelty, it also has a serious side. This phenomenon was responsible for the demise of an industry on affected farmland. The Darling Downs was originally settled by Europeans to graze sheep. Overgrazing favoured black spear grass, and some pastures became dominated by this species. Helped by the lanolin in the wool of the sheep, the seeds of the grass burrowed into their skin, made infected spots and caused abscesses. The consequent discharges downgraded the wool and skins to the extent that it was no longer economically viable to run sheep.

Cattle were substituted for sheep, as their hairy coats and thicker skins could withstand the prickly invaders much better.



Photo: Patricia Gardner

*Heteropogon contortus*

**Blady grass (*Imperata cylindrica*)** is native to Queensland but is a weed on the Darling Downs, and an indicator of impaired fertility. It is a harsh, unpalatable species, partly because the leaf edges can cut like blades. It spreads by rhizomes (underground stems) as well as seed and grows in thick clumps. The flower head is a panicle with many white filaments, like foxtail grasses.

Blady grass also poses a fire danger, as it burns readily and hot. Fires involving this species are hard to control.



Photo: Greg Spearritt

*Imperata cylindrica*

**Yabila grass (*Panicum queenslandicum*)** is well known in all five major ecosystems of the Darling Downs. It is consistently less than 1 m tall, with an erect growth, and is very robust if it has an adequate supply of nitrogen.

The flower head is an open panicle with the lowest seed-bearing arms growing out from a common point and the higher arms coming from either opposite or alternate points.

Other *Panicum* species and cultivars have been introduced to Queensland as pasture grasses, and some have spread far beyond their original paddocks. This is a potential source of confusion when identifying *P. queenslandicum*.

## NATIVE GRASSES AT PEACEHAVEN

The grasses planted in the recently established grassland garden at Peacehaven Botanic Park include four of the native Darling Downs species described in this fact sheet:

- *Cymbopogon refractus*
- *Dichanthium sericeum*
- *Heteropogon contortus*
- *Imperata cylindrica*.

This section of the botanic park is still a work-in-progress.

## REFERENCES

1. Alan Cunningham's journal for 1827, published in Russell H S, *Genesis of Queensland*, Sydney, 1888
2. Parliamentary Select Committee on Selections in Agricultural Reserves, *Queensland Votes and Proceedings* 1867, p 929