

# Grasses of Townsville

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Photographs by Greg Calvert and Chris Gardiner



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# Grasses of Townsville

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## Preface

I developed an interest in grasses some 13 years ago. At the time I noted that there was no book on grasses in Townsville. I later decided to write a flora. This book was written to fill that gap and has grown from many years of activity in this field and builds on the work in my previous three books.

The journey began in 2004, when Chris Gardiner and I resolved to cultivate a grass garden as a resource to teach students how to identify grasses. Grass identification was an integral part of the subject “Structure and Dynamics of Tropical Savannas”. We decided to collect plants and seeds from the plants found on the Townsville campus for this garden and between 2004 and 2008; we explored many areas of the campus and other sites in Townsville in search of new grasses. The early stages of this activity provided a base for the publication of *Grasses of James Cook University* (2009), co-authored with Betsy Jackes.

Soon after this work was published I was asked by Coastal Dry Tropics Landcare Incorporated to compose a book of twelve native grasses for Townsville region. This book, *Native Grasses for Revegetation in the Townsville Region* (2010), has been a popular resource used by landcare workers and land managers groups and has been republished by the NQ Dry Tropics, acknowledging that it is important to increase knowledge and management of the native grasses.

The *Grass Genera in Townsville* (2012) was the next book. This book described 73 genera and listed more than 220 grass species. The key to grass genera uses drawings to help describe the terms used. It was a valuable reference for the identification of grasses encountered in the region of Townsville. This book is available on James Cook University webpage [http://www-public.jcu.edu.au/discovernature/JCU\\_103577](http://www-public.jcu.edu.au/discovernature/JCU_103577)

This book, *The Grasses of Townsville* was a major undertaking. I have described 234 grass species, subspecies and varieties and have provided illustrations and photographs of all of them. The species is based on Australia’s Virtual Herbarium records (<http://avh.ala.org.au>) supplemented my own collecting. I hope that this work will be welcomed by botanists, land managers, conservationists and interested amateurs who want to identify the grasses of the Townsville area.

I am a Curator of the James Cook Herbarium, I have been in the position since 2002.

Finally I want to gratefully acknowledge the assistance of Linda Forscutt, Neil Renison and Christine Dalliston with editing this publication.

Nanette Hooker, March 2016.



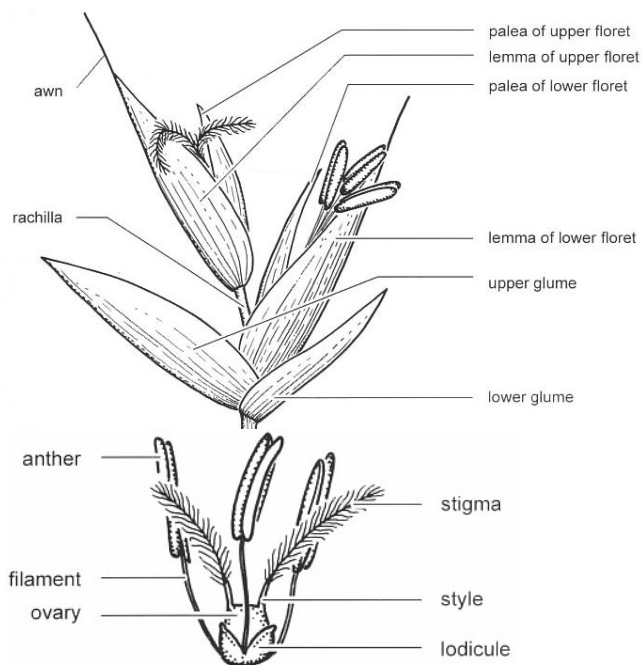
## GRASSES OF THE TOWNSVILLE AREA

Welcome to the grasses of the Townsville area. The genera covered in this publication are those found in the lowland areas around Townsville as far north as Bluewater, south to Alligator Creek and west to the base of Hervey's Range.

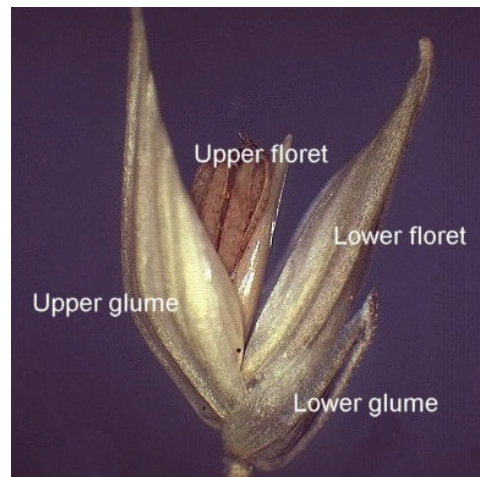
This book provides a means of identifying the native and naturalised grasses of the Townsville region. The aim of this book is to help students, researchers, conservationists and anyone else who is interested in the Poaceae family. This book provides a description and photographs of the genera and species.

The grasses belong to a very widespread and large family called the Poaceae. The original family name, Gramineae, is used in some publications, in Australia the preferred family name is Poaceae. It is one of the largest flowering plant families of the world, comprising more than 700 genera, and more than 10,000 species. In Australia there are over 1300 species including non-native grasses. There are 165 natives, 65 non-natives and 4 cultivated grasses found in the Townsville area and I have described 234 grass species, subspecies and varieties.

The grasses have highly modified flowers arranged in a variety of ways. Because they are highly modified and specialized, there are also many new terms used to describe the various features. Hence there is a lot of terminology that chiefly applies to grasses, but some terms are used also in the sedge family. The basic unit of the grass inflorescence (the flowering part) is the spikelet. The spikelet consists of 1-2 basal glumes (bracts at the base) that subtend 1-many florets or flowers. Each basic floret consists of lemma and palea; these enclose the male and female organs.



Drawing from (Mallett and Orchard 2002)



Photograph (© D. Sharp, Qld Herbarium)  
adapted from (Sharp and Simon 2002)

There are many basic variations on this basic pattern, sometimes the palea may be missing for instance or the floret may be sterile or neuter, i.e. there are no male or female organs inside. Some spikelets are bisexual (both stamens and ovary present) or unisexual (only male or female organs present). Sometimes male and female flowers are in different spikelets, then the plant is said to be monoecious; if male on one plant and female on another as for the Beach Spinifex then the plant is dioecious.

Because of the difficulties in understanding the various terms, in this book illustrations are used as much as possible. To find your way to a genus, there are two routes you can follow, the first method is 'flick till you find'. The second is to use what is called a 'key'. This is based on pairs of contrasting statements or couplets. Both statements must be read to find out which one 'fits' your plant and then you go to the corresponding number and continue like this till you find the description that fits. Diagrams have been used as much as possible to supplement the words.



Several useful references are:

Hooker N, Jackes B (2009) Grasses of James Cook University, Townsville campus: Part A  
<http://eprints.jcu.edu.au/2103/>

Jacobs SWL, Whalley RDB, Wheeler DJB (2008) 'Grasses of New South Wales (Fourth Edition).'  
 (University of New England: Armidale)

Mallett K, Orchard AE (Eds) (2002) 'Flora of Australia Volume 43, Poaceae 1: Introduction and Atlas.'  
 (ABRS/CSIRO Publishing: Melbourne)

Wheeler DJB, Jacobs SWL, Whalley RDB (2002) 'Grasses of New South Wales (Third Edition).'  
 3rd. edn. (University of New England: Armidale)  
[http://www.fog.org.au/grasses\\_of\\_nsw/grasses\\_of\\_nsw.htm](http://www.fog.org.au/grasses_of_nsw/grasses_of_nsw.htm)

There are several groups of plants which are sometimes mistaken for grasses.

Families which have grass-like species or could be mistaken for grasses are:

Sedges or Cyperaceae chiefly found in moist habitats; rushes - the families Juncaceae and Restionaceae and pipeworts or Eriocaulaceae.

The following table provides a comparison of these families, all of whom do not have typical petal-like flowers.

Grasses and grass-like plants (and flowers without petaloid perianth)					
	Poaceae (grasses)	Cyperaceae (sedges)	Juncaceae (rushes)	Restionaceae (Australian rushes)	Eriocaulaceae (pipeworts)
Stems	Hollow or solid Round	Solid Triangular or round	Solid Round	Hollow or solid Triangular, round or flat	Solid or spongy
Leaf sheaths	Open	Closed	Open or closed	Closed	Open
Leaves	2-ranked	3-ranked	2-ranked	Much reduced rosette	Spiral
Ligules	Present	Absent	Absent or present	Absent or present	Absent
Flowers	Commonly bisexual, enclosed by a lemma and palea and subtended by sterile glumes	Bisexual or unisexual and monoecious, enclosed by a single bract (glume)	Bisexual	Unisexual and dioecious	Unisexual and dioecious
Floral formula	P0 A3 G(2)	P0 A3 G(2-3)	P 3+3 (dull- coloured) A6 G(1 or 3)	P 0 or 3 or 6 A 1 or 2 or 3 G(1 or 2 or 3)	P 3+3 A3-6 G(2-3)

Plants with petaloid perianths which are sometimes grass-like include.

<b>Liliaceae <i>sensu lato</i></b>	Flowers unisexual or bisexual. Perianth 3+3 or 6
<b>Laxmanniaceae (<i>Lomandra</i>)</b>	Plants with unisexual, flowers white, cream or pale yellow Leaves arranged two vertical rows on opposite sides of an axis
<b>Hemerocallidaceae (<i>Dianella</i>)</b>	Distinguished by their blue flowers and berries

#### References

Sharp D, Simon BK (2002) AusGrass: grasses of Australia. CD-ROM, Version 1.0. In. ' (Australian Biological Resources Study: Canberra, and Environmental Protection Agency: Brisbane)

Mallett K, Orchard AE (Eds) (2002) 'Flora of Australia Volume 43, Poaceae 1: Introduction and Atlas.'  
 (ABRS/CSIRO Publishing: Melbourne)

## GRASS GENERA SUMMARY

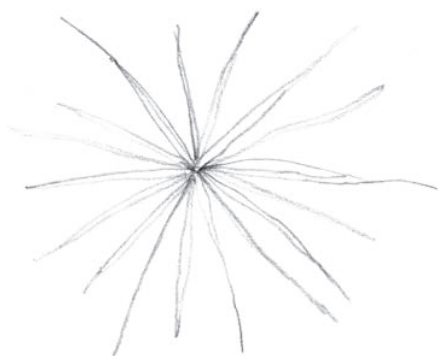
The 74 genera of grass which have been found in Townsville area are listed here.

<i>Alloteropsis</i>	<i>Hymenachne</i>
<i>Ancistrachne</i>	<i>Hyparrhenia</i>
<i>Andropogon</i>	<i>Imperata</i>
<i>Aristida</i>	<i>Ischaemum</i>
<i>Arthragrostis</i>	<i>Leersia</i>
<i>Arundinella</i>	<i>Lepturus</i>
<i>Arundo</i>	<i>Megathyrsus</i>
<i>Axonopus</i>	<i>Melinis</i>
<i>Bothriochloa</i>	<i>Mnesithea</i>
<i>Brachyachne</i>	<i>Ophiuros</i>
<i>Capillipedium</i>	<i>Oplismenus</i>
<i>Cenchrus (Pennisetum)</i>	<i>Oryza</i>
<i>Chionachne</i>	<i>Oxychloris</i>
<i>Chloris</i>	<i>Panicum</i>
<i>Chrysopogon</i>	<i>Paspalidium</i>
<i>Cleistochloa</i>	<i>Paspalum</i>
<i>Cymbopogon</i>	<i>Perotis</i>
<i>Cynodon</i>	<i>Phragmites</i>
<i>Dactyloctenium</i>	<i>Pseudopogonatherum</i>
<i>Dichanthium</i>	<i>Pseudoraphis</i>
<i>Digitaria</i>	<i>Sacciolepis</i>
<i>Dinebra (Leptochloa)</i>	<i>Sarga</i>
<i>Diplachne (Leptochloa)</i>	<i>Schizachyrium</i>
<i>Echinochloa</i>	<i>Sehima</i>
<i>Ectrosia</i>	<i>Setaria</i>
<i>Eleusine</i>	<i>Sorghum</i>
<i>Elionurus</i>	<i>Spinifex</i>
<i>Elytrophorus</i>	<i>Sporobolus</i>
<i>Enneapogon</i>	<i># Stenotaphrum</i>
<i>Enteropogon</i>	<i>Themeda</i>
<i>Eragrostis</i>	<i>Thuarea</i>
<i>Eremochloa</i>	<i>Triodia</i>
<i>Eriachne</i>	<i>Tripogon</i>
<i>Eriochloa</i>	<i>Urochloa</i>
<i>Eulalia</i>	<i>Vacoparis</i>
<i>Hemarthria</i>	<i>Whiteochloa</i>
<i>Heteropogon</i>	<i># Zoysia</i>

Some garden (cultivated) plants are included and are indicated by #.

## KEY TO GRASS GENERA IN TOWNSVILLE

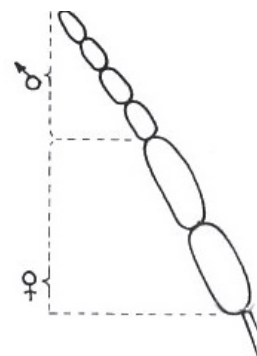
1. Spikelets morphologically or functionally unisexual .....go to 2  
Spikelets bisexual.....go to 4
2. Plants dioecious i.e. with male and female spikelets on different plants, grows on sandy seashores ..... **SPINIFEX**  
Plants monoecious, i.e. with male and female spikelets on the same plant, grows on sandy seashores or creek banks.....go to 3



Dioecious plant - female flowers

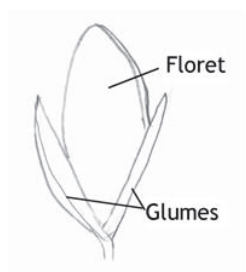


Dioecious plant - male flowers

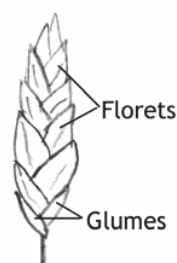


Monoecious plant- male and female flowers

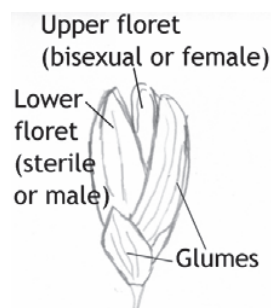
3. Plant tufted, more than 1 m tall, grows on creek banks..... **CHIONACHNE**  
Plant prostrate, grows on sandy seashores ..... **THUAREA**



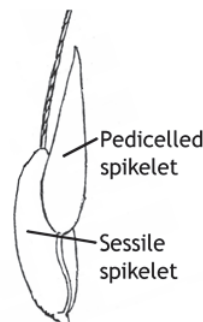
Spikelet with one floret



Spikelet with many florets



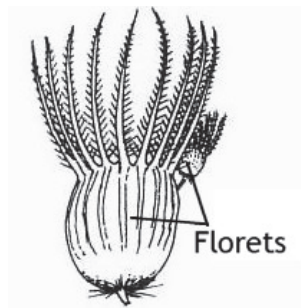
Panicoid spikelet  
Paniceae tribe



Panicoid spikelet pair  
Andropogoneae tribe

4. Spikelets with one to many florets, if two-flowered both florets or lower one bisexual .....go to 5  
Spikelets two flowered, lower floret male or barren, upper bisexual or female (see PANICOIDEAE - pages 20-26) ..... go to 31
5. Inflorescence a solitary, bilateral spike (almost cylindrical); spikelets solitary and partially embedded in rachis; lower glume absent or obscure; a coastal grass ..... **LEPTURUS**  
Grasses without the above combination of characters.....go to 6
6. Fertile lemmas distinctly nine-lobed ..... **ENNEAPOGON**  
Fertile lemmas entire, dentate or slightly lobed.....go to 7





Fertile lemmas distinctly 9-lobed

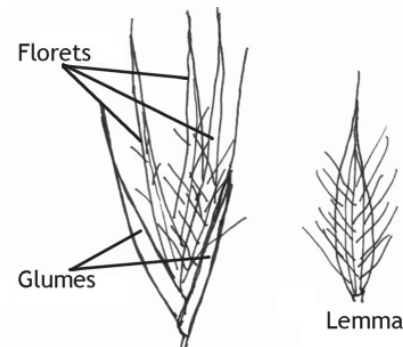


Fertile lemmas entire

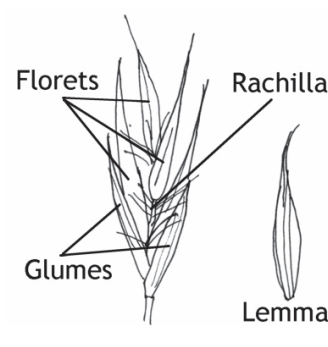


Fertile lemmas dentate or slightly lobed

7. Leaf blades hard, woody, needle-like ..... **TRIDIA**  
 Leaf blades not hard, woody, needle-like ..... go to 8
8. Plants tall and reed like, usually more than 2 m tall ..... go to 9  
 Plants not tall and reed like ..... go to 10
9. Lemmas not hairy (glabrous); rachilla (axis of spikelet) hairy ..... **PHRAGMITES**  
 Lemmas hairy; rachilla not hairy ..... **ARUNDO**

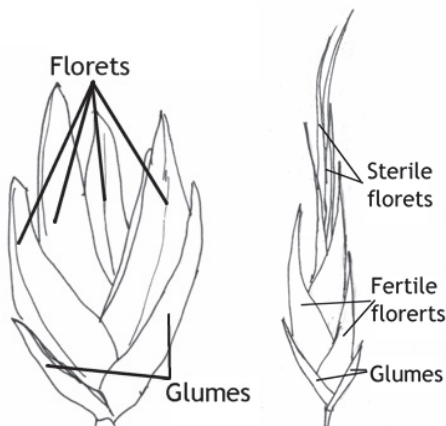


Lemmas hairy = Arundo

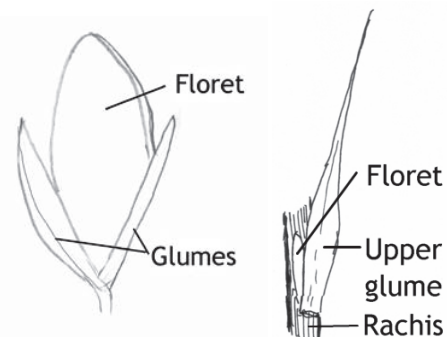


Rachilla hairy = Phragmites

10. Spikelets with two or more bisexual florets, or if only one bisexual floret with sterile florets (empty lemmas) above it ..... go to 11  
 Spikelets with one bisexual floret, with no sterile florets above it ..... go to 22

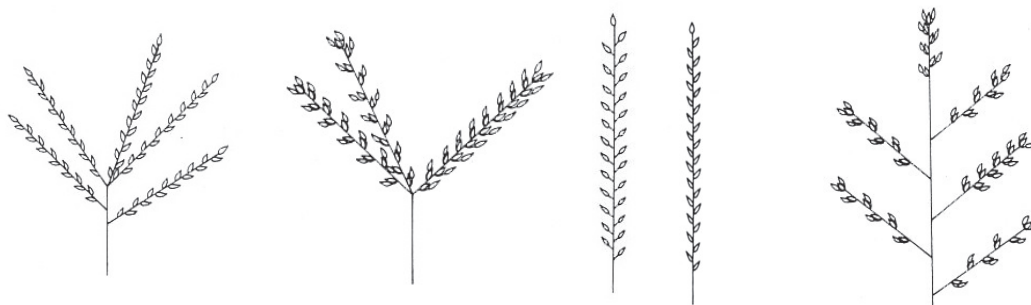


Spikelets with two or more bisexual florets, or if one bisexual floret with sterile florets above it



Spikelets with one bisexual floret

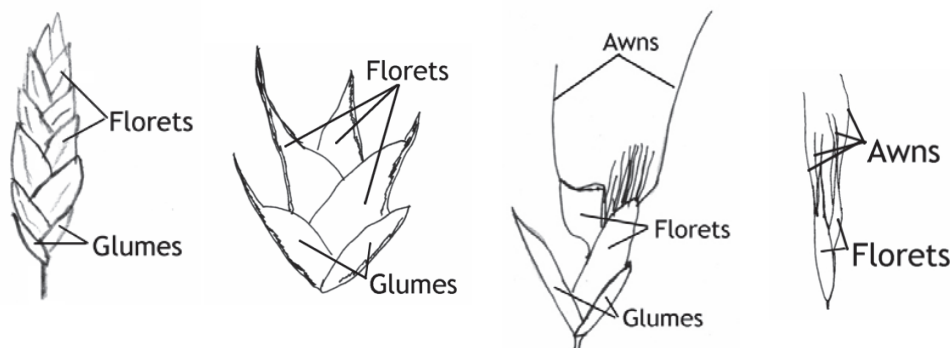
11. Inflorescence digitate or subdigitate ..... go to 12  
 Inflorescence a raceme, spike or panicle ..... go to 16



Inflorescence a digitate or subdigitate

Inflorescence a raceme, spike or panicle

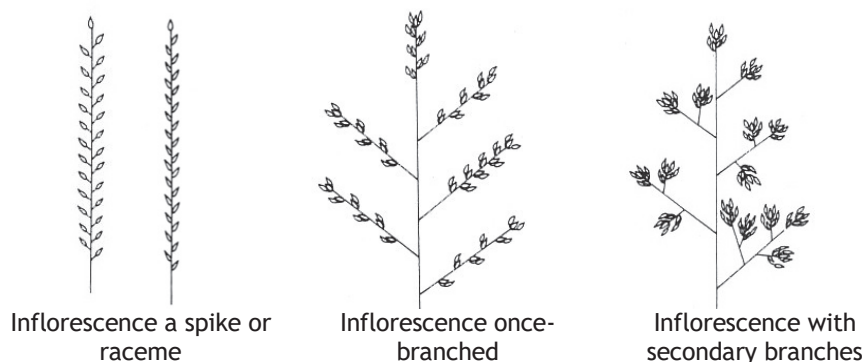
12. Florets unawned or shortly awned ..... go to 13  
 Florets with distinct awns..... go to 14



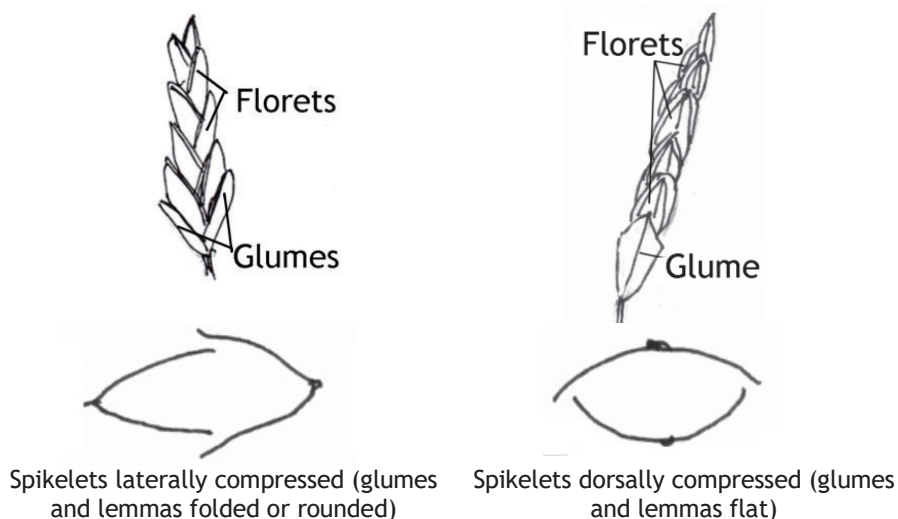
Florets unawned or shortly awned

Florets with distinct awns

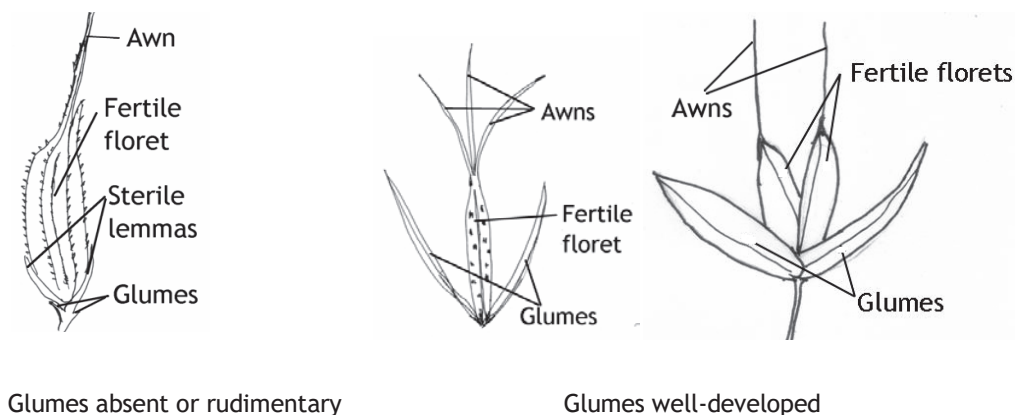
13. Axis of each inflorescence branch ending in a bristle; spikelet-bearing axis  
 disarticulating ..... **DACTYLOCTENIUM**  
 Axis of each inflorescence branch ending in a spikelet;  
 spikelet-bearing axis not disarticulating ..... **ELEUSINE**
14. Lowest lemma dorsally compressed (lying on front or back when placed on  
 a flat surface) ..... **ENTEROPOGON**  
 Lowest lemma laterally compressed (lying on the side when placed on a flat surface) ..... go to 15
15. Lemmas very broad, wing-like ..... **OXYCHLORIS**  
 Lemmas not very broad, not wing-like ..... **CHLORIS**
16. Spikelets distinctly awned ..... go to 17  
 Spikelets unawned or mucronate or shortly awned ..... go to 19
17. Inflorescence an interrupted spicate panicle ..... **ELYTROPHORUS**  
 Inflorescence an open or contracted panicle ..... go to 18
18. Inflorescence a contracted panicle; spikelets with one or two basal bisexual flowers,  
 with male or empty lemmas above them, the upper lemmas reduced to awns ..... **ECTROSIA**  
 Inflorescence an open panicle, spikelets with two bisexual florets only ..... **ERACHNE**
19. Inflorescence a spike or raceme ..... **TRIPOGON**  
 Inflorescence a once-branched open panicle ..... go to 20  
 Inflorescence a panicle with secondary branches ..... go to 21



20. Spikelets are laterally compressed ..... **DINEBRA** (LEPTOCHLOA)  
 Spikelets are dorsally compressed ..... **DIPLACHNE** (LEPTOCHLOA)

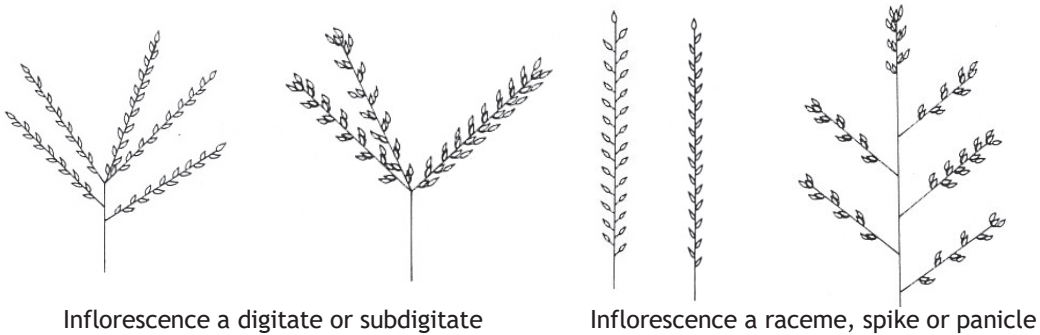


21. Spikelets with two bisexual florets ..... **ERIACHNE**  
 Spikelets with three or more bisexual florets ..... **ERAGROSTIS**
22. Spikelets awned ..... go to 23  
 Spikelets unawned ..... go to 26
23. Inflorescence unbranched - a spike or raceme ..... **PEROTIS**  
 Inflorescence branched - an open or contracted panicle ..... go to 24
24. Glumes absent or rudimentary ..... **ORYZA**  
 Glumes well-developed ..... go to 25

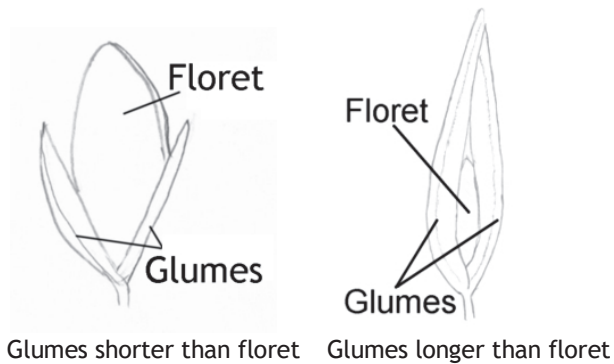




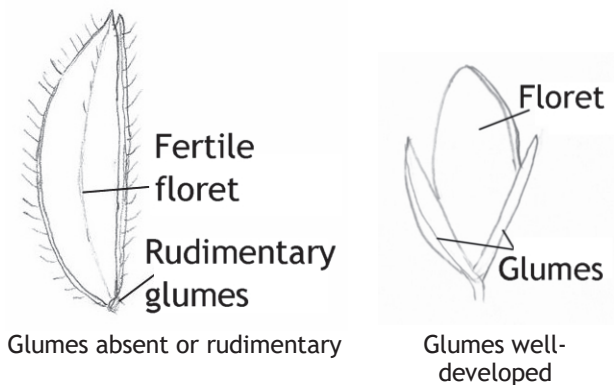
25. Lemma with a 3-branched awn (very rarely 1-branched); spikelets with one floret ..... **ARISTIDA**  
 Lemma with a single awn; spikelets with 2 florets (very rarely 1)..... **ERIACHNE**
26. Inflorescence digitate..... go to 27  
 Inflorescence a spike or raceme or an open or contracted panicle..... go to 28



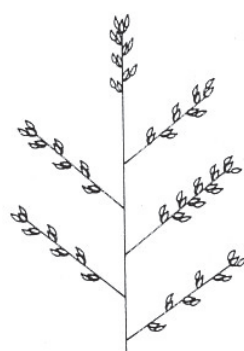
27. Glumes shorter than floret ..... **CYNODON**  
 Glumes longer than floret..... **BRACHYACHNE**



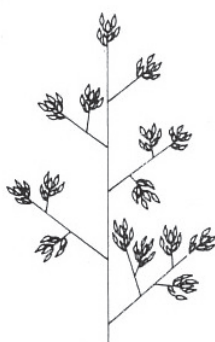
28. Inflorescence a single raceme; mat-forming plant used as an ornamental grass ..... **ZOYSIA**  
 Inflorescence an open or contracted panicle; tufted grass..... go to 29
29. Glumes absent or rudimentary..... **LEERSIA**  
 Glumes well developed..... go to 30



30. Inflorescence a one-branched panicle..... **DINEBRA**  
 Inflorescence a panicle with secondary branches, open or contracted ..... **SPOROBOLUS**



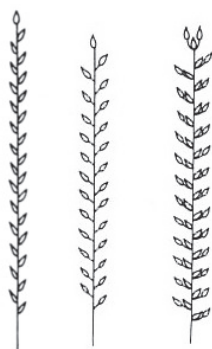
Inflorescence once-branched



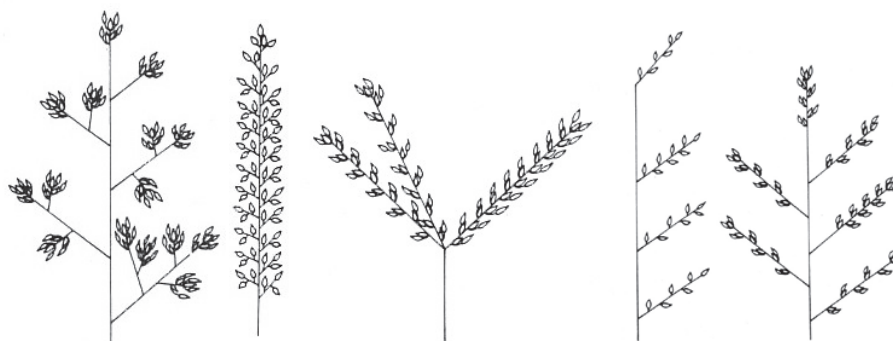
Inflorescence with secondary branches

**PANICOID GENERA (subfamily PANICOIDEAE)**

31. Inflorescence a raceme or spike (unbranched) ..... go to 32  
 Inflorescence with branches (panicle)..... go to 44



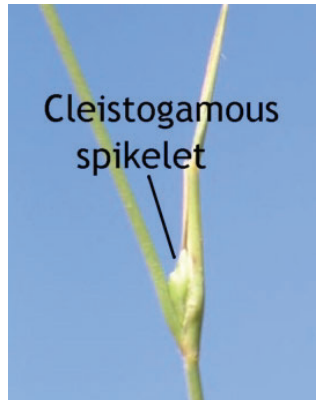
Spike or raceme



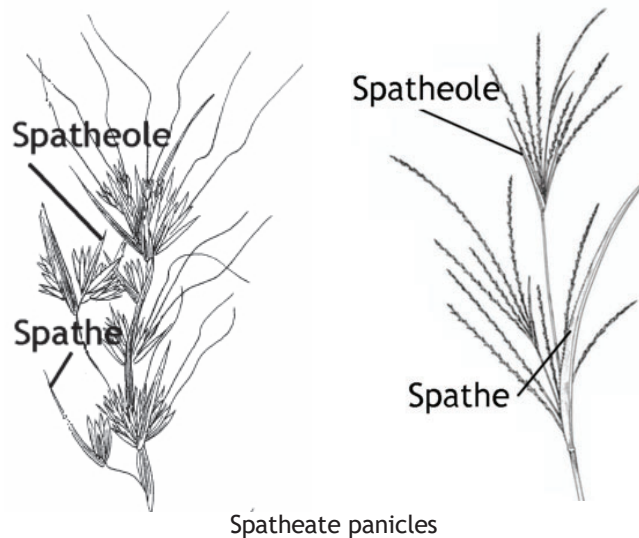
Branched inflorescences (panicles)

32. Leaves when crushed are lemon-scented; lower glume of sessile spikelet 2 toothed ..... **ELIONURUS**  
 Leaves when crushed, NOT lemon scented; lower glume of sessile spikelet entire or notched .. go to 33
33. Spikelets sessile distinctly awned ..... go to 34  
 All spikelets not distinctly awned ..... go to 37
34. Awns more than 4.5 cm long, intertwined with other awns at maturity ..... **HETEROPOGON**  
 Awns less than 4.5 cm long, not intertwined with other awns at maturity ..... go to 35
35. Annual; inflorescence usually subtended by a leaf-like bract; spikelets usually covered with long, silky white hairs ..... **SCHIZACHYRIUM**  
 Perennial; inflorescence not subtended by a leaf-like bract; spikelets glabrous or covered with short white hairs..... go to 36
36. Lower glume of pedicelled spikelet slightly asymmetrical and strongly nerved; pedicels and internodes of the inflorescence densely bearded with white hairs ..... **SEHIMA**  
 Lower glume of pedicelled spikelet not asymmetrical and faintly nerved; pedicels and internodes of the inflorescence not bearded with white hairs..... **DICHANTHIUM**
37. Creeping or prostrate grass ..... go to 38  
 Tufted erect or semi-erect grass ..... go to 40

38. Raceme subtended by a spathe (leaf-like bract); growing on sandy beaches ..... **THUAREA**  
 Raceme not subtended by a spathe; growing on a range of soils ..... go to 39
39. Leaves broad, 4-10 mm wide, cultivated grass ..... **STENOTAPHRUM**  
 Leaves narrow 2-4 mm wide, uncultivated grass ..... **HEMARTHRIA**
40. Raceme or spike with 2-6 spikelets; with a single cleistogamous spikelet in the axils .....  
 ..... **CLEISTOCHLOA**  
 Raceme or spike with more than 6 spikelets, no axillary spikelets present ..... go to 41

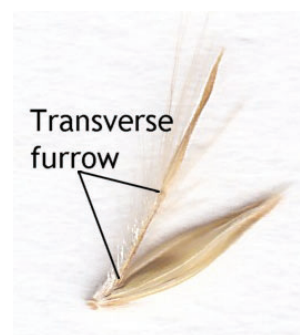
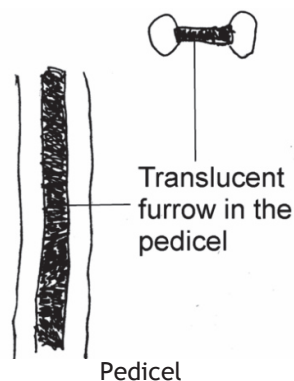


41. Sessile spikelets with curved spines on the lower margin ..... **EREMOCHLOA**  
 Spikelets with no spines on the margin ..... go to 42
42. Raceme or spike partly or wholly enclosed by a leaf-like bract at the base ..... **MNESITHEA**  
 Raceme or spike not subtended by a leaf-like bract, spikelets fully exposed ..... go to 43
43. Spikelets solitary; inflorescence branches ending in a bristle ..... **PASPALIDIUM**  
 Spikelets in pairs; inflorescence branch ending in a spikelet ..... **HEMARTHRIA**
44. Inflorescence a spatheate panicle (leaf-like bracts arranged throughout the panicle) ..... go to 45  
 Inflorescence not a spatheate panicle ..... go to 50

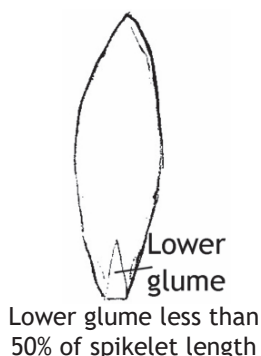
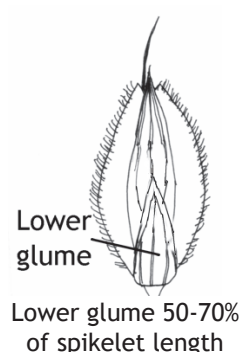


45. Leaves lemon-scented when crushed ..... **CYMBOPOGON**  
 Leaves not lemon-scented when crushed ..... go to 46

46. Fertile spikelets within an involucre of four male or barren spikelets ..... **THEMEDA**  
Fertile spikelets without an involucre of spikelets ..... go to 47
47. Sessile spikelet awned ..... go to 48  
All spikelets awnless ..... go to 49
48. Spikelets are covered with red or brown hairs ..... **HYPARRHENIA**  
Spikelets are covered with white hairs ..... **ANDROPOGON**
49. Spikelets in opposite neat rows on axis; spikelets often stick out at maturity ..... **OPHIUROS**  
Spikelets on one side of axis; spikelets erect at maturity ..... **MNESITHEA**
50. Inflorescence a digitate or subdigitate panicle ..... go to 51  
Inflorescence an open or contracted panicle ..... go to 59
51. Pedicelled spikelet distinctly awned (awn more than 3 mm long) ..... go to 52  
All spikelets awnless or shortly awned (awn 3 mm or less long) ..... go to 56
52. Racemes 2, appressed and interlocking and only separating at maturity;  
pedicels swollen ..... **ISCHAEMUM**  
Racemes 2 or more always separate; pedicels not swollen ..... go to 53
53. Delicate annual; awns intertwining at maturity; all spikelets very small, 1.5-2.5 mm long  
..... **PSEUDOPOGONATHERUM**  
Perennial; awns not intertwining at maturity; sessile spikelets usually more than 3 mm long ... go to 54
54. Pedicels of spikelets and glumes with silky brown hairs ..... **EULALIA**  
Pedicels of spikelets and glumes glabrous or with white hairs ..... go to 55
55. Rachis joints and pedicels with a translucent furrow between thickened margins ..... **BOTHRIOCHLOA**  
Rachis joints and pedicels without a translucent mid-line ..... **DICHANTHIUM**

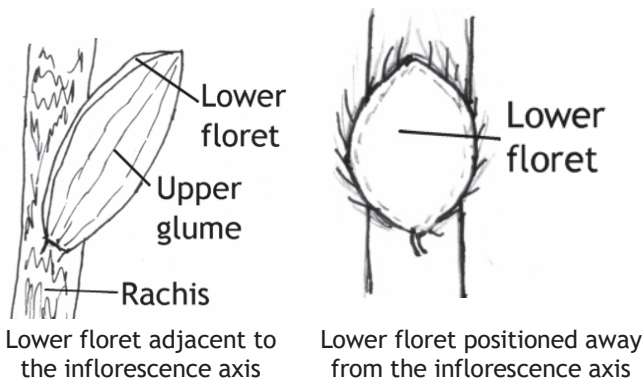


56. Lower glume 50-70% of spikelet length; spikelet shortly awned ..... **ALLOTEROPSIS**  
Lower glume less than 50% of spikelet length or absent; spikelet awnless ..... go to 57

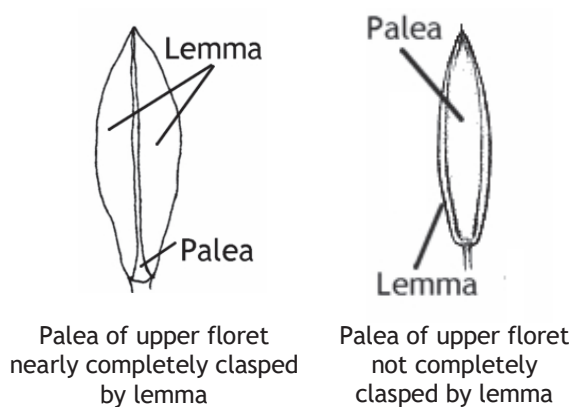




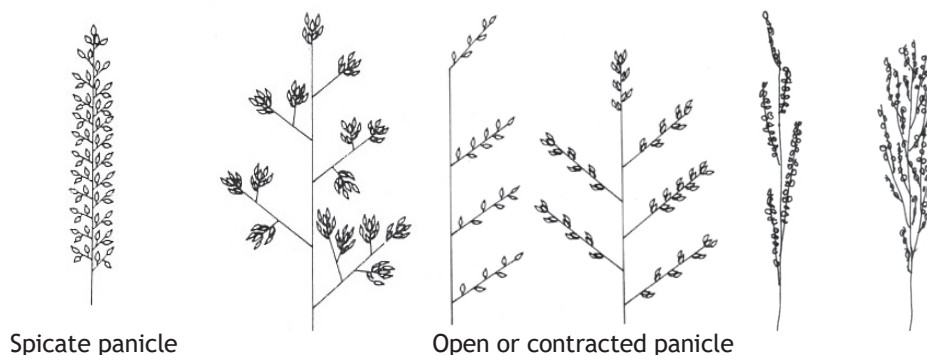
57. Lower floret adjacent to the inflorescence axis..... **AXONOPUS**  
 Lower floret positioned away from the inflorescence axis ..... go to 58



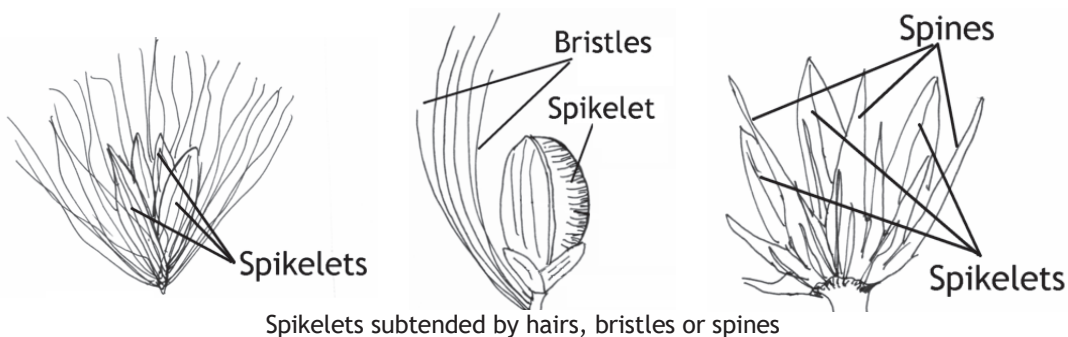
58. Palea of upper floret nearly completely clasped by lemma..... **DIGITARIA**  
 Palea of upper floret not completely clasped by lemma ..... **PASPALUM**



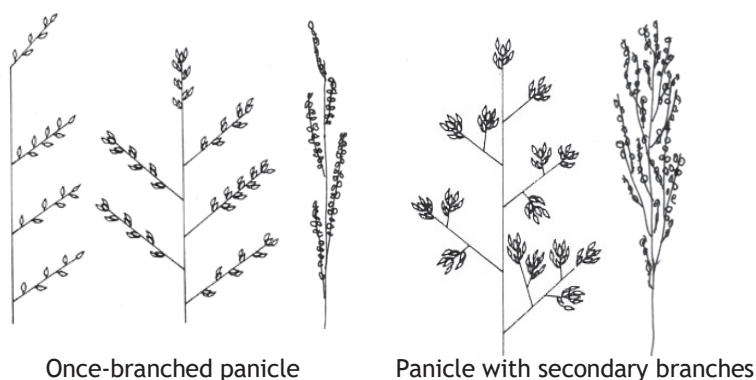
59. Inflorescence spicate panicle, panicle branches short and often difficult to see..... go to 60  
 Inflorescence open or contracted, panicle branches obvious, sometimes appressed to main axis ..... go to 64



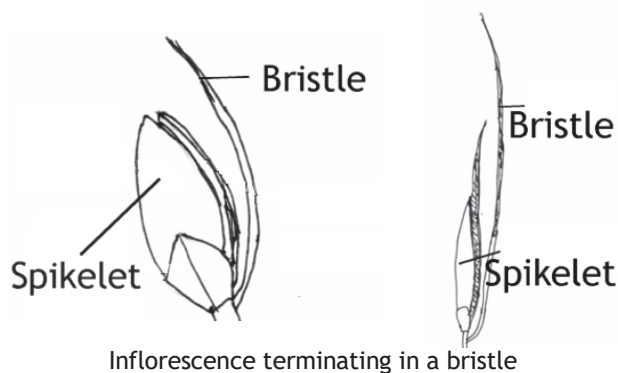
60. Spikelets covered in long, white hairs giving the inflorescence a fluffy appearance ..... **IMPERATA**  
 Spikelets not covered in long, white hairs; inflorescence not fluffy ..... go to 61
61. Spikelets subtended by hairs, bristles or spines ..... go to 62  
 Spikelets not subtended by hairs, bristles or spines ..... go to 63



62. Spikelets falling at maturity without any bristles or spines attached ..... **SETARIA**  
 Spikelets falling at maturity with bristles or spines attached..... **CENCHRUS**
63. Annual 10-60 cm tall; inflorescence 1-13 cm long; spikelets hump-backed.....**SACCIOLEPIS**  
 Aquatic perennial 50-350 cm tall; inflorescence 8-50 cm long; spikelets not hump-backed .....  
 ..... **HYMENACHNE**
64. Upper glume and lower lemma with hooked hairs ..... **ANCISTRACHNE**  
 Upper glume and lower lemma without hooked hairs ..... go to 65
65. Inflorescence a once-branched panicle ..... go to 66  
 Inflorescence with secondary branches ..... go to 74

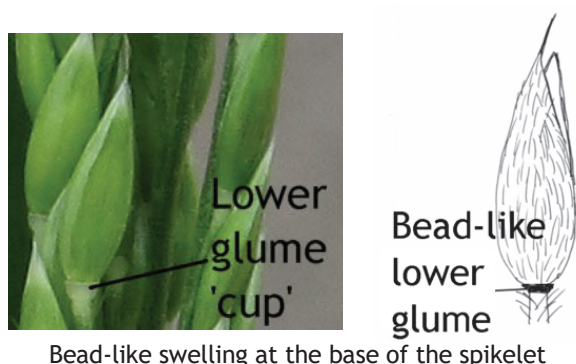


66. Inflorescence terminating in a bristle (inspect carefully since it looks similar to an awn) ..... go to 67  
 Inflorescence terminating in a spikelet ..... go to 68



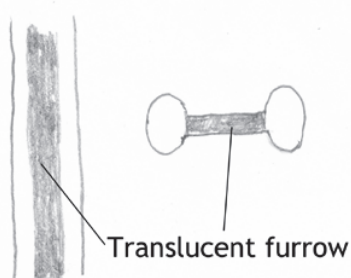
67. Upper lemma covered with wrinkles, as long as or longer than upper glume ..... **PASPALIDIUM**  
 Upper lemma smooth, shorter than upper glume ..... **PSEUDORAPHIS**

68. Spikelet with a bead-like swelling at base (lower glume) ..... **ERIOCHLOA**  
 Spikelet without a bead-like swelling at base..... go to 69

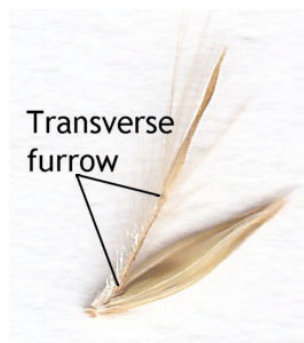


Bead-like swelling at the base of the spikelet

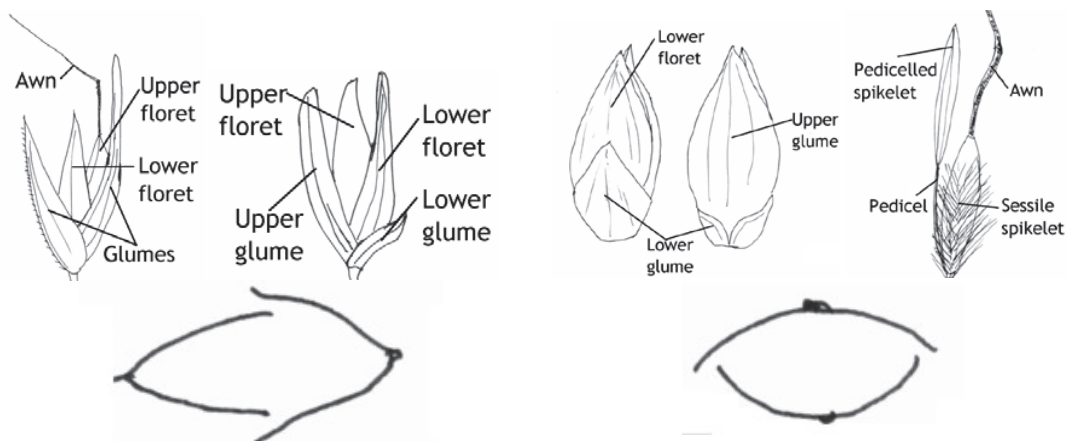
69. Spikelets distinctly awned ..... go to 70  
 Spikelets awnless or mucronate ..... go to 71
70. Glumes more or less equal and similar; decumbent grass of shaded habitats ..... **OPLISMENUS**  
 Glumes very unequal and dissimilar; erect grass of wet habitats..... **ECHINOCHLOA**
71. Ligule absent; glumes very unequal; palea tip reflexed ..... **ECHINOCHLOA**  
 Ligule present ..... go to 72
72. Palea of upper floret completely clasped by lemma (or nearly so)..... **DIGITARIA**  
 Palea of upper floret not completely clasped by lemma ..... go to 73
73. Lower glume present..... **UROCHLOA**  
 Lower glume absent or very much reduced ..... **PASPALUM**
74. Inflorescence purple or red, fading to white; spikelets with awns arising from between apical lobes of upper glume and lower lemma, sometimes not obvious if spikelet covered in long hairs ..... **MELINIS**  
 Inflorescence various colours; spikelets awnless or with awn arising terminally from lemmas or glumes..... go to 75
75. Spikelets in pairs or triplets, sessile spikelet awned..... go to 76  
 Spikelets solitary or paired, awnless..... go to 81
76. Inflorescence with sweet, spicy smell when crushed; pedicels with a translucent furrow between thickened margins ..... **CAPILLIPEDIUM**  
 Inflorescence without distinctive smell; pedicels without a translucent furrow ..... go to 77



Pedicel



77. Spikelets laterally compressed..... go to 78  
 Spikelets dorsally compressed ..... go to 79



Spikelets laterally compressed (glumes and lemmas folded or rounded)

Spikelets dorsally compressed (glumes and lemmas flat)

78. Spikelets all alike; spikelets breaking above glumes ..... **ARUNDINELLA**  
 Pedicelled spikelets different to sessile spikelets; spikelets breaking up in spikelet pairs or triplets ..... **CHRYSOPOGON**
79. Pedicelled spikelets reduced to narrow, linear glumes ..... **VACOPARIS**  
 Pedicelled spikelets usually well developed ..... go to 80
80. Lemma awns of sessile spikelet absent or 1-1.5 cm long if present ..... **SORGHUM**  
 Lemma awns of sessile spikelet 2-9 cm long ..... **SARGA**
81. Spikelets dorsally compressed ..... go to 82  
 Spikelets laterally compressed ..... go to 85
82. Panicle contracted, spikelets very closely packed ..... go to 83  
 Panicle open, spikelets widely spaced ..... go to 84



Contracted panicle; spikelets closely packed



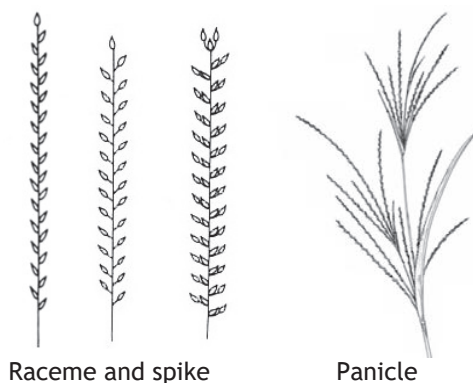
Open panicle; spikelets widely spaced

83. Spikelets hairy (sugar cane) ..... **SACCHARUM**  
 Spikelets not hairy ..... **SORGHUM**
84. Fertile lemma smooth ..... **PANICUM**  
 Fertile lemma rugose (wrinkled) ..... **MEGATHYRSUS**
85. Robust perennial 1.5-2 m tall; inflorescence purplish (Vetiver Grass) ..... **CHRYSOPOGON**  
 Annual or weak perennial 15-110 cm tall; inflorescence green ..... go to 86
86. Plant 45-110 cm tall; grows on sandy, alluvial soils; inflorescence open or contracted, branches persistent..... **WHITEOCHLOA**  
 Plant 17-60 cm; grows on rocky hillsides; inflorescence open; branches deciduous ..... **ARTHROGROSTIS**

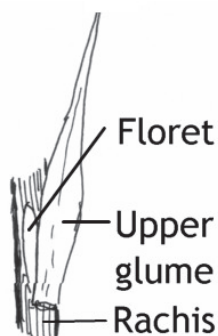


## KEY TO THE SPECIES WITH THICKENED RACHIS

1. Leaves when crushed, they have a lemon scent; lower glume of sessile spikelet 2-toothed ..... *Elionurus citreus*  
 Leaves when crushed, they don't have a smell-like lemon; lower glume not 2-toothed ..... 2
2. Inflorescence a single raceme or spike ..... 3  
 Inflorescence a panicle ..... 5



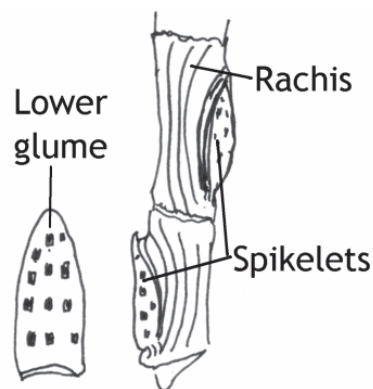
3. Spikelets in pairs, one sessile, the other pedicellate (sometimes embedded in rachis) ..... 3  
 Spikelets not in pairs ..... *Lepturus repens*
4. Pedicellate spikelet is reduced to a pedicel ..... *Eremochloa bimaculata*  
 Pedicellate spikelet is like the sessile spikelet ..... *Hemarthria uncinata*
5. Spikelets in opposite rows ..... *Ophiuros exaltatus*  
 Spikelets on one side of axis ..... *Mnesithea rottboellioides*



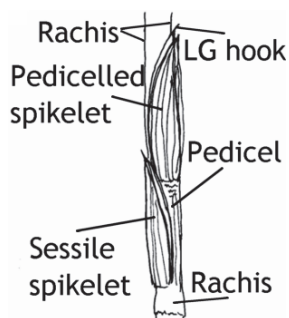
*Lepturus repens*



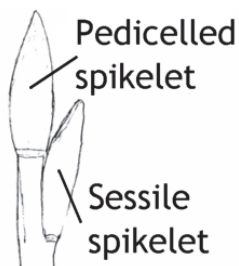
*Elionurus citreus*



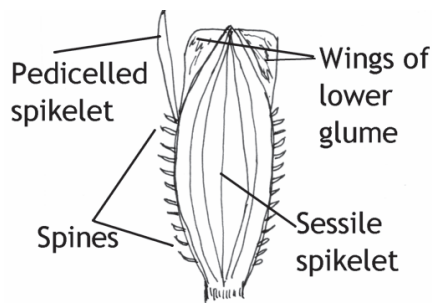
*Ophiuros exaltatus*



*Hemarthria uncinata*  
(LG = lower glume)



*Mnesithea rottboellioides*



*Eremochloa bimaculata*

## SUBFAMILIES AND TRIBES OF GRASSES (excluding bamboos) IN TOWNSVILLE

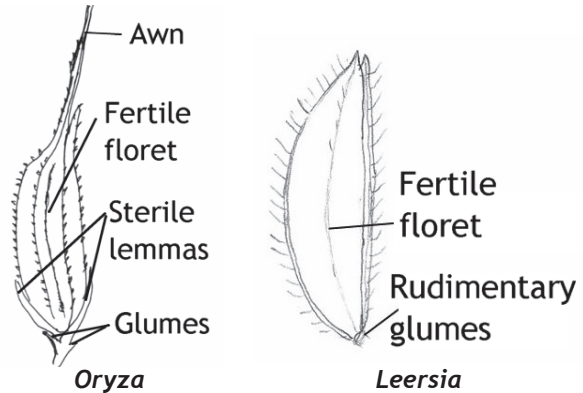
There are 13 subfamilies in Poaceae. The grasses found in Townsville are represented in 6 subfamilies, the largest of which is the subfamily Panicoideae. The spikelet drawings refer to species in Townsville.

### Ehrhartoideae

#### Tribe Oryzeae

1. Spikelets without glumes or glumes rudimentary.
2. Spikelets one-flowered or three-flowered with the two lower florets reduced to sterile lemmas
3. Aquatic or wetland grasses
4. Disarticulation at the base of the lemmas

Townsville Genera: *Leersia* (A=6 or 1-3), *Oryza* (A=6)

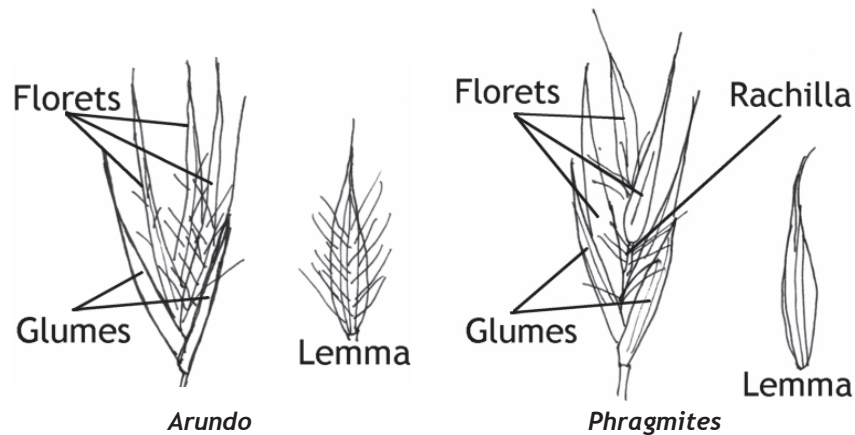


### Arundinoideae

1. Common members of these taxa are robust, “reed-like” grasses with plumose panicles
2. Stems usually hollow
3. Disarticulation above the glumes and between the florets

#### Tribe Arundineae

Townsville Genera: *Arundo*, *Phragmites*

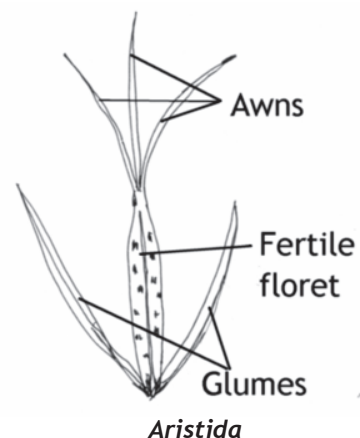


### Aristidoideae

#### Tribe Aristideae

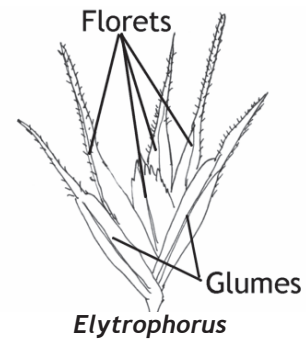
1. Spikelets with a single floret
2. Lemma with a 3-branched awn at the apex (though the 2 lateral awns may be reduced)
3. Callus of lemma well developed
4. Ligule a fringed-membrane or a fringe of hairs
5. Disarticulation above the glumes

Townsville Genera: *Aristida*



### Danthonioideae

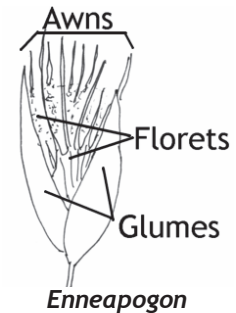
1. Spikelets with multiple florets
  2. Lemmas bifid at apex, an awn emerging from between the lobes
  3. Glume usually  $\pm$  equal and as long as column of florets
  4. Ligule of hairs
  5. Disarticulation above the glumes and between the florets
- Townsville Genera: *Elytrophorus*



### Chloridoideae

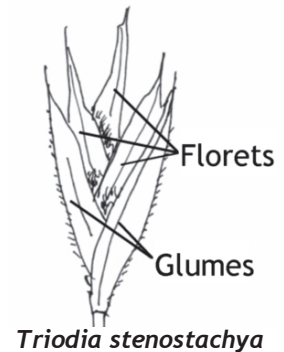
#### Tribe Pappophoreae

1. Lemmas with 5-13 veins, all of which extend into apical awns
  2. Ligule a fringe of hairs
  3. Spikelets with 3 or more florets
  4. Disarticulation above the glumes but not between the florets
- Townsville Genera: *Enneapogon*



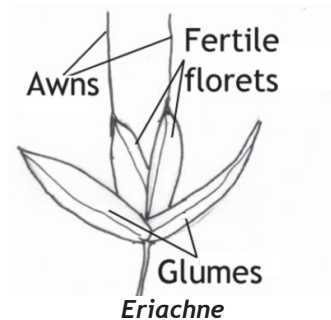
#### Tribe Triodieae

1. Spikelets with one or more florets
  2. Lemmas rounded on back, with 3-9 nerves
  3. Leaf blades rigid, needle-like
- Townsville Genera: *Triodia*



#### Tribe Eriachneae

1. Spikelets usually with two bisexual florets, awned or unawned
- Townsville Genera: *Eriachne*

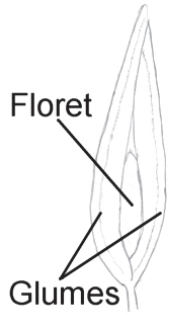


#### Tribe Cynodonteae

Most members of the tribe possess 2 or more of the following characteristics:

1. Laterally compressed spikelets
  2. Lemmas with 1-3 veins or 7-13 veins
  3. Spike-like branches of the inflorescence
  4. Coarse hairs near the junction of the sheath and blade
  5. Disarticulation variable (e.g. beneath fertile florets, beneath the glumes, at base of branches)
- Townsville Genera: *Brachyachne*, *Chloris*, *Cynodon*, *Dactyloctenium*, *Dinebra*, *Diplachne*, *Ectrosia*, *Eleusine*, *Enteropogon*, *Eragrostis*, *Lepturus*, *Oxychloris*, *Perotis*, *Sporobolus*, *Tripogon*, *Zoysia*.

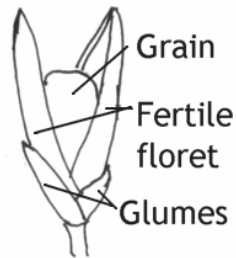
Cynodonteae spikelets



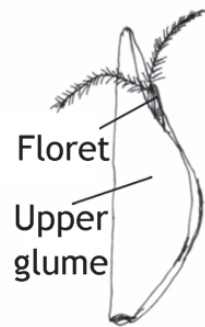
*Brachyachne*



*Cynodon*



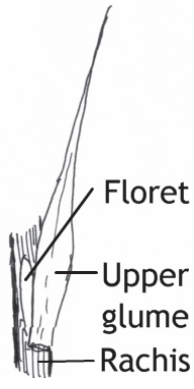
*Sporobolus*



*Zoysia*



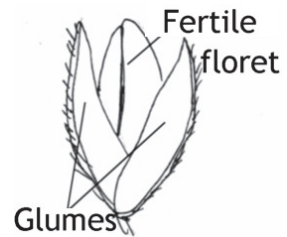
*Perotis*



*Lepturus*



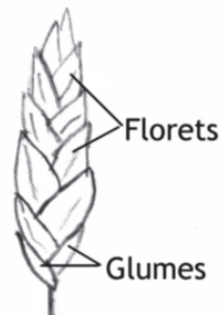
*Dinebra*



*Diplachne*



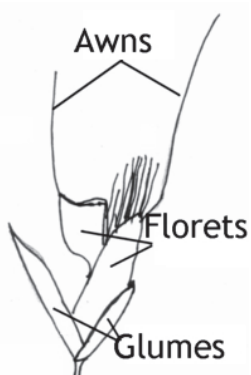
*Eleusine*



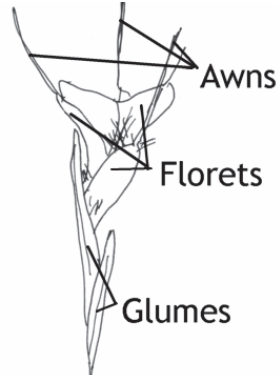
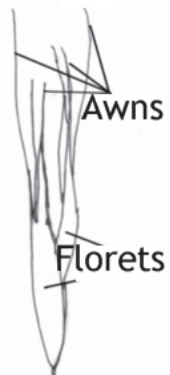
*Eragrostis*



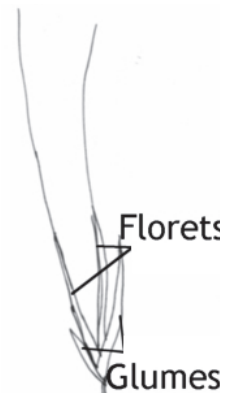
*Tripogon*



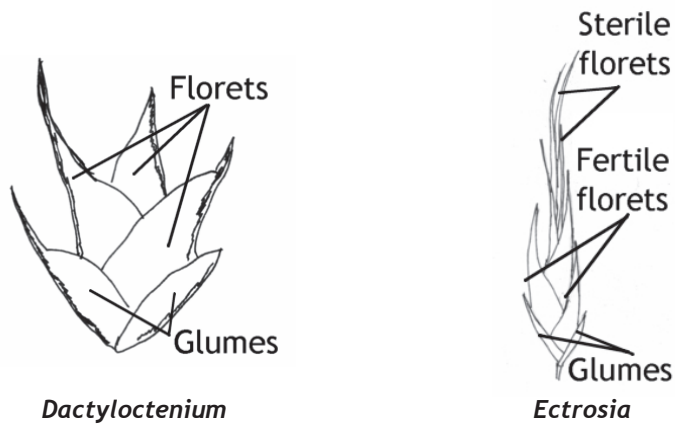
*Chloris*



*Oxychloris*



*Enteropogon*



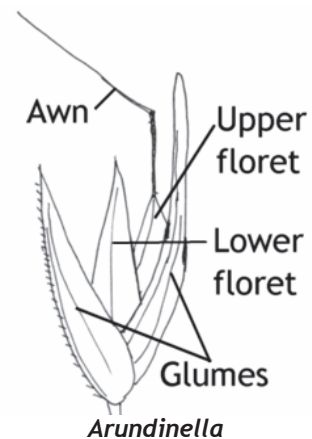
### Panicoideae

The special feature of this subfamily is the two-flowered spikelet with the lower floret male or barren, and the upper floret bisexual or female.

Of the 74 genera found in Townsville, 49 belong in this subfamily. The three tribes represented are Arundinelleae 1 genus, Paniceae 24 genera and Andropogoneae 24 genera.

#### Tribe Arundinelleae

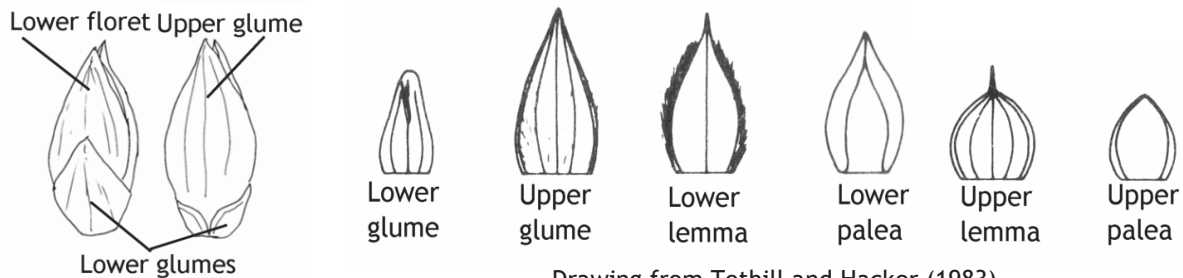
1. Spikelets 2-flowered, the lower floret sterile or male
  2. Spikelets usually not paired, all alike
  3. Disarticulation above the glumes, persistent
  4. Glumes usually unequal, the upper exceeding the florets
  5. Upper floret awned from sinus (a notch or depression in the apex)
  6. Inflorescence a panicle (branched)
- Townsville Genera: *Arundinella*



#### Tribe Paniceae

1. Spikelets 2-flowered, the lower floret sterile or male
2. Spikelets usually all alike
3. Disarticulation below the glumes
4. The lower glume is usually small or absent
5. The upper glume usually resembles the lemma of the lower floret
6. Upper lemma and palea of spikelet usually indurate (hardened)
7. Inflorescence usually a panicle (branched)

### Paniceae spikelet

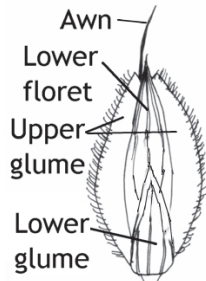


Drawing from Tothill and Hacker (1983)

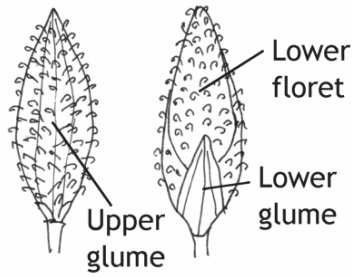
Townsville Genera: *Alloteropsis*, *Ancistrachne*, *Arthragrostis*, *Axonopus*, *Cenchrus* (*Pennisetum*), *Cleistochloa*, *Digitaria*, *Echinochloa*, *Eriochloa*, *Hymenachne*, *Megathyrsus*, *Melinis*, *Oplismenus*, *Panicum*, *Paspalidium*, *Paspalum*, *Pseudoraphis*, *Sacciolepis*, *Setaria*, *Spinifex*, *Stenotaphrum*, *Thuarea*, *Urochloa* (*Brachiaria*), *Whiteochloa*.



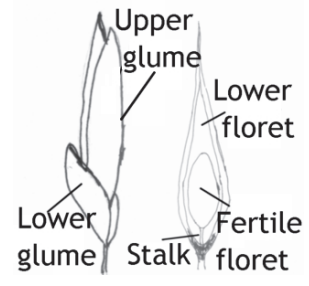
Panicoideae spikelets



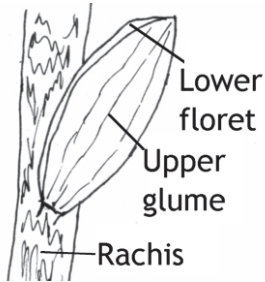
*Alloteropsis*



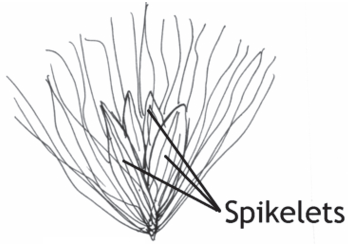
*Ancistrachne*



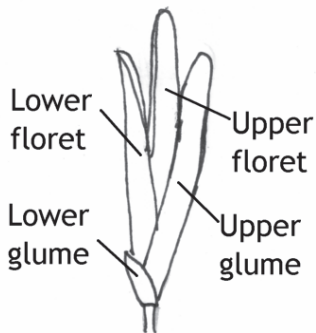
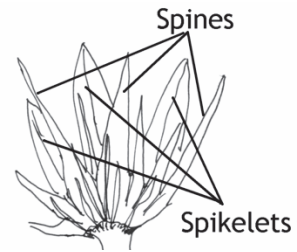
*Arthrargrostis*



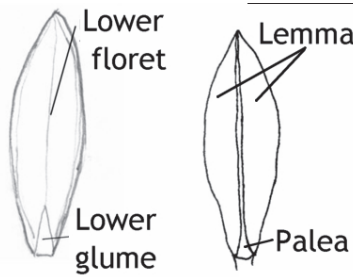
*Axonopus*



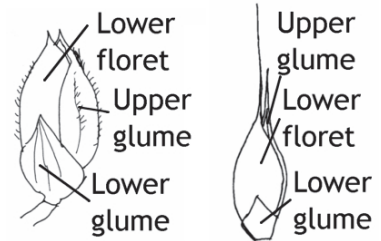
*Cenchrus*



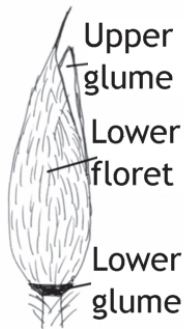
*Cleistochloa*



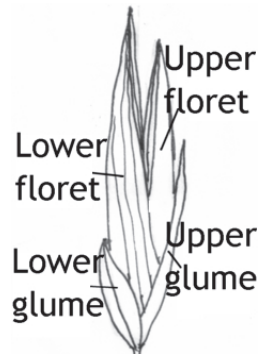
*Digitaria*



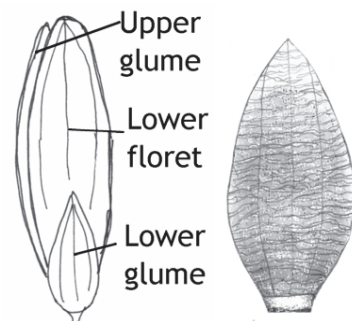
*Echinochloa*



*Eriochloa*



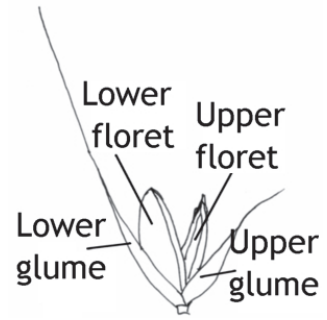
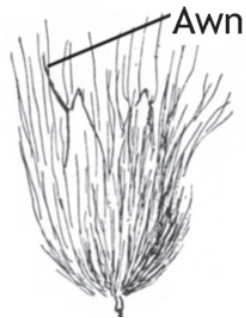
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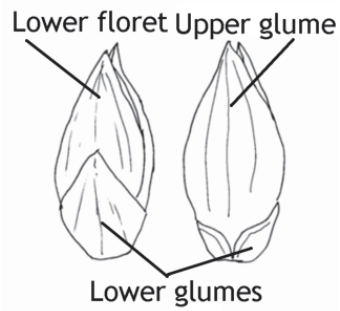
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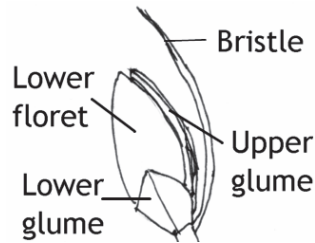
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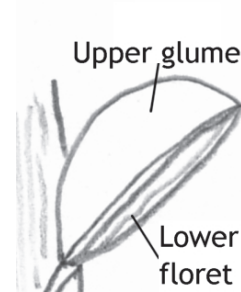
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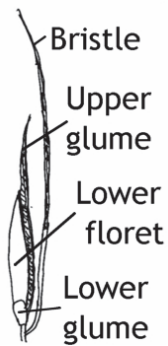
*Panicum*



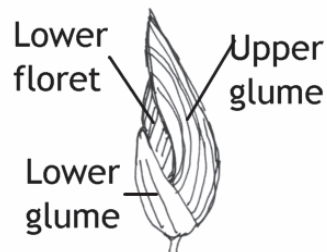
*Paspalidium*



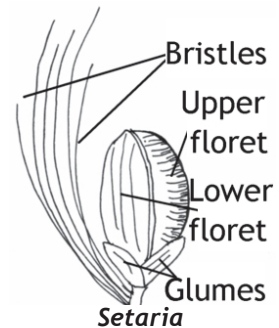
*Paspalum*



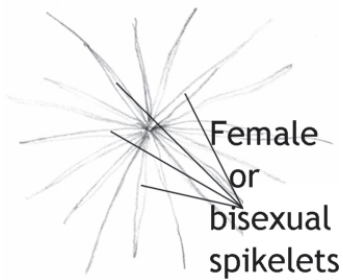
*Pseudoraphis*



*Sacciolepis*



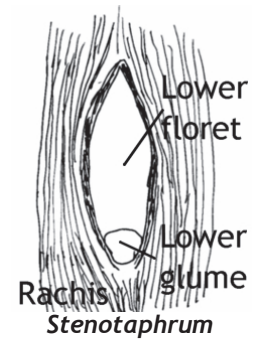
*Setaria*



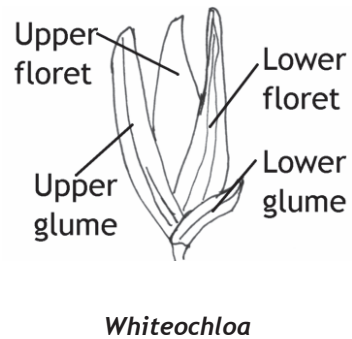
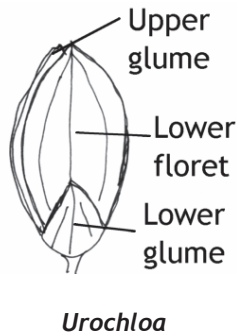
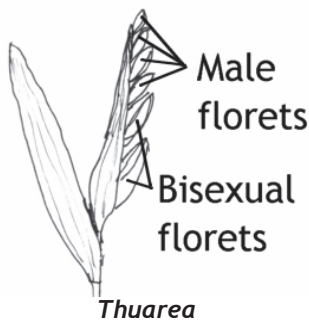
*Spinifex*



*Spinifex (male)*



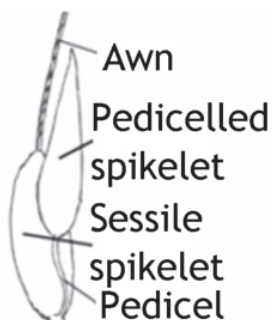
*Stenotaphrum*



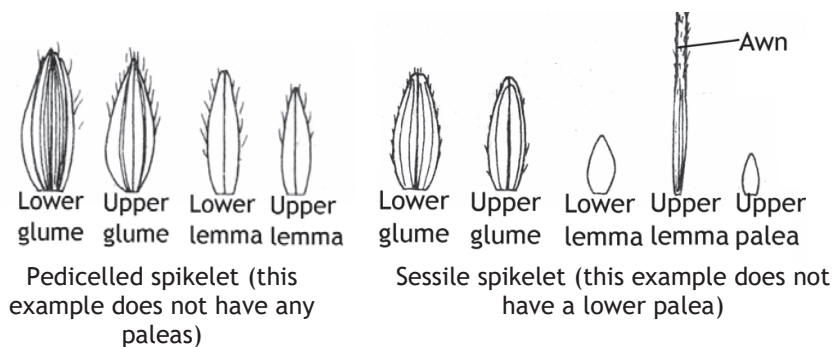
#### Tribe Andropogoneae

1. Spikelets 2-flowered, the lower floret sterile or male
2. Spikelets usually paired, one sessile the other pedicelled, usually dissimilar
3. Disarticulation usually in the branch axes beneath the sessile or short-pedicelled spikelet
4. Both glumes usually concealing the florets
5. Upper lemma and palea of spikelet usually of weak texture
6. Inflorescence a collection of rames (a series of paired spikelets, one sessile and one pedicellate)

#### Andropogoneae spikelets



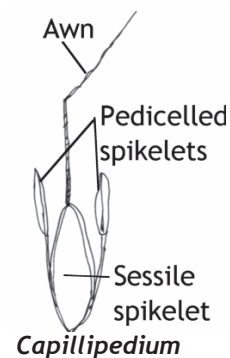
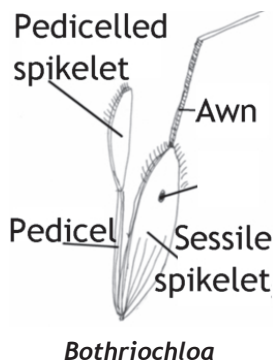
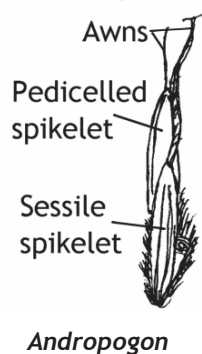
Spikelet pair, many of the genera have a triplet of spikelets (2 pedicelled and 1 sessile) at the end of the branches

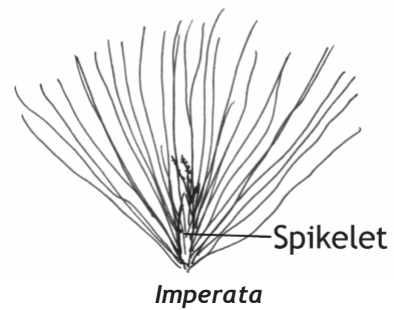
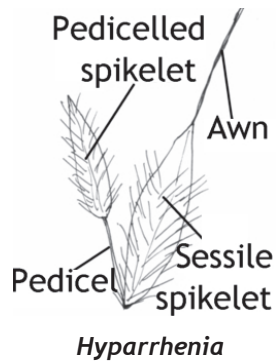
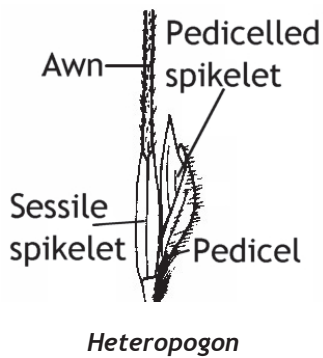
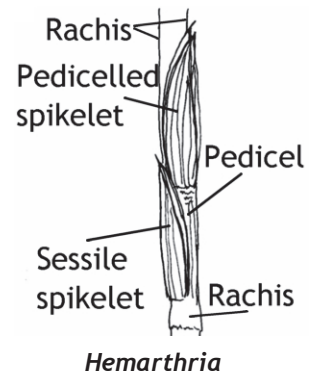
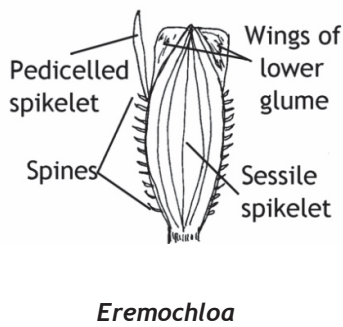
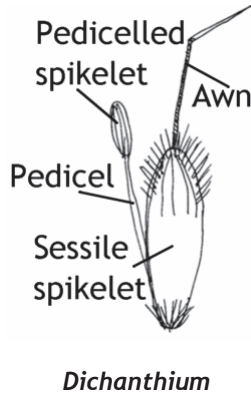
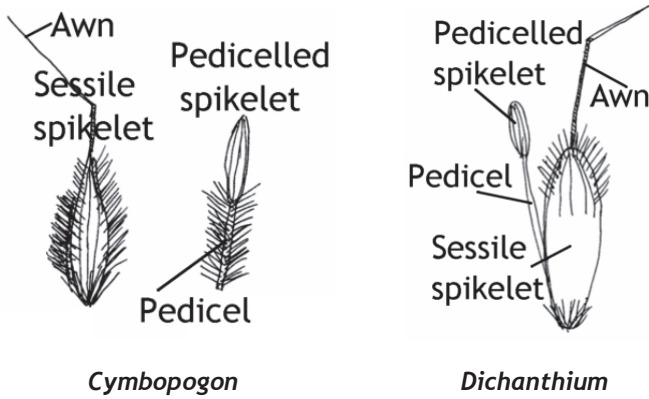
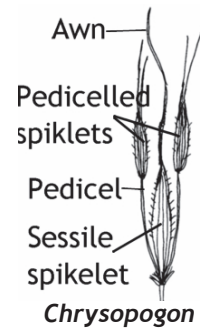
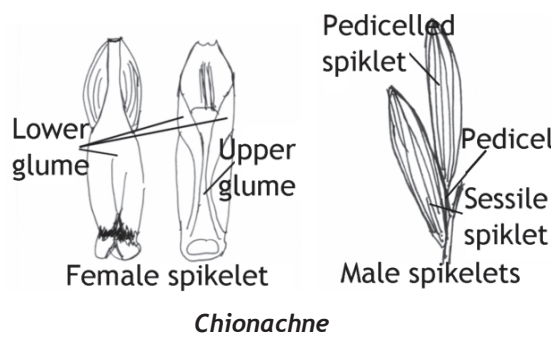


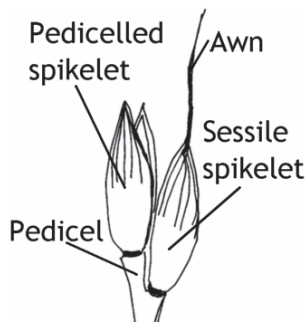
Drawings from Tothill and Hacker (1983)

Townsville Genera: *Andropogon*, *Bothriochloa*, *Capillipedium*, *Chionachne*, *Chrysopogon*, *Cymbopogon*, *Dichanthium*, *Elionurus*, *Eremochloa*, *Eulalia*, *Hemarthria*, *Heteropogon*, *Hyparrhenia*, *Imperata*, *Ischaemum*, *Mnesithea*, *Ophiuros*, *Pseudopogonatherum*, *Sarga*, *Schizachyrium*, *Sehima*, *Sorghum*, *Themeda*, *Vacoparis*.

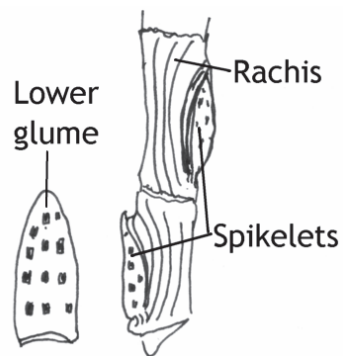
#### Andropogoneae spikelets



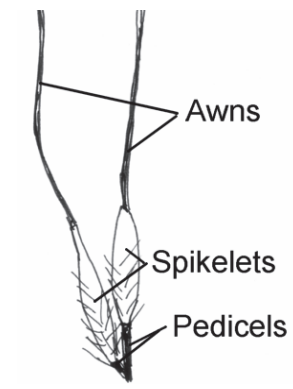




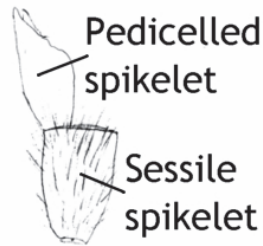
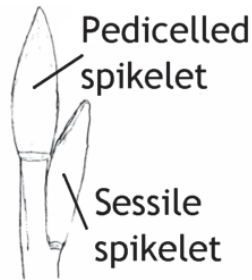
*Ischaemum*



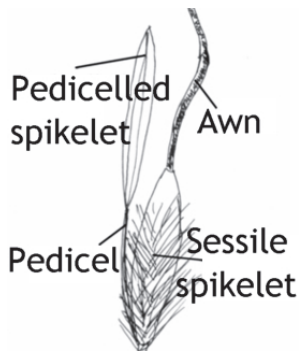
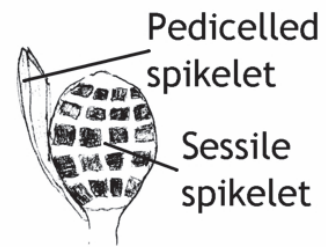
*Ophiuros*



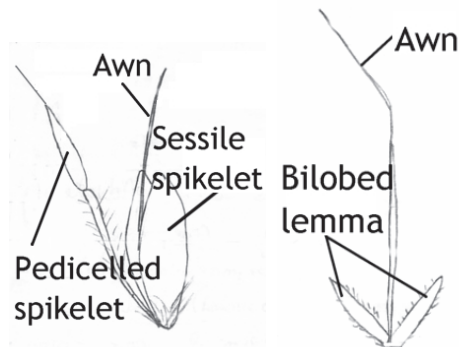
*Pseudopogonatherum*



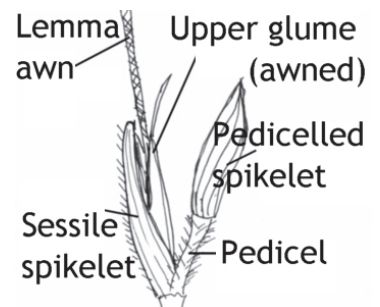
*Mnesithea*



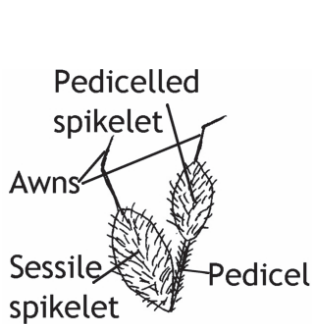
*Sarga*



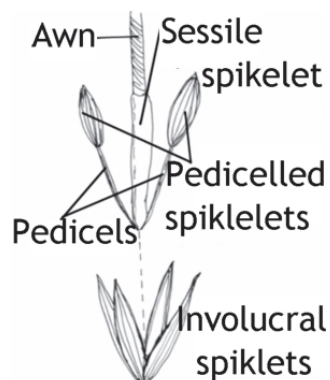
*Schizachyrium*



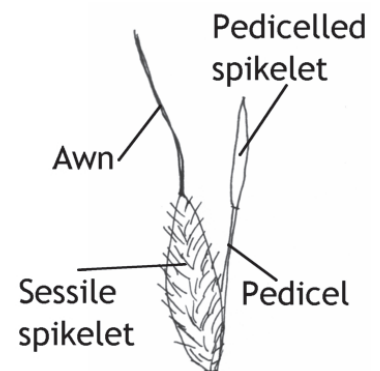
*Sehima*



*Sorghum*



*Themeda*



*Vacoparis*



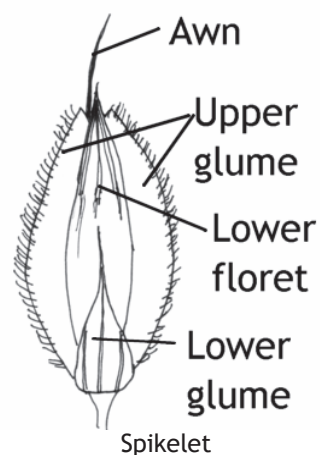
## GRASS GENERA AND SPECIES DESCRIPTIONS

# *Alloteropsis* Cockatoo Grasses

*Alloteropsis* is from the Greek *allotrios* (belonging to another) and *opsis* (appearance), the spikelets and inflorescences somewhat resemble another genus of grass.

Tufted perennials or annuals, culms erect or decumbent. The inflorescence is digitate and the spikelets are usually paired and usually awned. The glumes are unequal, the lower glume 50-75% of the spikelet, the upper glume as long as the spikelet and densely hairy along the marginal nerves. The lower glume is shorter than the spikelet.

Subfamily: Panicoideae; Tribe: Paniceae  
Species: World = 5-8, Australia = 2



### Townsville species

<i>Alloteropsis ciminica</i>	Annual Cockatoo Grass
<i>Alloteropsis semialata</i>	Cockatoo Grass

### Key to the species of *Alloteropsis*

Tussocky, perennial; spikelets 4-7.5 mm long .....	<i>Alloteropsis semialata</i>
Annual, 1-3 culms; spikelets 3.5-5.5 mm long .....	<i>Alloteropsis ciminica</i>



## *Alloteropsis cimicina* - Annual Cockatoo Grass

### Derivation

*cimicina* - from the Latin *cimex* (bug) and *-ina* (resemblance), mature spikelets bear a fanciful resemblance to a small bug.

### Habit

An annual, erect grass, the culms are 15-100 cm tall.

### Inflorescence

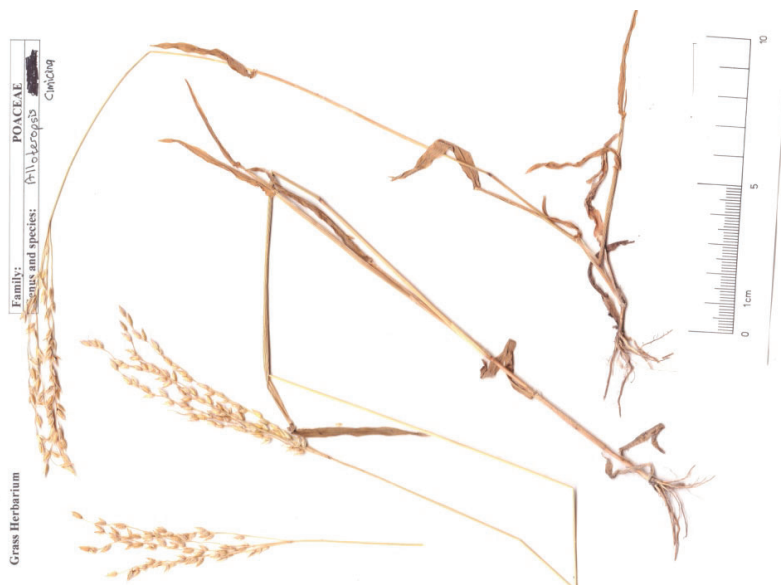
The panicle digitate with 4-11 racemes, 5-10 cm long, and the spikelets are 3.5-5.5 mm long. The raceme rachis is glabrous.

### Habitat

This species occurs on woodlands and grasslands.



Spikelets





## ***Alloteropsis semialata* - Cockatoo Grass**

### **Derivation**

*semialata* - from the Latin *semi* (half) and *ala* (wing) and *-ata* (possessing), refers to the winged margins of the upper glume.

### **Habit**

A perennial, tufted grass, the culms are 20-150 cm tall.

### **Inflorescence**

The panicle digitate with 2-4(28) racemes, 2-22 cm long, and the spikelets are 4-7.5 mm long. The raceme rachis is pilose.

### **Habitat**

This species occurs on woodlands and grasslands.



Spikelets



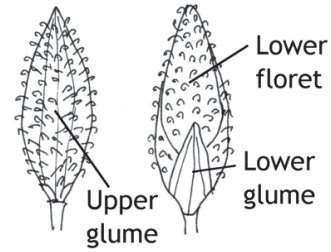
# Ancistrachne

From Greek *ankistron* (fish-hook) and *achne* (glume), referring to the often hooked hairs on the spikelet.

Tufted or scrambling perennial with wiry culms, leaves cauline (growing on stems) and usually less than 10 cm long. The inflorescence is a depauperate panicle or a single raceme. The spikelets (upper glume and lower lemma) are covered with hooked or curved spines or hairs.

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = 4, Australia = 2



Spikelets

## Townsville species

*Ancistrachne uncinulata* Hooky Grass





## ***Ancistrachne uncinulata* - Hooky Grass**

### **Derivation**

*uncinulata* - from the Latin *uncinulus* (small hook) and - *ata* (possessing), referring to the hooked hairs on the upper glume and lower lemma.

### **Habit**

A perennial, shrubby, erect or spreading grass, the culms is 30-200 cm tall.

### **Inflorescence**

Inflorescence is a narrow panicle 2-14 cm long with few spikelets. The rigid, hooked spines on the spikelets make it a distinctive species.

### **Habitat**

This species usually grows on sandstone soils.



# Andropogon

From the Greek words *aner* (man) and *pogon* (beard), alluding to the awns or to the long hairs on the raceme internodes and pedicels.

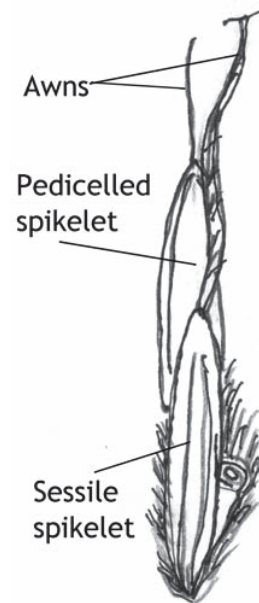
Tufted perennials or annuals. The inflorescence of spicate main branches or paniculate, usually with paired or digitate racemes. The spikelets are in pairs, one sessile and the other pedicelled.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = c.120, Australia = 3

## Townsville species

\* *Andropogon gayanus* Gamba Grass

*Andropogon gayanus* grows mainly along roadsides and in disturbed areas. It could be confused with Grader Grass (*Themeda quadrivalvis*), Giant Spear Grass (*Heteropogon triticeus*) and Thatch Grass (*Hyparrhenia rufa* subsp. *rufa*).



## Key to the species of *Andropogon* and similar genera

1. Inflorescence is a raceme ..... *Heteropogon triticeus*  
    Inflorescence with branches ..... 2
2. Fertile spikelets within an involucre of four male or barren spikelets ..... *Themeda quadrivalvis*  
    Fertile spikelets without an involucre of spikelets ..... 3
3. Spikelets covered with red or brown hairs ..... *Hyparrhenia rufa* subsp. *rufa*  
    Spikelets covered with white hairs ..... *Andropogon gayanus*



Spikelets covered with brown or red hairs  
*Hyparrhenia rufa* subsp. *rufa*



Spikelets covered with white hairs  
*Andropogon gayanus*



## ***Andropogon gayanus* - Gamba Grass**

### **Derivation**

*gayanus* in honor of Claude Gay (1800-1873) French and - *ana*, indicating connection.

### **Habit**

A perennial, tufted grass, the culms are 150-400 cm tall.

### **Inflorescence**

The panicle is subtended by a spatheole. The rames are paired and are 4-9 cm long. The sessile spikelet is 5-8 mm long. Both sessile and pedicelled spikelets are often with awns.

### **Habitat**

This non-native species was imported into Queensland as a pasture grass, it is now a weed, it is often spread by vehicles and machinery along roads.



Spikelets





# *Aristida*

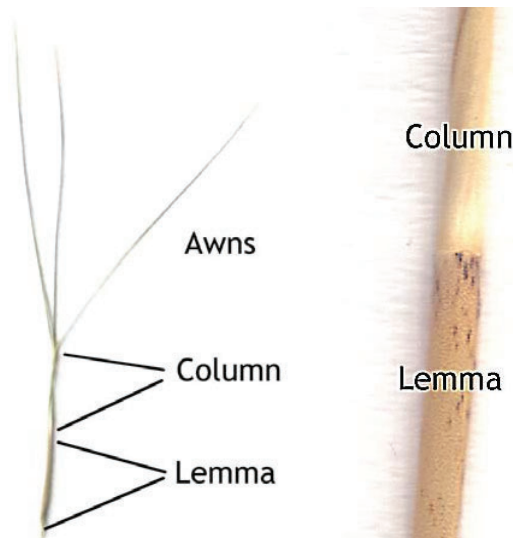
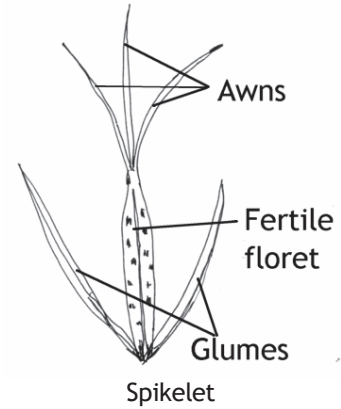
## Wiregrasses or Kerosene or Three Awn Grasses

From Latin *arista* (awn or beard of a grain), alluding to the awned lemma.

Tufted, annuals or perennials, usually with slender wiry stems. The inflorescence is a contracted or open panicle. The spikelets solitary. The genus is easily recognised by the lemma awns which are usually 3-branched. The callus (the hard, usually pointed base of the spikelet) is usually sharp and can become embedded into clothing. The glumes remain on the inflorescence after the mature seed falls.

Australian species of *Aristida* usually grow on poor sandy and red soils, although there are a few that prefer black soils and cracking clays.

Subfamily: Aristidoideae; Tribe: Aristideae  
Species: World = 290, Australia = 59

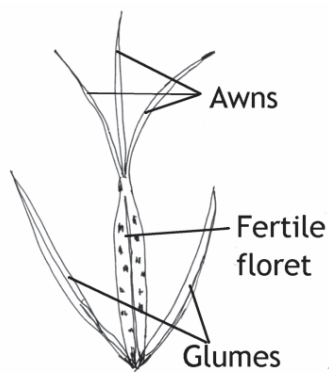


Parts of *Aristida* spikelet

## Townsville species

<i>Aristida acuta</i>	
<i>Aristida calycina</i>	Dark Wiregrass, Branched Wiregrass
<i>Aristida gracilipes</i>	
<i>Aristida holathera</i>	Erect Kerosene Grass
<i>Aristida latifolia</i>	Feathertop Wiregrass
<i>Aristida pernicioso</i>	
<i>Aristida queenslandica</i> var. <i>dissimilis</i>	Queensland Wiregrass
<i>Aristida queenslandica</i> var. <i>queenslandica</i>	Queensland Wiregrass
<i>Aristida spuria</i>	
<i>Aristida superpendens</i>	
<i>Aristida utilis</i>	
<i>Aristida warburgii</i>	

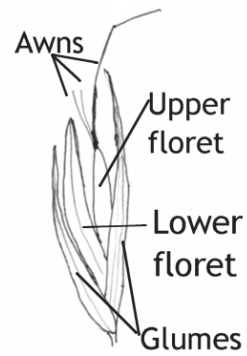
*Aristida* can be easily identify by the single floret and mostly with 3 awns. They might be confused with some *Chloris* spikelets and with *Arundinella setosa*.



Spikelet with a single floret  
Subfamily Aristoideae  
*Aristida*



Spikelets with 3 or more florets  
Subfamily Chloridoidea  
*Chloris*

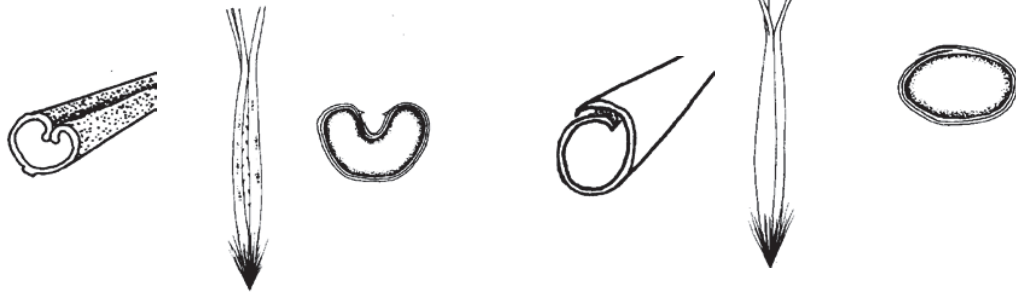


Spikelets with 2 florets, the lower one sterile or male  
Subfamily Panicoideae  
*Arundinella setosa*

Identifying *Aristida* species usually requires looking at the spikelets under magnification. The involute or convolute condition of the lemma, the presence or absence of a lemma awn column and the lengths of the lateral awn branches compared to the median awn branch are diagnostic features of *Aristida* species.

**Involute lemma:**  
with the margins rolled inwards on the upper surface but not overlapping, and with a furrow on the ventral surface of the caryopsis

**Convolute lemma:**  
rolled longitudinally with one edge inside the other



*Aristida acuta*  
*Aristida calycina*  
*Aristida perniciososa*  
*Aristida queenslandica*  
*Aristida spuria*  
*Aristida utilis*

*Aristida gracilipes*  
*Aristida holathera*  
*Aristida latifolia*  
*Aristida superpendens*  
*Aristida warburgii*

Drawings from (Tothill and Hacker 1983; Wheeler *et al.* 2002) (Jacobs *et al.* 2008)

#### References:

Tothill JC, Hacker JB (1983) 'The grasses of southern Queensland.' (University of Queensland Press: St Lucia)

Wheeler DJB, Jacobs SWL, Whalley RDB (2002) 'Grasses of New South Wales (Third Edition).' (University of New England: Armidale)

Equal or subequal to median awn

Lateral lemma awns  
Shorter than median awn  
1/3 to 2/3 as long as median awn

Absent or very short



*Aristida acuta*  
*Aristida calycina*  
*Aristida holathera*  
*Aristida latifolia*  
*Aristida perniciososa*  
*Aristida warburgii*

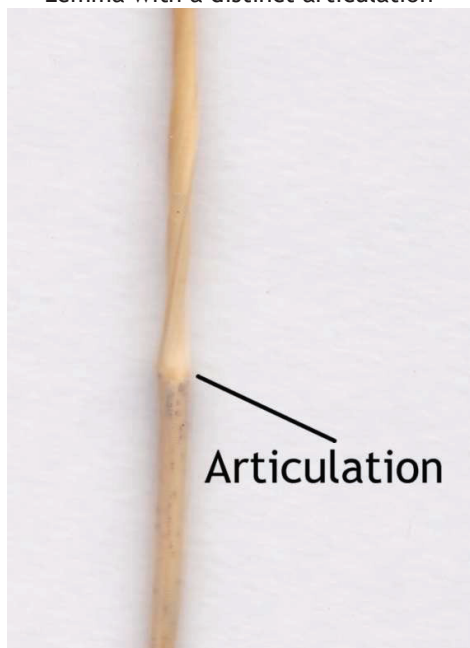
*Aristida gracilipes*  
*Aristida queenslandica*

*Aristida spuria*  
*Aristida utilis*

## Key to the species of *Aristida*

1. Lateral awns of lemma less than two-thirds the length of the median awn or absent.....2  
Lateral awns of lemma equal or subequal in length to the median awn ... .....5
2. Lateral awns less than one-third the length of the median awn or absent .....3  
Lateral awns one-third to two-thirds the length of the median awn.....4
3. Lower internodes glabrous; leaf blade involute.....*Aristida spuria*  
Lower internodes hairy; leaf blade flat..... *Aristida utilis*
4. Lemma convolute, caryopsis without a distinct furrow..... *Aristida gracilipes*  
Lemma involute, caryopsis furrowed.....*Aristida queenslandica*
5. Lemma awn column absent .....6  
Lemma awn column present .....8
6. Lemma convolute, caryopsis without a distinct furrow..... *Aristida gracilipes*  
Lemma involute, caryopsis furrowed.....7
7. Glumes acute to obtuse (rarely aristulate); inflorescence branches usually bearing spikelets from base ..... *Aristida calycina*  
Glumes acuminate, awned; inflorescence branches usually naked in lower half .....*Aristida acuta*
8. Lemma involute, caryopsis furrowed.....*Aristida perniciosa*  
Lemma convolute, caryopsis without a distinct furrow.....9
9. Articulation (often swollen joint) present between lemma and awn or column of awn ..... 10  
Articulation absent on the lemma (awn persistent or breaking at no particular place) ..... 11

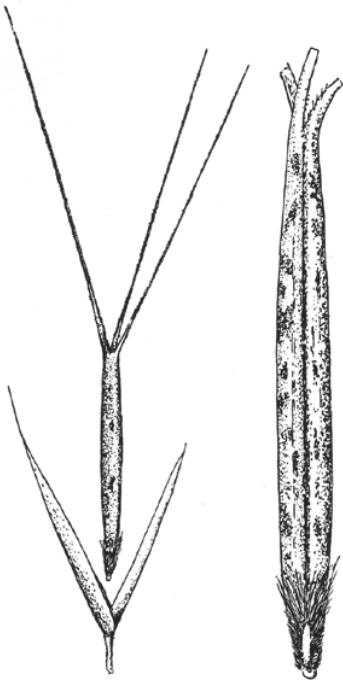
Lemma with a distinct articulation



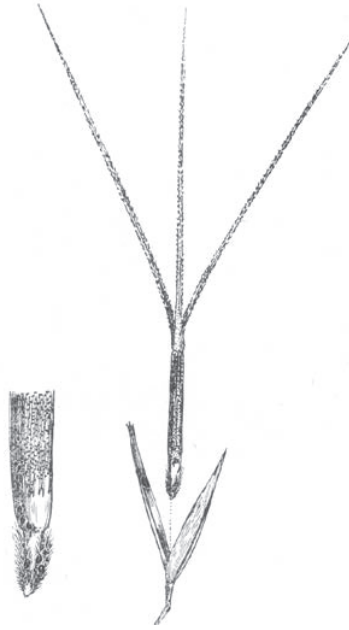
Lemma without a distinct articulation



10. Awns dissimilar width, median thicker and usually recurved, laterals slender usually erect and up to 2 cm shorter ..... *Aristida superpendens*  
Awns  $\pm$  similar width, and erect, laterals as long as median or shorter by 2-5 mm . *Aristida holathera*
11. Lower glume 3-7 nerved; mature spikelets with central awn strongly recurved and thicker than lateral awn..... *Aristida warburgii*  
Lower glume 1-nerved; awns of mature spikelets with central awn straight and not noticeably thicker than lateral awns ..... *Aristida latifolia*



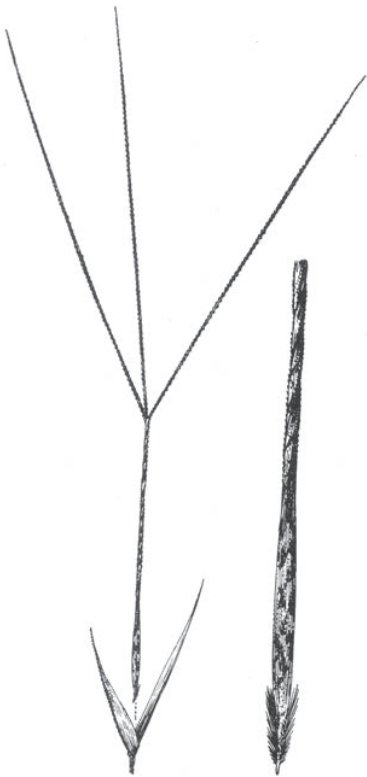
*Aristida acuta*



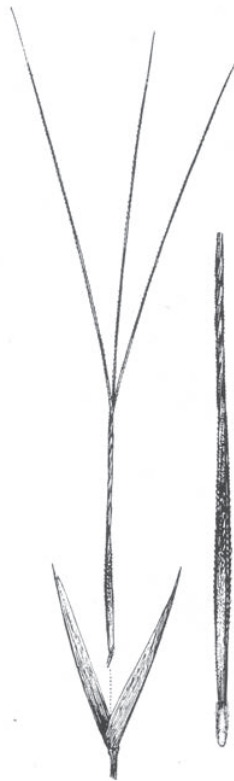
*Aristida calycina*



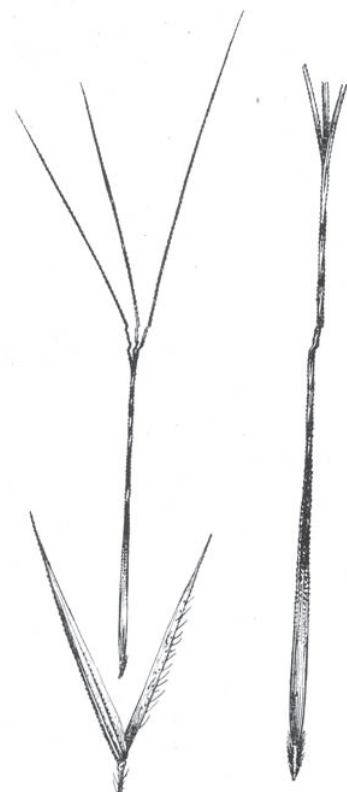
*Aristida gracilipes*



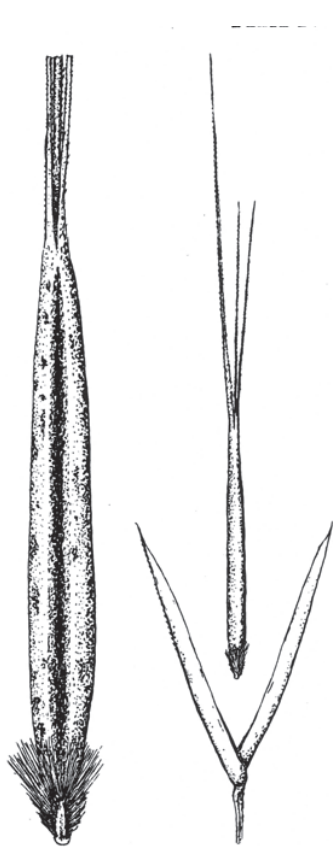
*Aristida holathera*



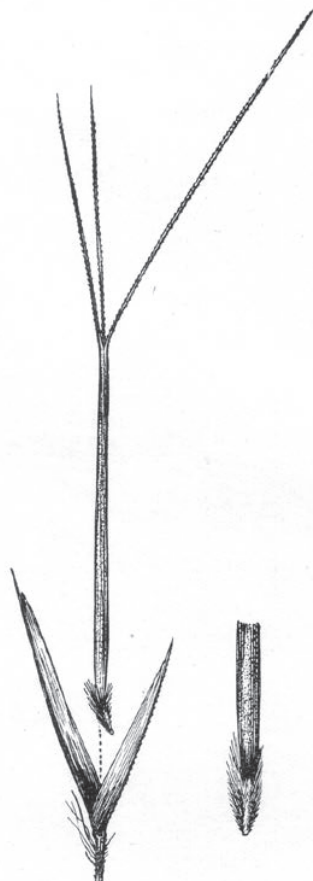
*Aristida latifolia*



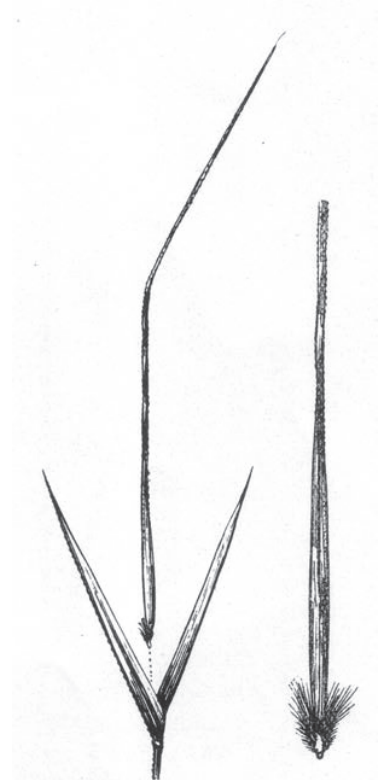
*Aristida perniciososa*



*Aristida queenslandica* var.  
*dissimilis*



*Aristida queenslandica* var.  
*queenslandica*



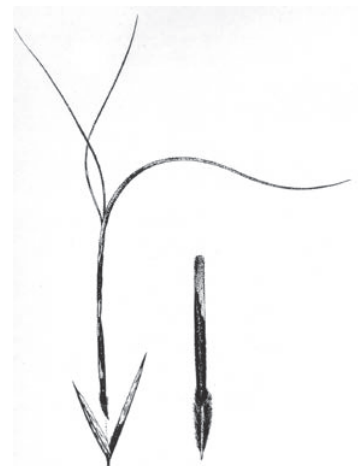
*Aristida spuria*



*Aristida superpendens*



*Aristida utilis*



*Aristida warburgii*

Spikelets drawing taken from:

Blake, ST (1940) Studies on Queensland grasses. *Proceedings of the Royal Society of Queensland* 51, 169-176.

Henrard, JT (1933) 'A Monograph of the genus *Aristida*.' (Mededeelingen van' Rijks Herbarium: Leiden).



## ***Aristida acuta***

### **Derivation**

*acuta* - from the Latin *acuo* (sharpen), alluding to the sharply pointed glumes.

### **Habit**

A perennial grass with culms 40-125 cm tall.

### **Inflorescence**

The panicle is a linear or elliptic, 15-30 cm long, 1-10 cm wide. The lemma margin is involute and the awns do not have a column. The lateral awns are subequal (about 70-85%) to the median awn. The glumes are acuminate and awned.

### **Habitat**

It is found in *Eucalyptus* woodlands and forests on poor soil.



## ***Aristida calycina* - Feathertop Dark Wiregrass**

### **Derivation**

*calycina* - from the Greek *kalyx* (cup) and *-ina* (belonging to), the subtending glumes are as long as or longer than the lemma thereby resembling a cup.

### **Habit**

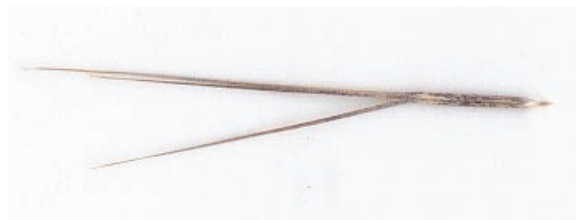
A loosely tufted perennial grass, culms 70-150 cm tall, branched.

### **Inflorescence**

The panicle is open or contracted, linear to elliptic, 12-31.5 cm long, 2-20 cm wide. The spikelets are purple or brown. The lemma margin is involute and the awns do not have a column. The lateral awns are equal to subequal (about 75-100%) to the median awn. Glumes are acute to obtuse.

### **Habitat**

It grows on red earths, sands and alluvial soils.



## ***Aristida gracilipes***

### **Derivation**

*gracilipes* - from the Latin *gracilis* (slender) and *pes* (foot), alluding to the fine and bushy habit.

### **Habit**

Loosely tufted perennial with culms 60-115 cm tall. It has many branches giving a bushy appearance. It has narrow leaves, 0.5 mm wide.

### **Inflorescence**

The panicle is open to linear, 12-21 cm long, 1-3 cm wide. The lemma margin is convolute and the awns do not have a column. The lateral awns are distinctly unequal (about 60-75%) to the median awn.

### **Habitat**

This species grows in *Acacia*, brigalow, *Eucalyptus* communities, and rainforest fringes, on clays, loams and sandy soils.





## ***Aristida holathera* - Erect Kerosene Grass**

### **Derivation**

*holathera* - from Greek *holos*, wholly; *ather*, spike or ear of wheat; awn not disarticulating from base of lemma at maturity.

### **Habit**

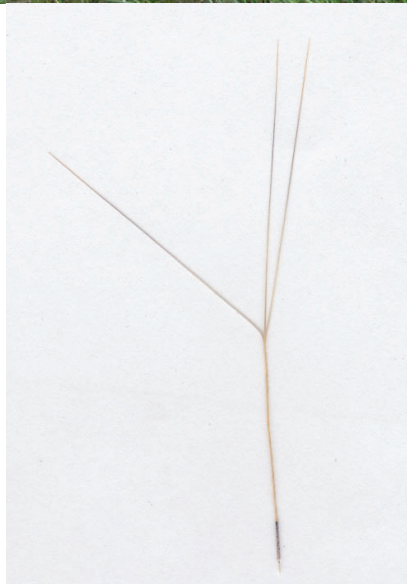
An annual or perennial grass, with culms 28-128 cm tall.

### **Inflorescence**

The panicle is open and elliptic, 8-41 cm long, 1-10 cm wide. The lemma margin is convolute and the awns have a twisted distinct column (15-60 mm long). The lemma has a distinct articulation. The lateral awns are equal to subequal (about 75-100%) to the median awn.

### **Habitat**

It grows on sandy soils.





## ***Aristida latifolia* - Feathertop Wiregrass**

### **Derivation**

*latifolia* - from Latin *latus* (broad) and *folium* (leaf), leaf blades broad or relatively broad compared to related species.

### **Habit**

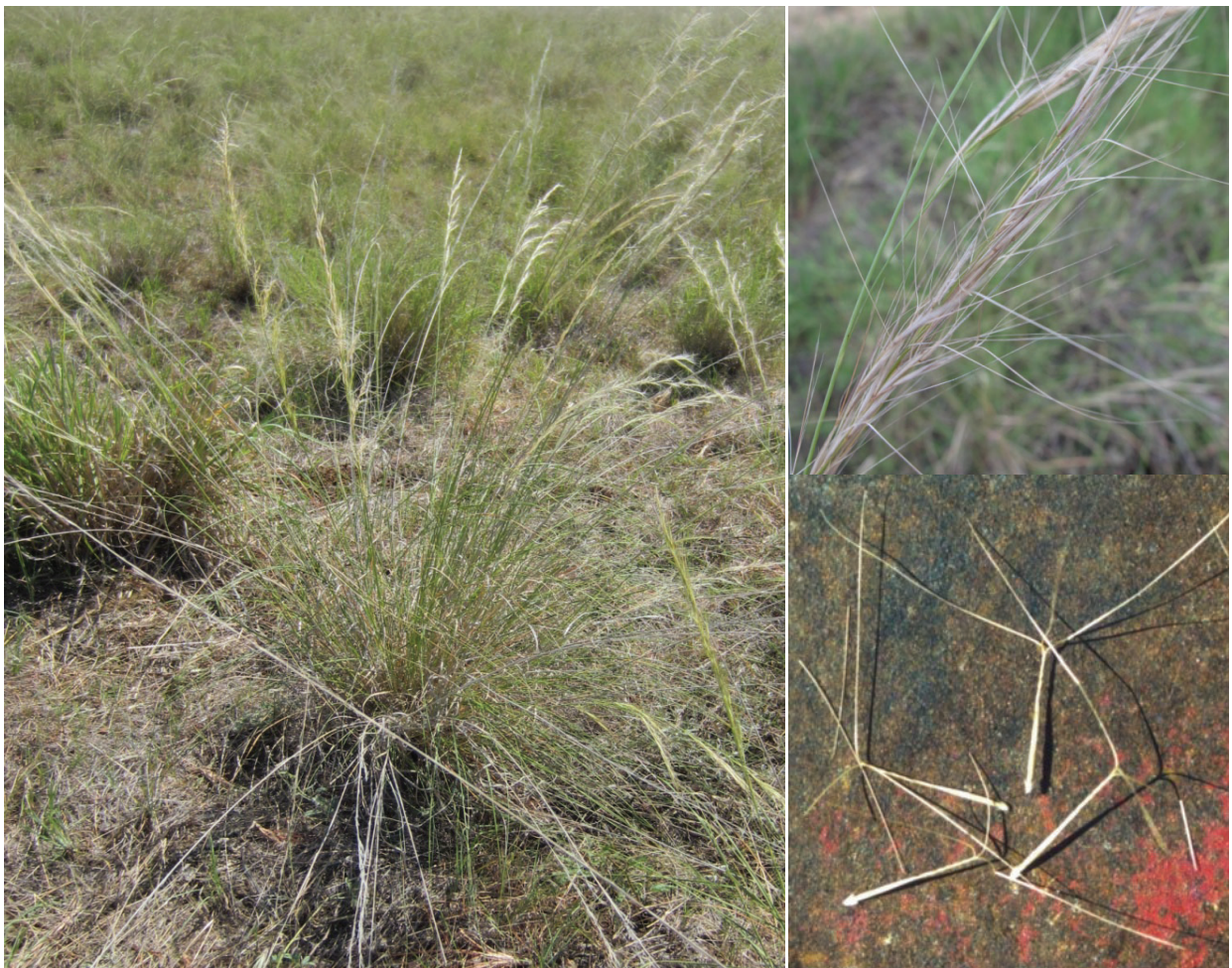
A loosely tufted perennial grass, culms 20-130 cm tall.

### **Inflorescence**

The panicle is contracted and linear, 8-70 cm long 3-3.5 cm wide. The lemma margin is convolute and the awns with 1-9 spirals in the column. The lateral awns are equal to subequal (about 85-100%) to the median awn.

### **Habitat**

Grows on clays, red earths, sands and alluvial soils.



## *Aristida pernicioso*

### Derivation

*pernicioso* - from the Latin *per* (very), *noxius* (harmful) and *-osa* (abundance); callus very sharp and readily entangling in wool and clothing.

### Habit

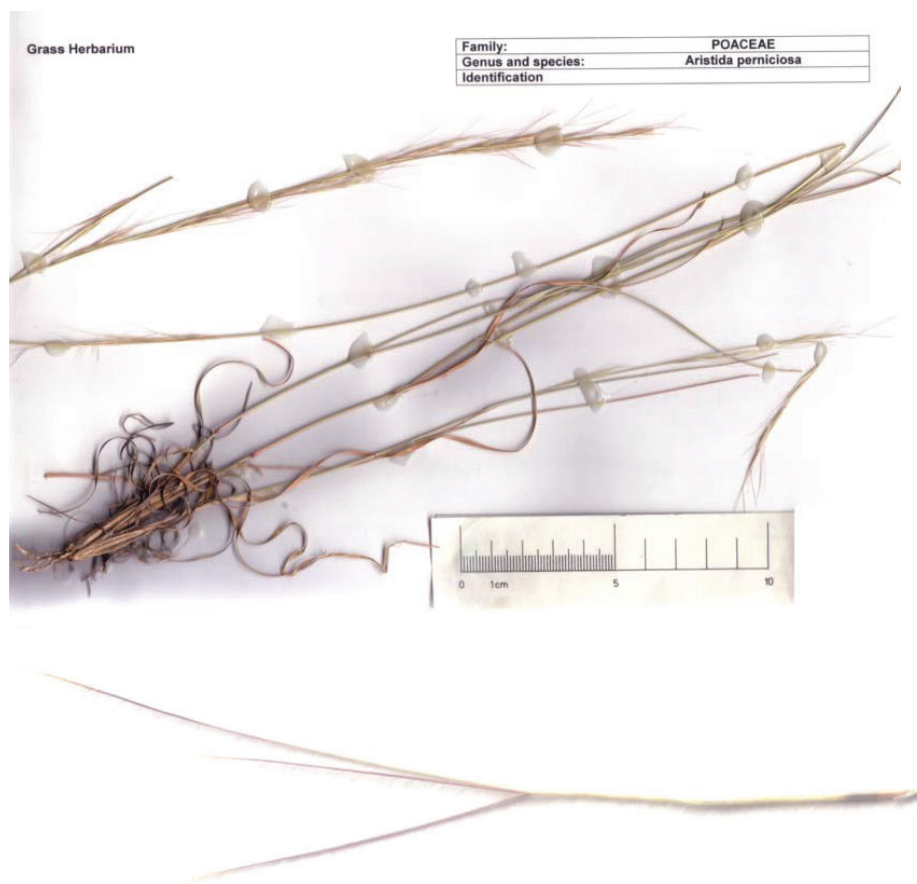
Compactly tufted coarse perennial grass with culms 60-140 cm tall.

### Inflorescence

The panicle is contracted or spiciform, linear, 15-39 cm long, 1-1.5 cm wide. The lower glume is 5-nerved. The lemma margin is involute and the awns do not have a column. The lateral awns are equal to subequal (about 75-100%) to the median awn.

### Habitat

Occurs in *Eucalyptus* and *Melaleuca* communities on sands and loams.





## *Aristida queenslandica* - Queensland Wiregrass

### Derivation

*queenslandica* - named for the distribution of the species, found mainly in Queensland.

### Habit

A perennial, tufted grass with culms erect, 25-109 cm tall.

### Inflorescence

The panicle is open and elliptic or loose, 7-64 cm long, 2-9 cm wide. The lemma margin is involute and the awns do not have a column. The lateral awns are unequal (about 30-65%) to the median awn.

### Habitat

Usually grows on *Eucalyptus* communities on rocky areas and sandstone and granite hills.

### Two varieties are recognised

Culm internodes with pilose hairs, especially at base .....var. *queenslandica*

Culm internode glabrous .....var. *dissimilis*



Spikelet



## *Aristida spuria*

### Derivation

*spuria* - from the Latin *spurius* (false), alluding to the lateral awns being very short or absent.

### Habit

A perennial grass with culms decumbent, 20-91 cm tall. It is similar to *Aristida utilis*, but lower internodes glabrous and the leaf blades are involute.

### Inflorescence

The panicle is contracted and linear, 11-29 cm long and 0.9-1 cm wide. The lemma margin is involute and the awns with a twisted column. The lateral lemma awns absent or present, 0-4 mm long, shorter than median awn, 0-20% of length of principal.

### Habitat

Usually grows on *Eucalyptus* woodlands, sometimes in elevated areas and off-shore islands. Sandy and loamy soils.



## *Aristida superpendens*

### Derivation

*superpendens* - from the Latin *super* (above) and *pendeo* (hang), derived from the pendulous spikelets in the upper part of the inflorescence.

### Habit

A perennial, tufted grass with culms erect, 60-120 cm tall.

### Inflorescence

The panicle is open and elliptic, 14-34 cm long, 5-8 cm wide. The lemma margin is convolute and the awns with a distinct column. The lemma has a distinct articulation. The lateral awns are equal to subequal (about 75-100%)

### Habitat

Grows in *Eucalyptus* and *Melaleuca* woodlands on granite sand and alluvial soils.



## *Aristida utilis*

### Derivation

*utilis* - from Latin *utilis* (useful). Peduncles used for the manufacture of hats.

### Habit

A perennial and tufted grass with culms 53-130 cm tall. It is similar to *Aristida spuria*, but lower internodes hairy and the leaf blades are flat.

### Inflorescence

The panicle is open and lanceolate, 15-48 cm long, 1-6 cm wide. The lemma margin is involute and the awns with a column. The lateral lemma awns absent or present, 1-7 mm long, shorter than median awn, 0-40% of the length of principal.

### Habitat

Grows in *Eucalyptus* woodlands in granite and sand country.





## *Aristida warburgii*

### Derivation

*warburgii* - in honour of Otto Warburg (1859-1938), German botanist.

### Habit

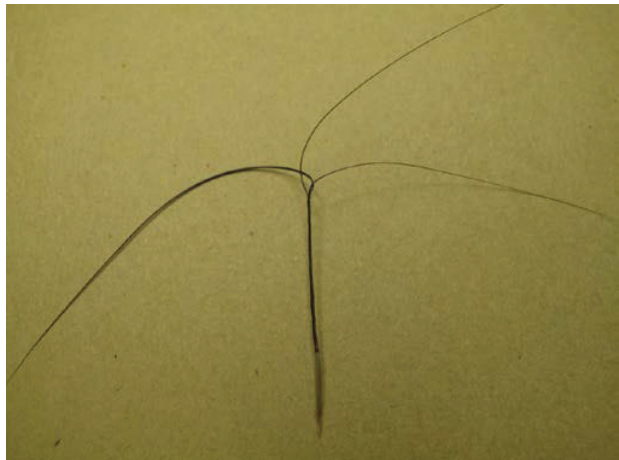
It is perennial and tufted; the culms are 30-90 cm tall.

### Inflorescence

The panicle is open and elliptic, 11-15 cm long and 2-7 cm wide. The lower glume has 3-7 nerves. The lemma is convolute and the awns with a distinct column. The lemmas awns are equal to subequal (about 70-100%), mature spikelets with central awn strongly recurved and thicker than lateral awn.

### Habitat

Grows in *Eucalyptus* and *Melaleuca* communities on sandy soils.





# Arthrargrostis

From Greek *arthron* (joint) and *agrostis* (grass), alluding to the disarticulation of the panicle into component parts.

*Arthrargrostis* was segregated from the genus *Panicum* on the basis of a number of distinct morphological features. One of its diagnostic characters is the stalked fertile floret.

Tufted or decumbent annual grasses of open habitats. The inflorescence is an open panicle and spikelets solitary.

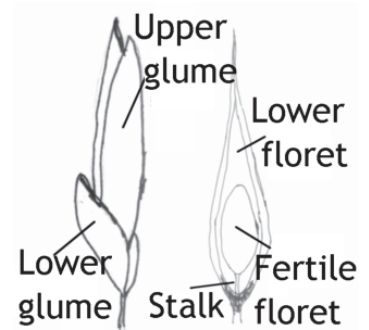
Subfamily: Panicoideae; Tribe: Paniceae.

Species: World = 3, Australia = 3

This species could be confused with *Panicum* and *Whiteochloa*.

## Townsville species

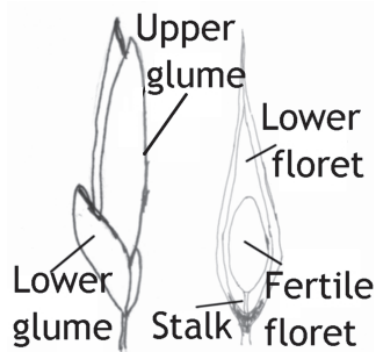
*Arthrargrostis deschampsoides*



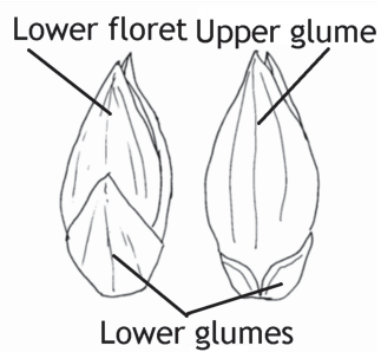
Spikelets

## Key to the species of *Arthrargrostis* and related genera

1. Spikelets laterally compressed .....2
- Spikelets dorsally compressed.....*Panicum*



Spikelets laterally compressed



Spikelets dorsally compressed

2. Plant 45-110 cm tall; grows on sandy, alluvial soils; inflorescence open or contracted, branches persistent..... *Whiteochloa airoides*
- Plant 17-60 cm; grows on rocky hillsides; inflorescence open; branches deciduous  
..... *Arthrargrostis deschampsoides*

## ***Arthrargrostis deschampsioides***

### **Derivation**

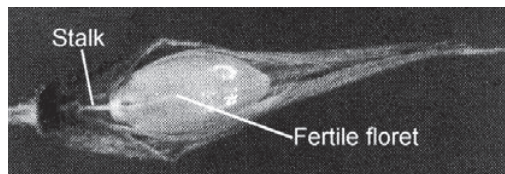
*deschampsioides* - name alluding to the similarity to the genus *Deschampsia*.

### **Habit**

A slender, annual grass, the culms are 17-60 cm tall.

### **Inflorescence**

The panicle is open, 5-25 cm long and 1-5 cm wide. The spikelet is laterally compressed; the fertile floret is dorsally compressed and borne on a slender stalk.



Spikelet with glumes removed  
(Lazarides 1984)



A microscope is needed to see the stalk

### **Habitat**

This species grows on rocky hillsides e.g. Castle Hill and Many Peaks Range.



### **References**

Lazarides M (1984) New taxa of tropical Australian grasses (Poaceae). *Nuytsia* 5, 273-303.

# Arundinella

## Reed Grasses

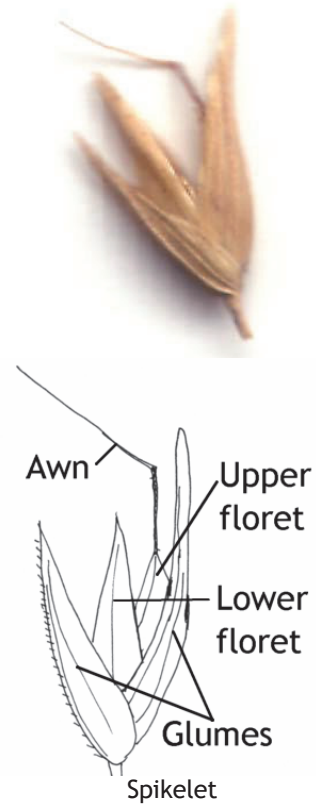
From the Latin *arundo* (a reed) and *-ella* (diminutive suffix).

Tufted annuals and perennials, usually with erect culms, and usually growing in marshy places and along riverbanks. The inflorescence is an open or contracted panicle. The spikelets are solitary or paired, and all are alike. The upper fertile lemma is geniculately (bent like a knee) awned.

Subfamily: Panicoideae; Tribe: Arundinelleae  
Species: World = 55, Australia = 4

### Townsville species

<i>Arundinella nepalensis</i>	Reed Grass
<i>Arundinella setosa</i>	Reed Grass

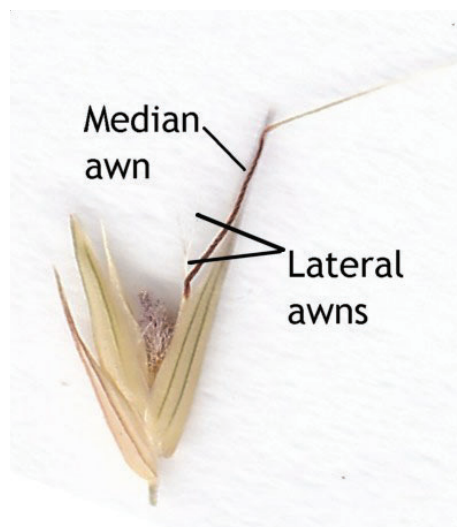


### Key to the species of *Arundinella*

Grows in rocky ground, dry hills; fertile lemma 3-awned (need to use microscope to see this)

..... *Arundinella setosa*

Grows along creek beds and swamps; fertile lemma 1-awned..... *Arundinella nepalensis*



*Arundinella setosa*



*Arundinella nepalensis*



## ***Arundinella nepalensis* - Reed Grass**

### **Derivation**

*nepalensis* - from the Latin *-ense*, denoting origin, from Nepal.

### **Habit**

A perennial, erect grass, the culms are 60-180 cm tall. The ligule is an eciliate membrane.

### **Inflorescence**

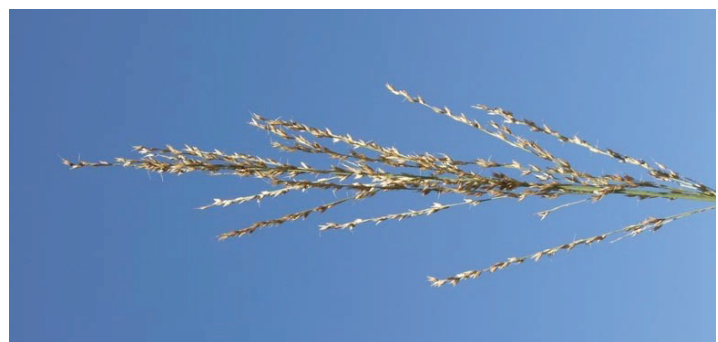
The panicle is compound, open; it is 5-40 cm long. The spikelet is 4-7 mm long. Lower glume is muticous; the lemma is 1-awned.

### **Habitat**

This species grows along creek beds and swamps, in Eucalypt forest, Melaleuca swamp, and various types of woodland and in grassland.



Spikelet





## *Arundinella setosa* - Reed Grass

### Derivation

*setosa* - from the Latin *seta* (bristle) and *-osa* (abundance), each raceme subtended by a stout bristle.

### Habit

A perennial, tufted grass, the culms are 50-120 cm tall. The ligule is a ciliolate membrane.

### Inflorescence

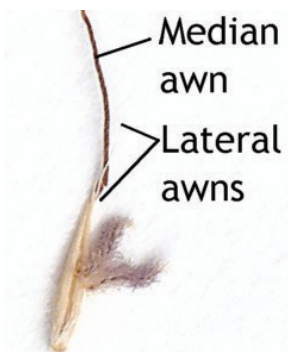
The panicle is compound, open; it is 5-30 cm long. The spikelet is 5-7 mm long. The lower glume is awned, the lemma is 3-awned.

### Habitat

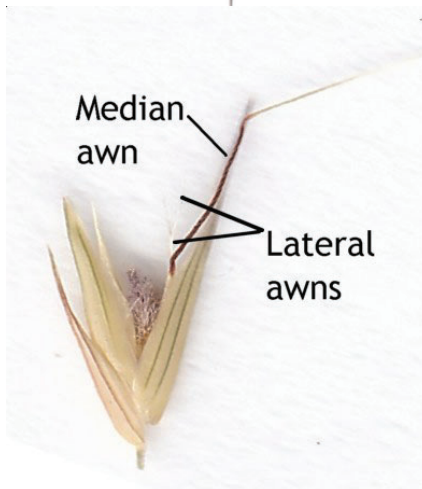
This species grows in rocky ground, dry hills, in open forests, forest margins and grasslands.

Grass Herbarium

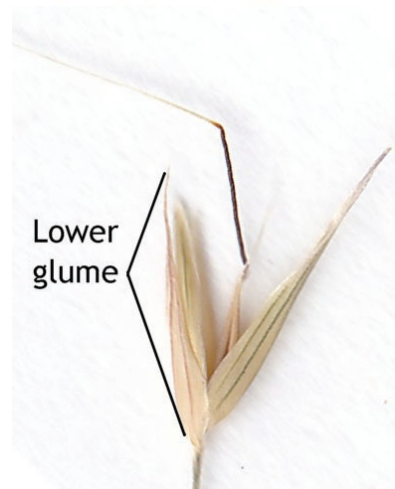
Family:	POACEAE
Genus and species:	<i>Arundinella setosa</i>
Identification	



Lemma



Spikelet



Spikelet,  
note the lower glume is awned

# Arundo

## Reed Grasses

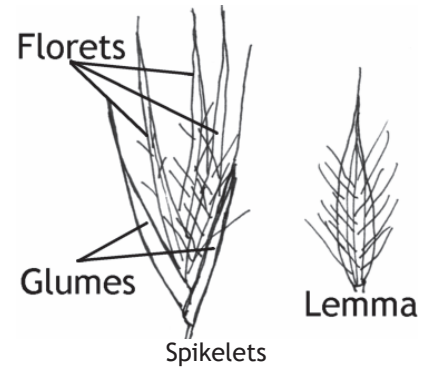
From Latin *arundo* (reed).

Tall perennials with thick, knotty rhizomes. Culms woody and persistent, 2 to 8 m tall. It grows in very large clumps and resembles bamboo. The inflorescence is an open panicle. The spikelets are solitary and the lemmas covered with long, soft hairs.

Subfamily: Arundinoideae; Tribe: Arundineae  
Species: World = 3, Australia = 1

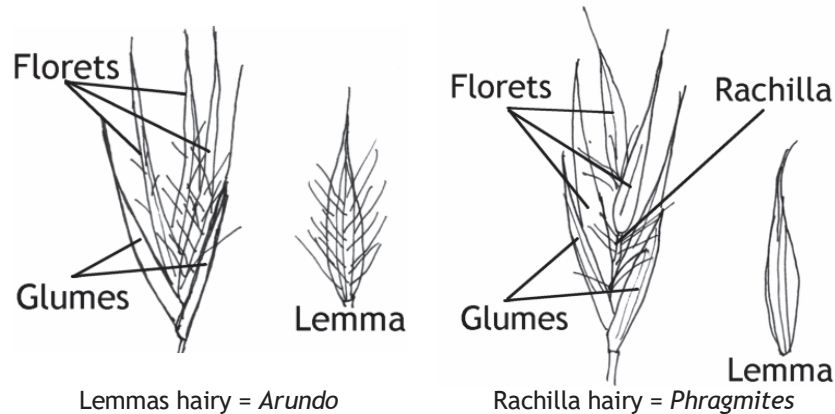
### Townsville species

\* *Arundo donax* Giant Reed



### Key to the species of *Arundo* and similar species

Lemmas hairy; rachilla not hairy ..... *Arundo donax*  
Lemmas not hairy (glabrous); rachilla (axis of spikelet) hairy ..... *Phragmites*





## ***Arundo donax* - Giant Reed**

### **Derivation**

*donax* - the Greek word for a type of reed in classical literature, alluding to the easy dispersal of diaspores by the wind.

### **Habit**

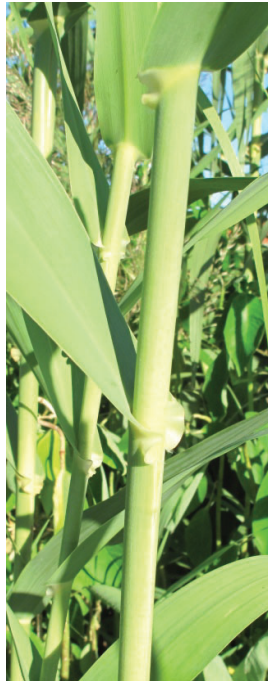
A large tufted perennial, bamboo-like, 2-6 m tall, usually unbranched, with leaves arising along the stem, which is erect or bent over. Closeley related and similar to *Phragmites*.

### **Inflorescence**

The inflorescence is a large feathery panicle, 30-60 cm long and 12 cm wide. The spikelets are solitary, and comprising of numerous (2-7) florets; the rachilla is glabrous and the lemmas are covered with long silky hairs.

### **Habitat**

Giant reed reproduces vegetatively from rhizomes (underground stems) and can invade nearby bushland. It is now recognised as a weed in most states in Australia; it grows on vacant land, margins of rubbish tips or on roadsides where garden refuse has been tipped.



# Axonopus

## Carpet Grasses

From the Greek *axon* (axis) and *pous* (foot), alluding to the racemes arising from a common point (digitate).

Stoloniferous or tufted perennials. The inflorescence is digitate or sub-digitate. The spikelets are solitary, and on one side of the rachis (the axis or branch of the inflorescence). The upper glume is abaxial (the side facing away from the rachis). The lower glume is absent or obscure.

*Axonopus* species are similar to some species of *Paspalum*, however this genus has the upper glume adaxial (the side facing to the rachis).

Subfamily: Panicoideae; Tribe: Paniceae  
Species: World = 114, Australia = 2



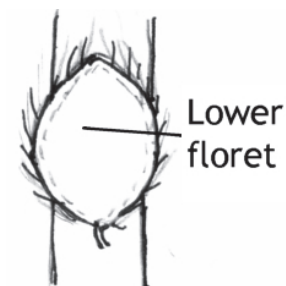
Spikelet

### Townsville species

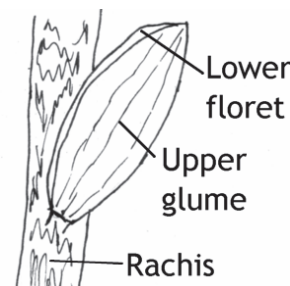
- \* *Axonopus compressus* Buffalo Grass, Broadleaf Carpet Grass

### Key to the species of *Axonopus* and related genera

1. Lower floret adjacent to the inflorescence axis ..... *Axonopus*  
Lower floret positioned away from the inflorescence axis..... *Paspalum*



Lower floret positioned away from the inflorescence axis  
*Paspalum*



Lower floret adjacent to the inflorescence axis  
*Axonopus*





## ***Axonopus compressus* - Buffalo Grass, Broadleaf Carpet Grass**

### **Derivation**

*compressus* - from the Latin *comprimo* (squeeze together), referring to the flattened culms.

### **Habit**

A perennial, stoloniferous, mat-forming grass, the culms are 15-60 cm tall.

### **Inflorescence**

The panicle is digitate or subdigitate, the spikes are 2-3(-5), 3-10 cm long. The spikelets are 2-2.8 mm long, the lower glume is absent or obscure.

### **Habitat**

This non-native species is used as a popular lawn grass in Townsville.



Spikelets

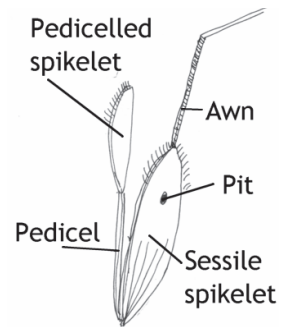


# *Bothriochloa*

## Bluegrasses

From the Greek *bothros* (trench or pit), and *chloa*, (grass), alluding either to the groove in the pedicels or to the pit in the lower glumes of some species.

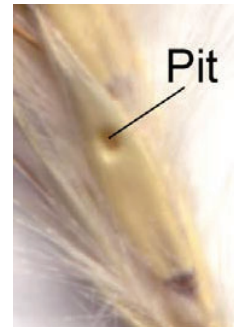
Tufted, decumbent or stoloniferous perennials, often with branched culms. The inflorescence is a digitate or subdigitate, or an open panicle; and usually has a spicy smell when crushed. The spikelets are in pairs (with terminal triplets), one sessile and one pedicelled. The lower glume of the sessile spikelet of some species has a pit (circular depression). The sessile spikelet is awned and bisexual; the pedicelled spikelet can be bisexual, male or sterile.



Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 35, Australia = 9

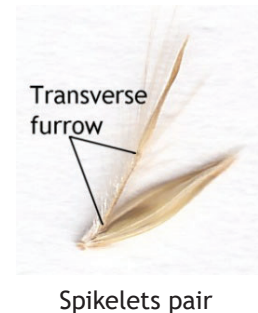
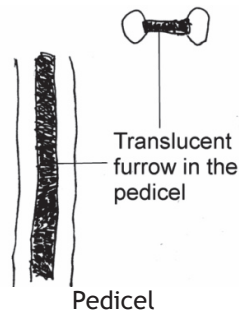
*Bothriochloa* is closely related to *Dichanthium*, the difference between these two genera requires careful dissection under a microscope. The pedicels of *Bothriochloa* species have a longitudinal translucent furrow, often purple coloured; in cross section the pedicels are dumbbell shaped. The pedicels of *Dichanthium* species are rounded.

*Bothriochloa bladhii* subsp. *bladhii* is closely related and similar to the genus *Capillipedium*.



### Townsville species

<i>Bothriochloa bladhii</i>	Forest Bluegrass
subsp. <i>bladhii</i>	
<i>Bothriochloa decipiens</i>	Pitted Grass
<i>Bothriochloa ewartiana</i>	Desert Bluegrass
* <i>Bothriochloa pertusa</i>	Indian Bluegrass



### Key to the species of *Bothriochloa*

These species are covered in the *Dichanthium* genus.





## ***Bothriochloa bladhii* subsp. *bladhii* - Forest Bluegrass**

### **Derivation**

*bladhii* - named after Pehr Johann Bladh who collected in China and South Africa.

### **Habit**

A perennial, tufted grass, the culms are erect or geniculately ascending, 50-150 cm tall.

### **Inflorescence**

The inflorescence is compound; it is commonly purple-coloured. The panicle is 3-14 cm long. It is different than all other of *Bothriochloa* which normally have digitate panicle. Does not have a pitted lower glume.

### **Habitat**

An important and widespread grass of *Eucalyptus* forests and woodlands. It is usually in alluvial soils and is the vicinity of major creeks.





## ***Bothriochloa decipiens* - Pitted Grass**

### **Derivation**

*decipiens* - from the Latin word for resembling another species.

### **Habit**

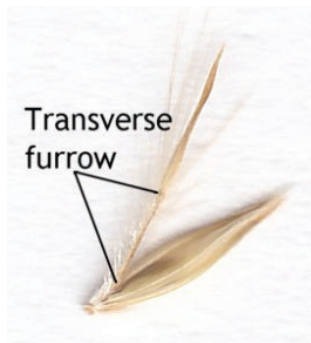
A perennial, tufted grass, culms erect or geniculately ascending, 30-200 cm tall.

### **Inflorescence**

The inflorescence digitate to subdigitate, with ramose branches, the racemes 3-5, 4-7 cm long. The sessile spikelet is awned and with a pit. There are only two species in Townsville which have a pit in the glumes, these are *B. decipiens* and *B. pertusa*.

### **Habitat**

Mostly found on drier soils or hillslopes; a widespread grass in open forest country.



Spikelets pair





## ***Bothriochloa ewartiana* - Desert Bluegrass**

### **Derivation**

*ewartiana* - after the English-born Australian botanist, Albert James Ewart (1872-1937).

### **Habit**

A perennial, tufted grass, culms erect or geniculately ascending, 30-60 cm tall. The leaves are bluish-green when young, becoming reddish.

### **Inflorescence**

The inflorescence digitate to subdigitate, with ramose branches, the racemes. The inflorescence is subdigitate, with ramose branches, the racemes 4-11, and 3.5-7 cm long. Lower glumes not or rarely pitted, without a sub-apical arch of hairs.

### **Habitat**

Generally found in stream banks, drainage plains and valley slopes. It is found in grasslands and *Eucalyptus* forests.

This species may be confused with *Dichanthium* species.



## ***Bothriochloa pertusa* - Indian Bluegrass**

### **Derivation**

*pertusa* - Latin for with a pit, alluding to the deep pit on the abaxial surface of the lower glume.

### **Habit**

A low growing mat forming grass 15-70 cm tall, rooting from lower nodes. The mid-culm nodes are glabrous or bearded. This is a perennial grass that spreads via stolons.

### **Inflorescence**

The inflorescence is subdigitate, the length of the panicle are 2.5-7.5 cm, and racemes are usually 3-8. The lower glumes are pitted (usually needs a hand lens to see it). There are only two species in Townsville which have a pit in the glumes, these are *B. decipiens* and *B. pertusa*.

### **Habitat**

This species is introduced to Australia as a fodder grass. It spreads as a weed everywhere, it is in moderate to low fertility soils.

It is found in many gardens since it grows as a lawn. It grows in many types of soils, it withstands drought and disturbance.





# Brachyachne

## Native Couches

From the Greek *brachys* (short) and *achne* (scale, chaff), alluding to lemmas shorter than glumes.

Stoloniferous or tufted annuals or perennials. The digitate inflorescence contains 3-6 racemes with the spikelets in 2 close rows on 1 side of the raceme. The glumes are much longer than the single floret.

Subfamily: Chloridoideae; Tribe: Cynodonteae  
Species: World = 10, Australia = 5

### Townsville species

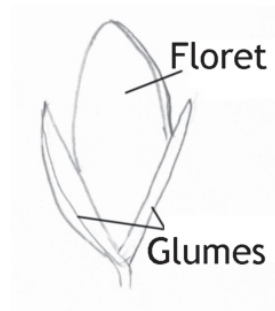
*Brachyachne convergens*      Common Native Couch



Spikelet

### Key to the species of *Brachyachne* and related species

Glumes shorter than floret ..... *Cynodon*  
Glumes longer than floret..... *Brachyachne convergens*



Glumes shorter than floret  
*Cynodon*



Glumes longer than floret  
*Brachyachne*

## ***Brachyachne convergens* - Common Native Couch**

### **Derivation**

*convergens* - from the Latin *convergo* (approach), the spikelets two-ranked but appearing to be one-ranked.

### **Habit**

An annual or biennial erect or decumbent grass, the culms 23-60 cm tall. The leaf sheaths are bearded

### **Inflorescence**

The panicle is digitate with 2-5 branches, 2-7 cm long. The glumes are 3-5 mm long.

### **Habitat**

This species grows in a range of habitats including claypans, river banks, levees and flood plains and sandplains, often in disturbed areas such as roadsides.



Spikelet





# Capillipedium

## Scented Tops

From the Latin *capillus* (hair) and *pes* (foot), alluding to the hair-like pedicels.

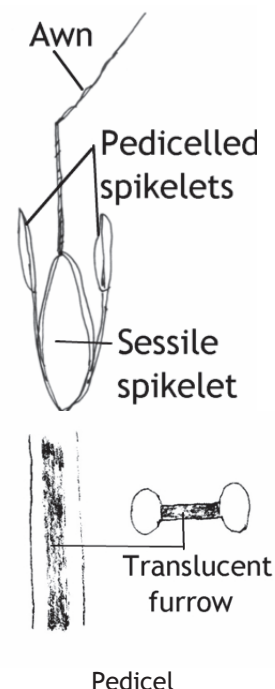
Tufted perennials with erect, slender culms. The inflorescence is an open panicle with secondary branching obvious. The spikelets are paired; one sessile and awned, one pedicelled and unawned. The sessile spikelet at the end of the branches is accompanied by 2 pedicelled spikelets (terminal triplet). The sessile spikelet is awned

Subfamily: Panicoideae; Tribe: Andropogoneae

Species: World = 14, Australia = 2

Based on inflorescence colour and shape, *Capillipedium* could be confused with *Melinis* and *Chrysopogon zizanioides* however the spikelets are very different however the spikelets are very different.

Closely related to *Bothriochloa*, with the same pedicel morphology, i.e. with a longitudinal translucent furrow, often purple coloured; in cross section the pedicels are dumbbell shaped. The differences between the genera are shown in the table below.



### *Bothriochloa bladhii*

Inflorescence, usually an arrangement of racemes on a central axis



Racemes with more than 8 spikelet pairs

### *Capillipedium*

Inflorescence more than once-branched



Racemes with 1-8 spikelet pairs

### Townsville species

<i>Capillipedium parviflorum</i>	Scented Top
<i>Capillipedium spicigerum</i>	Scented Top

### Key to the species of *Capillipedium*

Racemes 1-2-jointed; lower glume 6-nerved, 2 nerves between keels ..... *Capillipedium parviflorum*  
 Racemes 3-8-jointed; lower glume 8-9-nerved, 4-5 nerves between keels ..... *Capillipedium spicigerum*

## *Capillipedium parviflorum* - Scented Top

### Derivation

*parviflorum* - from the Latin *parvus* (small) and *flos* (flower); spikelets small or with few florets.

### Habit

An erect perennial grass 50-100 cm tall.

### Inflorescence

The panicle is open and purple-coloured. The sessile spikelet is accompanied with a pedicelled spikelet. These spikelet pairs (sessile and pedicelled spikelets) are grouped 1-2 along the raceme.

### Habitat

It is widespread in *Eucalyptus* woodlands.



## ***Capillipedium spicigerum* - Scented Top**

### **Derivation**

*spicigerum* - from the Latin *spica* (thorn) and *gero* (carry); inflorescence a spicate panicle.

### **Habit**

An erect perennial grass 50-150 cm tall. The grass is regarded as being of ornamental value.

### **Inflorescence**

The panicle is open and purple-coloured. The sessile spikelet is accompanied with a pedicelled spikelet. These spikelet pairs (sessile and pedicelled spikelets) are grouped 3-8 along the raceme.

### **Habitat**

It is widespread in *Eucalyptus* forests and woodlands.





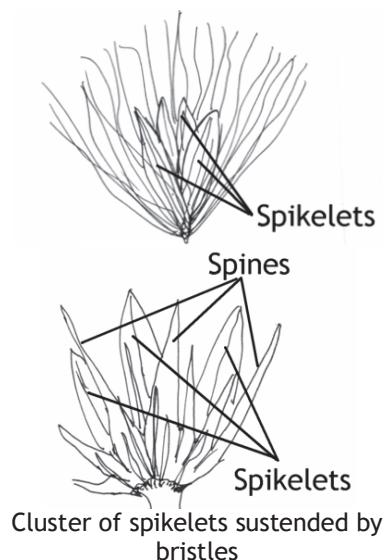
# Cenchrus

## (including *Pennisetum*)

From the Greek *kenchros* (millet).

Tufted or stoloniferous or rhizomatous annuals or perennials. The inflorescence is a spicate panicle (spike-like with short branches). The spikelets are all alike and in groups of one to five and subtended by an involucre of bristles or fused to form a spiny burr. Spikelets fall from plant with bristles attached, usually leaving a bare rachis. The primary bristles are located immediately below the spikelets and are usually noticeably the longest bristles.

Subfamily: Panicoideae; Tribe: Paniceae  
Species: World = c 102, Australia = 22



### Townsville species

	<i>Cenchrus brevisetosus</i>		<i>Pennisetum elymoides</i> var. <i>brevisetosus</i>
*	<i>Cenchrus ciliaris</i>	Buffel Grass	<i>Pennisetum ciliare</i>
*	<i>Cenchrus echinatus</i>	Mossman River Grass, Burr Grass	
	<i>Cenchrus elymoides</i>		<i>Pennisetum elymoides</i>
*	<i>Cenchrus pedicellatus</i> subsp. <i>unispiculus</i>	Annual Mission Grass	<i>Pennisetum pedicellatum</i> subsp. <i>unispiculum</i>
*	<i>Cenchrus pennisetiformis</i>	White Buffel Grass	<i>Pennisetum pennisetiforme</i>
*	<i>Cenchrus purpurascens</i>	Swamp Foxtail	<i>Pennisetum alopecuroides</i>
*	<i>Cenchrus setaceus</i>	Fountain Grass	<i>Pennisetum setaceum</i>
*	<i>Cenchrus setigerus</i>	Birdwood Grass	<i>Pennisetum setigerum</i>

### Key to the species of *Cenchrus* and related genera

1. Spikelets falling at maturity with bristles or spines attached.....2
- Spikelets falling at maturity without any bristles or spines attached..... *Setaria*



*Setaria*



*Cenchrus*



2. Bristles or spines stiff, joined to some degree at base, forming a burr.....3
- Bristles fine and thread-like, free to almost the base.....6

3. Spines connate for more than 1/3 of the distance above the base, forming a more or less globose burr or involucre, which encloses 1 or more spikelets ..... *Cenchrus echinatus*  
 Spines connate to 1/3 of the distance above the base, forming a small disc or shallow cup .....4
4. Spines prolonged beyond the burr none, glabrous or subglabrous, 2-4 mm long.....*Cenchrus setigerus*  
 Spines prolonged beyond the burr into distinct, slender, scabrid bristle.....5
5. Burr with a single elongated bristle and a few very short basal bristles..... *Cenchrus brevisetosus*  
 Burr with many bristles as long as or extending beyond burr, one of them at least three times longer than others..... *Cenchrus elymoides*
6. Involucre bristles glabrous ..... *Cenchrus purpurascens*  
 Involucre bristles hairy .....7
7. Inner bristles of involucre surrounding spikelets woolly-hairy. *Cenchrus pedicellatus* subsp. *unispiculus*  
 Inner bristles of involucre surrounding spikelets hairy .....8



Bristles woolly-hairy



Bristles hairy

8. Primary bristles 26-35 mm long ..... *Cenchrus setaceus*  
 Primary bristles 10-23 mm long .....9



Bristles 15-40 mm



Bristles 8-16 mm long

9. Inner bristles of involucre fused only at the base forming a short disc, otherwise free, bristles forming an uninterrupted ring; a variable species.....*Cenchrus ciliaris*  
 Inner bristles of involucre fused at the base for 1-3 mm to form a shallow, often oblique cup, burr usually deeply cleft on one side ..... *Cenchrus pennisetiformis*

## *Cenchrus brevisetosus*

### Derivation

*brevisetosus* - from the Latin *brevis* (short), and *setosus* (with setae), in reference to the presence of short bristles on the spikelets.

### Habit

A perennial, tufted grass, the culms are 40-150 cm tall.

### Inflorescence

The panicle is solid, a spicate, it is 10.5-16 cm long. The bristles are connate, the distance above the base forming a burr. The burr has a single elongated bristle and a few very short basal bristles.

### Habitat

This species is found in woodlands and coastal grasslands.

*Cenchrus brevisetosus* is very similar to *Cenchrus elymoides*, differing that the outer bristles are very short.



Spikelet





## ***Cenchrus ciliaris* - Buffel Grass**

### **Derivation**

*ciliaris* - from the Latin *cilium* (eyelid) and *-are* (pertaining to), the glumes or lemmas ciliate on nerves or margins.

### **Habit**

A perennial, tufted grass, the culms are 10-150 cm tall.

### **Inflorescence**

The panicle is solid, a spicate, it is 2-14 cm long. The primary bristles are 10-23 mm, hairy; they are fine and thread-like, free to base. The inner bristles form an uninterrupted ring.

### **Habitat**

This non-native species is widespread, naturalised in dry sites and wet places, in soils from sand to black cracking clay.



Spikelet





## ***Cenchrus echinatus* - Mossman River Grass, Burr Grass**

### **Derivation**

*echinatus* - from the Latin *echinatus* meaning spiny, the inflorescence a very condensed panicle and the spikelets or axillary structures are awned, the whole thereby resembling a hedgehog.

### **Habit**

An annual or perennial, tufted grass, the culms are 10-90 cm tall.

### **Inflorescence**

The panicle is solid, a spicate, it is 2-10 cm long. The spines are joined for more than 1/3 of the distance above the base, forming a more or less globose burr.

### **Habitat**

This non-native species grows in disturbed areas.



Spikelet



## *Cenchrus elymoides*

### Derivation

*elymoides* - from the Greek *-oides* (similar to), its resembling *Elymus* with respect to the inflorescence.

### Habit

A perennial, tufted grass, the culms are 40-150 cm tall.

### Inflorescence

The panicle is solid, a spicate, it is 10.5-16 cm long. The bristles are connate, the distance above the base forming a burr.

### Habitat

This species is found in woodlands and coastal grasslands.



Spikelets





## ***Cenchrus pennisetiformis* - White Buffel Grass**

### **Derivation**

*pennisetiformis* - from the Latin *forma* (resemblance), it is similar to *Pennisetum*.

### **Habit**

A perennial, tufted grass, the culms are 10-50 cm tall.

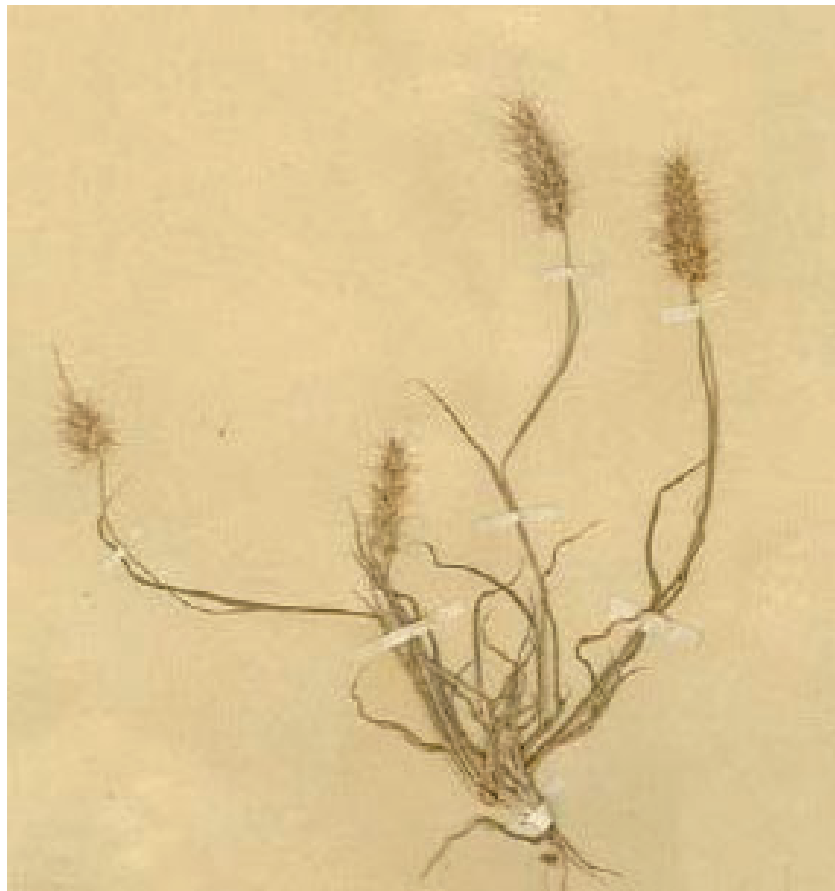
### **Inflorescence**

The panicle is solid, a spicate, it is 2-6 cm long. The bristles are 8-16 mm, hairy; they are fine and thread-like, free to near the base. The inner bristles form a shallow, often oblique cup, burr usually deeply cleft on one side.

### **Habitat**

This non-native species is growing on deep sandy soils and sand hills.

*Cenchrus pennisetiformis* is morphologically and taxonomically similar to *Cenchrus ciliaris*



## ***Cenchrus pedicellatus* subsp. *unispiculus* - Annual Mission Grass**

### **Derivation**

*pedicellatum* - from the Latin *pes* (foot), *-ellus* (diminutive) and *-ata* (possessing), the spikelets shortly stalked.

*unispiculus* -from the Latin *uni* (one) and *spiculus* (spike), the involucre with one spikelet.

### **Habit**

An annual or perennial, tufted grass, the culms are 30-150 cm tall.

### **Inflorescence**

The panicle is solid, a spicate, it is 15-25 cm long. The primary bristles are 15-25 mm long, woolly-hairy, they are fine and thread-like, free to base.

### **Habitat**

This non-native species grows in woodlands, arid hummock grasslands, and coastal grasslands



Spikelet



## *Cenchrus purpurascens* - Swamp Foxtail

### Derivation

*purpurascens* - from the Latin become purple-coloured, referring the inflorescence.

### Habit

An annual or perennial, tufted grass, the culms are 60-100 cm tall.

### Inflorescence

The panicle is solid, a spicate, it is 70-20 cm long. The primary bristles are 25-35 mm long, glabrous, they are fine and thread-like, free to base.

### Habitat

This non-native species is common on damp sites, especially in the vicinity of watercourses or swamps.



Spikelet





## ***Cenchrus setaceus* - Fountain Grass**

### **Derivation**

*setaceus* - from the Latin *seta* (bristle) and *-acea* (indicating resemblance), with long bristles in the inflorescence.

### **Habit**

A perennial, tufted grass, the culms are 20-150 cm tall.

### **Inflorescence**

The panicle is solid, a spicate, it is 6-30 cm long. The primary bristles are 26-35 mm, hairy; they are fine and thread-like, free to base.

### **Habitat**

This non-native species has been cultivated as an ornamental; it escapes to become a weed.



Spikelet





## ***Cenchrus setigerus* - Birdwood Grass**

### **Derivation**

*setigerus* - from the Latin *seta* (bristle) and *gero* (carry), with spikelets subtended by bristles.

### **Habit**

A perennial, tufted grass, the culms are 5-100 cm tall.

### **Inflorescence**

The panicle is solid, a spicate, it is 2-12 cm long. The bristles are connate to 1/3 of the distance above the base, forming a small disc or shallow cup.

### **Habitat**

This non-native species grows in open dry woodlands and grasslands, usually on alkaline soils, sometimes on heavy black clays with impeded drainage.



Spikelet



# Chionachne

From Greek *chion* (snow) and *achne* (chaff or scale), in allusion to the pale coloured glumes of some species.

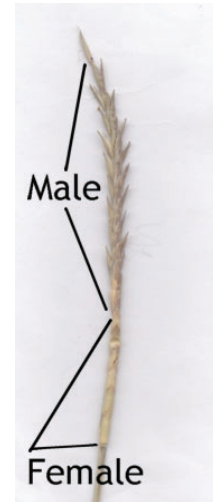
Annuals or reed-like perennials, rhizomatous or tufted. The inflorescence is subtended by a spathe. The spikelets are unisexual and segregated in different parts of the inflorescence which is a raceme or spike. The female spikelets are at the base and are sessile. The male flowers are at the apex, they are usually paired, one sessile and one pedicelled.

Subfamily: Panicoideae; Tribe: Andropogoneae

Species: World = 7, Australia = 2

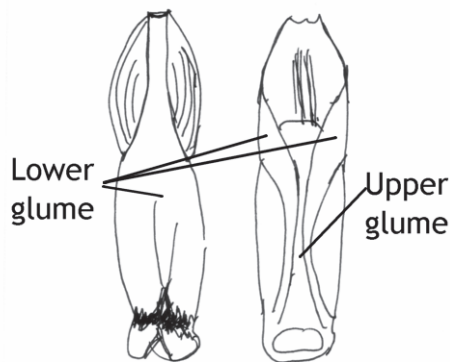
## Townsville species

*Chionachne cyathopoda* River Grass



Raceme showing male and female spikelets

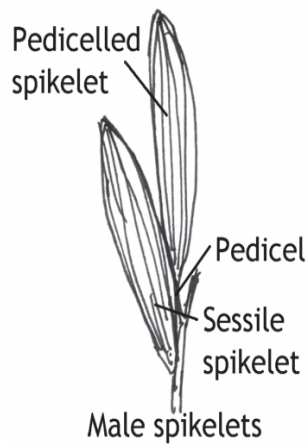
Female spikelets



Female spikelet



Male spikelets



Male spikelets





## *Chionachne cyathopoda* - River Grass

### Derivation

*cyathopoda* - from the Greek *kyathos* (cup) and *pous* (foot) referring to the shape of the apex of peduncle.

### Habit

A tufted perennial grass with reed-like culms, the culms are 2-4 m tall

### Inflorescence

The inflorescence is subtended by a spatheole, the racemes are single, 6-12 cm long and bearing a few female spikelets.

### Habitat

This species resembles *Megathyrsus maximus*. It grows on creek banks, in sandy or loamy soils.



Male spikelets



Female spikelets

# Chloris

## Windmill Grasses

From the Greek *chloros* (green), possibly alluding to the greenish flowers and green leaves; alternatively, named for *Chloris* (The Green One), mythological Greek goddess of flowers.

Tufted or stoloniferous perennials or annuals. The inflorescence is digitate or subdigitate, with the branches erect to spreading. The spikelets are solitary, laterally compressed, usually overlapping in 2 rows along 1 side of the slender rachis. Each spikelet consists of 2-4 florets with the basal floret bisexual and the upper florets reduced. The lemmas have 1-3 awns.

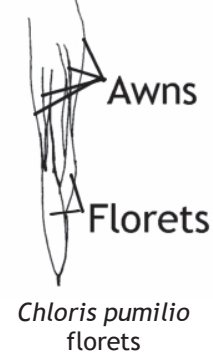
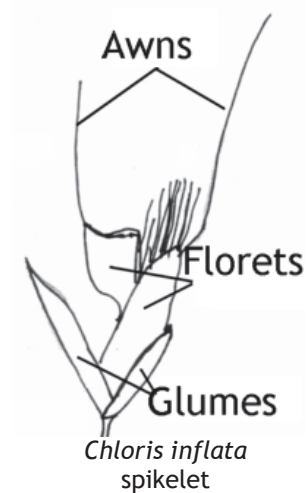
*Chloris* is closely related and easily confused with the genera *Enteropogon* and *Oxychloris*. The genus *Chloris* also has a superficial similarity to the genus *Pseudopogonatherum*.

Subfamily: Chloridoideae; Tribe: Cynodonteae

Species: World = c. 55, Australia = 11



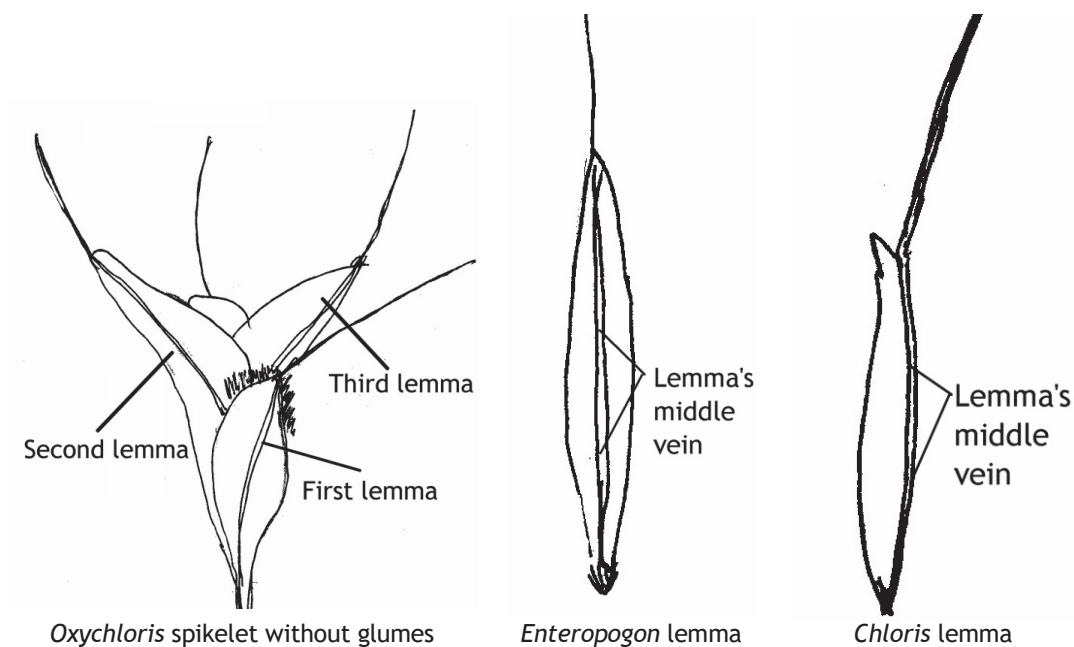
Townsville species



- \* *Chloris gayana* Rhodes Grass
- \* *Chloris inflata* Purpletop Grass
- Chloris lobata*
- Chloris pectinata* Comb Windmill Grass
- Chloris pumilio*
- \* *Chloris virgata* Feathertop Rhodes Grass

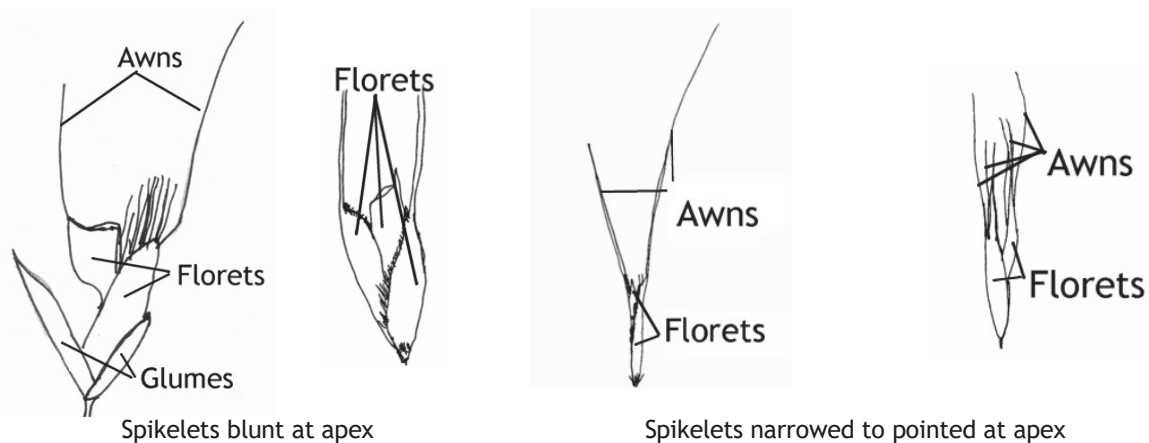
### Key to the species of *Chloris* and similar species

1. Second and third lemmas very broad, sharply recurved at maturity (wing-like)..... *Oxychloris scariosa*  
 Lemmas not very broad, not wing-like..... 2
2. Lowest lemma dorsally compressed (lying on front or back when placed on a flat surface).....  
 ..... *Enteropogon ramosus*  
 Lowest lemma laterally compressed (lying on the side when placed on a flat surface) ..... *Chloris*



### Key to the species of *Chloris*

1. Spikelets blunt at apex ..... 2
- Spikelets narrowed to pointed at apex ..... 4



2. Upper lemmas inflated ..... *Chloris inflata*
- Upper lemmas not inflated ..... 3
3. Spikelet with 2 florets (1 bisexual) ..... *Chloris virgata*
- Spikelet with 3-4 florets (1 or rarely 2 bisexual) ..... *Chloris gayana*
4. Lemma 1-awned ..... 5
- Lemma 3-awned ..... 6
5. Lowest lemma laterally compressed ..... *Chloris pectinata*
- Lemma dorsally compressed ..... *Enteropogon ramosus*
6. Lemma awns subequal, the central slightly longer ..... *Chloris lobata*
- Lemma awns very unequal ..... *Chloris pumilio*



## ***Chloris gayana* - Rhodes Grass**

### **Derivation**

*gayana* - in honour of Claude Gay (1800-1873), a French botanist.

### **Habit**

A perennial, erect grass, the culms are 45-120 cm tall.

### **Inflorescence**

The inflorescence is digitate with 6-18 branches, erect or spreading, 5-10 cm long.

### **Habitat**

This non-native species is mostly found on roadsides and other disturbed areas, it prefers heavy black or grey soils, but is found on sandy and reddish brown loamy soils.



Florets



Inflorescence



## ***Chloris inflata* - Purpletop Grass**

### **Derivation**

*inflata* - Latin for swollen, the upper lemmas are swollen.

### **Habit**

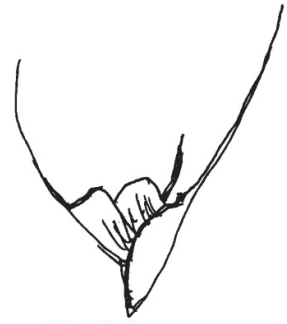
An annual or biennial, erect or decumbent grass, the culms are 40-90 cm tall.

### **Inflorescence**

The inflorescence is digitate with 7-16 branches, erect or spreading, 2-9 cm long.

### **Habitat**

This non-native species occurs generally as a weed of disturbed sites, common on roadsides.



Florets





## ***Chloris lobata***

### **Derivation**

*lobata* - from the Latin *lobus* (lobe) and *-ata* (possessing) the lemmas are lobed.

### **Habit**

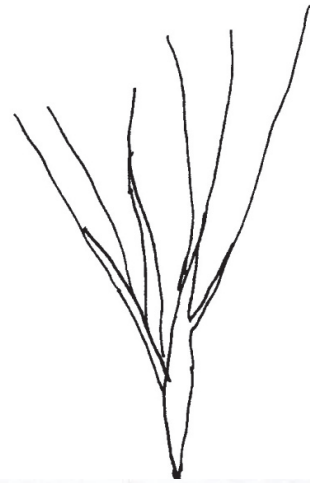
An annual, erect or prostrate grass, the culms are 15-40 cm tall.

### **Inflorescence**

The inflorescence is digitate with 2-7 branches, ascending or spreading, 1.4-5 cm long.

### **Habitat**

This species grows on a range of soil types but mostly heavy soils in seasonally wet areas such as claypans, river flood flats, creek beds and creek banks.



Florets



Inflorescence



## ***Chloris pectinata* - Comb Windmill Grass**

### **Derivation**

*pectinata* - from the Latin *pecten* (comb) and *-ata* (possessing), the inflorescence with spikes or racemes bearing a resemblance to a comb.

### **Habit**

An annual, erect or decumbent, the culms are 10-60 cm tall.

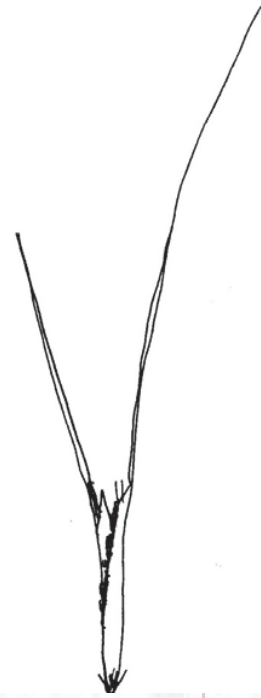
### **Inflorescence**

The inflorescence is digitate with 3-10 branches, spreading, 3-14 cm long.

### **Habitat**

This species grows in depressions, flood-outs and other watered sites, and extensive cracking clay pans.

*Chloris pectinata* florets are like *Enteropogon ramosus*, *Chloris pectinata* lowest lemma is laterally compressed.



Florets

## *Chloris pumilio*

### Derivation

*pumilio* - Latin for a dwarf, this grass is small compared with related species.

### Habit

An annual, erect or decumbent, the culms are 18-90 cm tall.

### Inflorescence

The inflorescence is digitate with 6-10 branches, erect, 2-10 cm long.

### Habitat

This species is found mostly in sandy and silty soils, in moist, low-lying areas, also growing on podsolic, reddish brown and grey brown soils or dark grey loams.

*Chloris pumilio* can be mistaken for the genus *Pseudopogonatherum*.



Florets

## ***Chloris virgata* - Feathertop Rhodes Grass**

### **Derivation**

*virgata* - from the Latin *virga* (broom) and *-ata* (possessing), the inflorescence branches or culms held erect.

### **Habit**

An annual or short-lived perennial grass, the culms are 15-100 cm tall.

### **Inflorescence**

The inflorescence is digitate with 7-19 branches, erect, 3-9 cm long.

### **Habitat**

This non-native species is generally a weed of disturbed ground, especially roadsides. It grows on a variety of soil types such as heavy black soil, grey and brown clays and loams, and red sandy soil.



Florets



Inflorescence



# Chrysopogon

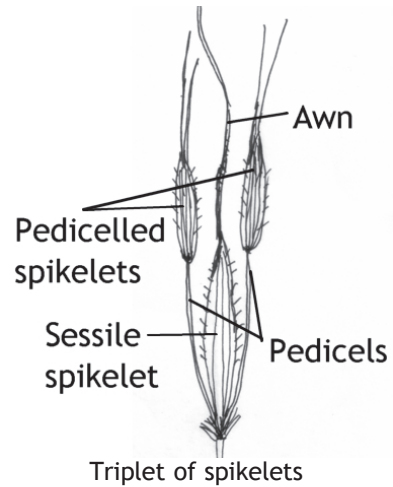
## Golden Beard Grasses

From Greek *chrysos* (golden) and *pogon* (beard), alluding to the golden hairs on the inflorescence.

Annuals or perennials, rhizomatous or stoloniferous or tufted or decumbent. The inflorescence is an open or contracted panicle. The spikelets are borne at the ends of the inflorescence branches. The spikelets in pairs or triplets; one sessile spikelet and 1 or 2 pedicelled spikelets. The sessile spikelet is awned or unawned. Mature spikelets are often purplish coloured.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 43, Australia = 11

Based on inflorescence colour and shape, *Chrysopogon zizanioides* could be confused with *Melinis* and *Capillipedium* however the spikelets are very different.

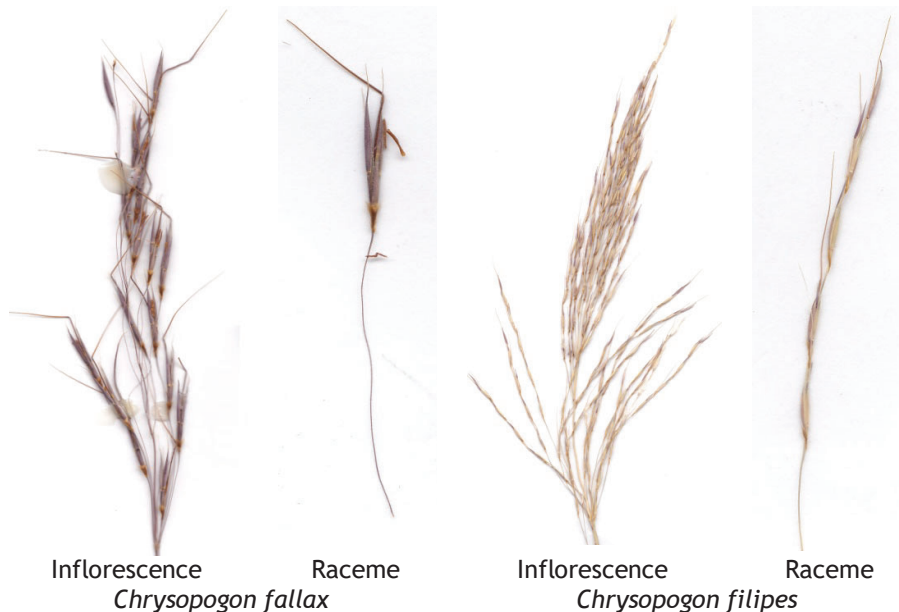


### Townsville species

* <i>Chrysopogon aciculatus</i>	Mackies Pest
<i>Chrysopogon fallax</i>	Golden Beard Grass
<i>Chrysopogon filipes</i>	Australian Vetiver
* <i>Chrysopogon zizanioides</i>	Vetiver Grass

### Key to the species of *Chrysopogon*

- Plants stoloniferous; grows in lawns ..... *Chrysopogon aciculatus*  
Plants not stoloniferous, tufted ..... 2
- Plant 150-300 cm tall; sessile spikelets awnless ..... *Chrysopogon zizanioides*  
Plant 30-120 cm tall; sessile spikelets awned ..... 3
- Racemes with 1 or 2 jointed ..... *Chrysopogon fallax*  
Racemes 3-many jointed ..... *Chrysopogon filipes*



## ***Chrysopogon acicularis* - Mackies Pest**

### **Derivation**

*aciculatus* - from the Latin *acus* (needle), *-ulus* (diminutive) and *-atus* (possessing), the spikelets with a needle-like callus.

### **Habit**

A perennial, mat forming grass, stolons present, the culms are 20-50 cm tall.

### **Inflorescence**

The panicles are open, ovate, 4-10 cm long, the racemes are 1-2 jointed. The sessile spikelets are awned and are 4-10 mm long.

### **Habitat**

This species grows as a weed in lawns.



Spikelets





## ***Chrysopogon fallax* - Golden Beard Grass**

### **Derivation**

*fallax* - Latin for deceptive, it closely resembling another species.

### **Habit**

A perennial, tufted grass, the culms are 30-120 cm tall.

### **Inflorescence**

The panicles are open, 7-20 cm long, the racemes are 1-2 jointed. The sessile spikelets are awned and are 9-14 mm long.

### **Habitat**

This species is widespread on a range of soils, often on floodplains.



Spikelets





## ***Chrysopogon filipes* - Australian Vetiver**

### **Derivation**

*filipes* - from the Latin *filum* (thread) and *ped* (foot), the pedicels of racemes slender.

### **Habit**

A perennial, tufted grass, the culms are 60-100 cm tall.

### **Inflorescence**

The panicles are contracted, 15-30 cm long, the racemes are 3-many jointed. The sessile spikelets are awned and are 8-10 mm long.

### **Habitat**

This species grows on banks, floodplains and dry parts of creek or river beds.



Spikelets

Grass Herbarium

Family:	POACEAE
Genus and species:	<i>Chrysopogon filipes</i>
Identification	



## ***Chrysopogon zizanioides* - Vetiver Grass**

### **Derivation**

*zizanioides* - by the riverside, reflecting the fact that the plant is commonly found along the waterways.

### **Habit**

A perennial, tufted grass, the culms are 150-300 cm tall.

### **Inflorescence**

The panicles are open, lanceolate, 15-40 cm long, the racemes are 3-many jointed. The sessile spikelets are not awned and are 3.5-5 mm long.

### **Habitat**

This species is planted for erosion control, however occasionally it escapes to nearby areas.



Spikelets

*Chrysopogon zizanioides* is confused with *Melinis* and *Capillipedium*; use the key on the *Melinis* page.





# Cleistochloa

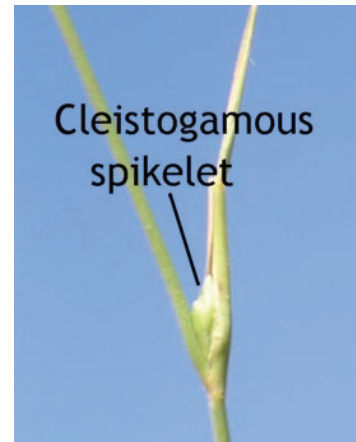
From the Greek *kleistos* (enclosed) and *chloe* (grass), referring to some of the spikelets being cleistogamous (flowers which do not open and are self-fertilized in the bud).

Tufted perennial grasses with wiry culms. The inflorescences are of two types, one a terminal raceme, the other is an axillary inflorescence with cleistogamous spikelets. The spikelets in each inflorescence are dissimilar. This genus is endemic to Australia and species grow on low-nutrient sandstone-derived soils.

Subfamily: Panicoideae; Tribe: Paniceae  
Species: World = 3, Australia = 3



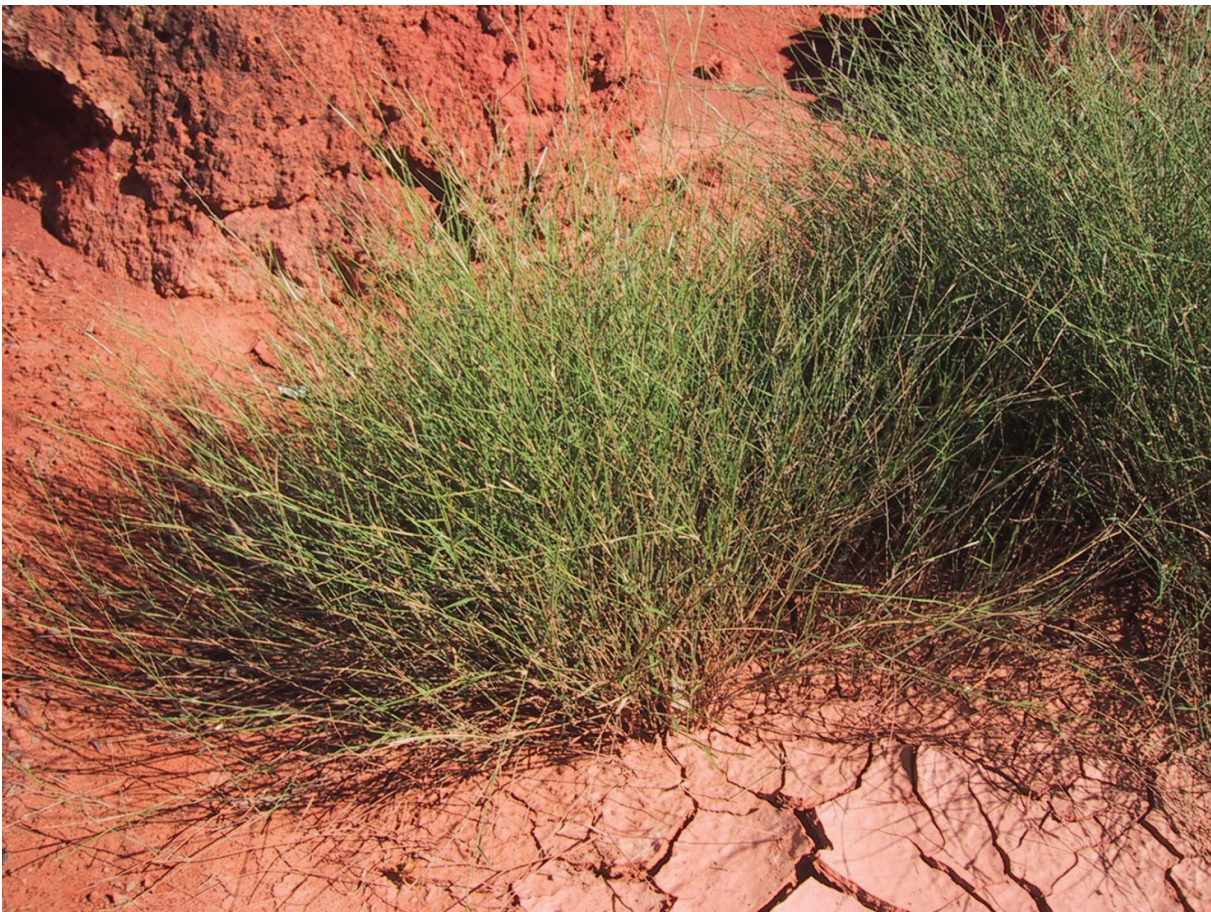
Terminal inflorescence



Axillary inflorescence

## Townsville species

*Cleistochloa subjuncea*





## *Cleistochloa subjuncea*

### Derivation

*subjuncea* - from this genus; *sub* (somewhat similar) and *juncea* (rush-like), refers to the habit.

### Habit

An erect or slightly spreading perennial grass, the culm is 30-60 cm tall. The leaf sheaths usually have erect white hairs on the back, and when the grass dries off, the leaf sheath loosens from the culm and the leaf blade breaks off at the ligule at maturity.

### Inflorescence

The inflorescence is in two forms, one terminal, and the other axillary. The terminal inflorescence is 0.7-3.5 cm long with 2-6 spikelets; the axillary inflorescence is reduced to a single spikelet that is hidden in the leaf sheaths.

### Habitat

This species grows on very poor, dry soils.

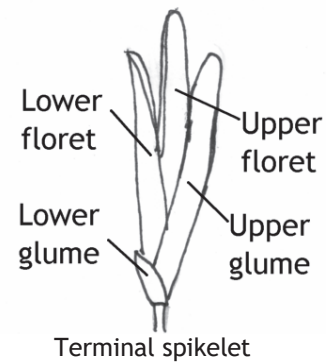
Old leaf sheath



Old leaf sheath showing where the leaf blade has broken off at the ligule



Leaf sheath showing erect white hairs



Grass Herbarium



Family: POACEAE  
Genus and species: *Cleistochloa subjuncea*  
Identification

# Cymbopogon

## Lemon-scented Grasses

From the Greek words *kumbe* (boat) and *pogon* (beard), referring to many-awned inflorescences and boat-shaped spathes.

Tufted perennials with aromatic (often lemon-scented) shoots and leaves when crushed. The inflorescence is a panicle of short paired racemes each subtended by a reddish spatheole. The spikelets are in pairs, one sessile and one pedicelled. The sessile spikelet is awned. Many of the species are covered with long, soft, white hairs.

The lemon-scented leaves are distinctive and make the identification of this genera easier even when the grass is not flowering. However, there is a grass species in another genera in Townsville with lemon-scented leaves - *Elionurus citreus*. Once all the fluffy spikelets have fallen, this genera can be mistaken for *Themeda*.

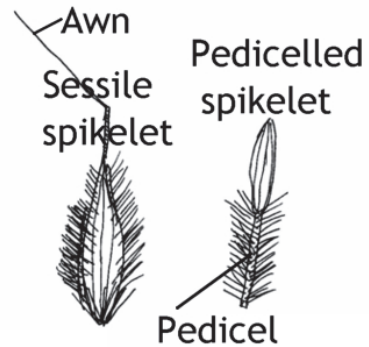
Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = c.40, Australia = 11

### Townsville species

<i>Cymbopogon ambiguus</i>	Scented Oilgrass, Lemon Grass
<i>Cymbopogon bombycinus</i>	Silky Oilgrass
<i>Cymbopogon obtectus</i>	Silkyheads
<i>Cymbopogon queenslandicus</i>	
<i>Cymbopogon refractus</i>	Barbed Wire Grass

### Cultivated species

<i>Cymbopogon citratus</i>	Lemon Grass
----------------------------	-------------



The pedicels and inflorescence axis are often covered with hairs making it difficult to see the spikelets

### Key to the species of *Cymbopogon* species

1. Racemes distinctly hairy, hairs 4-7 mm long ..... 2  
    Racemes only slightly hairy, hairs less than 3 mm long ..... 4
2. Longer callus hairs up to 1.3 mm long ..... *Cymbopogon ambiguus*  
    Longer callus hairs 3.5-5 mm long ..... 3

Racemes and spikelets distinctly hairy, hairs 4-7 mm long



*Cymbopogon ambiguus*



*Cymbopogon bombycinus*



*Cymbopogon obtectus*

Racemes and spikelets only slightly hairy, hairs less than 3 mm long



*Cymbopogon queenslandicus*



*Cymbopogon refractus*

3. Leaf sheaths to 6 mm wide, rolling back at maturity..... *Cymbopogon bombycinus*  
 Leaf sheaths 2-3 mm wide, not rolling back at maturity..... *Cymbopogon obtectus*

Leaf sheaths to 6 mm wide, rolling back at maturity



Leaf sheaths 2-3 mm wide, not rolling back at maturity



4. Pedicelled spikelet with 2 glumes; sessile spikelet with an awn 10-12 mm long, usually not reflexed at maturity ..... *Cymbopogon queenslandicus*

Pedicelled spikelet with one glume only; sessile spikelet usually awnless (if awned, awn small and imperfect), always distinctly reflexed at maturity ..... *Cymbopogon refractus*



## ***Cymbopogon ambiguus* - Scented Oilgrass, Lemon Grass**

### **Derivation**

*ambiguus* - Latin for uncertain, species that may be readily confused with others or do not necessarily belong to the genus in which they have been placed or are intermediate in characters between other genera.

### **Habit**

A perennial, tufted grass, the culms are 30-150 cm tall.

### **Inflorescence**

The panicle is 15-40 cm long, the spathes 1.5-3.5 cm long. The racemes are erect, distinctly hairy, hairs 4-7 mm long, the longer callus hairs up to 1.3 mm long.

### **Habitat**

This species is very adaptable to different types of soils; it is commonly on rocky outcrops.



Spikelets





## *Cymbopogon bombycinus* - Silky Oilgrass

### Derivation

*bombycinus* - from the Latin *bombyx* (silk) and *-inus* (belonging to), the inflorescence or leaves invested with long silky hairs.

### Habit

A perennial, tufted grass, the culms are 30-120 cm tall. The leaf sheaths are rolling back at maturity.

### Inflorescence

The panicle is 6-40 cm long, the spathes 2.0-3.5 cm long. The racemes are erect, distinctly hairy, hairs 4-7 mm long, the longer callus hairs 3.5-5 mm long.

### Habitat

This species is usually in *Eucalyptus* forest on sandy or stony soils, it grows on hills.



Spikelets





## *Cymbopogon obtectus* - Silkyheads

### Derivation

*obtectus* - from the Latin *obtego* (conceal), it is segregated from a closely related species.

### Habit

A perennial, tufted grass, the culms are 50-100 cm tall. The leaf sheaths not rolling back at maturity.

### Inflorescence

The panicle is 7-25 cm long, the spathes 2.0-3.2 cm long. The racemes are erect and commonly deflexed, and distinctly hairy, hairs 4-7 mm long, the longer callus hairs 3.5-5 mm long.

### Habitat

This species is tolerant of a range of environments, it grows on hills.



Spikelets





## *Cymbopogon queenslandicus*

### Derivation

*queenslandicus* - from Queensland.

### Habit

A perennial, tufted grass, the culms are 70-150 cm tall.

### Inflorescence

The panicle is 25-45 cm long, the spathes 1.8-2.5 cm. The racemes are erect and occasionally deflexed, and are only slightly hairy, hairs less than 3 mm long.

### Habitat

This species occurs in *Eucalyptus* forests, often on stony hillsides.



Spikelets





## ***Cymbopogon refractus* - Barbed Wire Grass**

### **Derivation**

*refractus* - Latin for curved back abruptly, it is mostly applied to species whose mature inflorescence branches curve back.

### **Habit**

A perennial, tufted grass, the culms are 30-150 cm tall.

### **Inflorescence**

The panicle is 10-45 cm long, the spathes 1.7-2.5 cm. The racemes are always distinctly reflexed at maturity, and usually glabrous.

### **Habitat**

This species is found in grassland and in the *Eucalyptus* forests and woodlands.

*Cymbopogon refractus* appears to produce occasional hybrids with other species.



Spikelets



# *Cynodon*

## Couchs and Star Grasses

From Greek *kynos* (dog) and *odous* (tooth), alluding to the tooth-like buds of the rhizome.

Stoloniferous and rhizomatous perennials with short, erect flowering stems. The inflorescence is digitate or subdigitate. Spikelets are solitary and on one side of the raceme. The glumes are shorter than the single floret.

Subfamily: Chloridoideae; Tribe: Cynodonteae

Species: World = 10, Australia = 7

*Cynodon dactylon* is the common lawn grass (couch) in Townsville. This grass is an extremely variable species, the growth form varies according to local condition. Widely distributed and common in disturbed areas, it can grow to 30 cm tall, when frequently mown it can form a close sward with a prostrate habit.



Spikelet



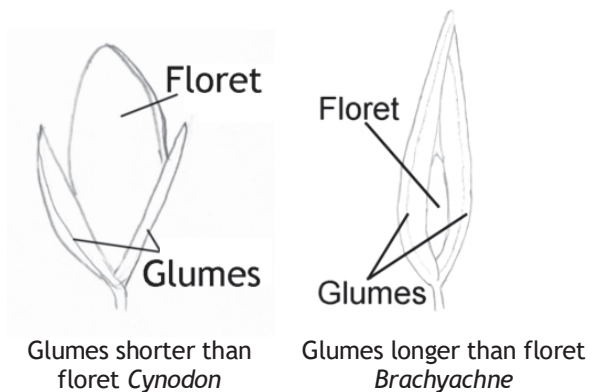
### Townsville species

- |                              |               |
|------------------------------|---------------|
| * <i>Cynodon dactylon</i>    | Couch Grass   |
| * <i>Cynodon nlemfuensis</i> | Bermuda Grass |
| * <i>Cynodon radiatus</i>    | Bermuda Grass |



## Key to the species of *Cynodon* and related species

1. Glumes shorter than floret ..... 2  
 Glumes longer than floret..... *Brachyachne*



2. Racemes full of bends and curves, 5-8, 6-12 cm long..... *Cynodon radiatus*  
 Racemes NOT full of bends and curves, 3-6, 1-6 cm long .....2



Racemes full of bends and curves



Racemes NOT full of bends and curves

3. Plant with rhizomes and stolons ..... *Cynodon dactylon*  
 Plants only with stolons..... *Cynodon nlemfuensis*

## ***Cynodon dactylon* - Couch Grass**

### **Derivation**

*dactylon* - from the Greek *daktylos* finger, the inflorescence branches are finger-like.

### **Habit**

A perennial, stoloniferous and rhizomatous grass, the culms are 10-35 cm tall.

### **Inflorescence**

The panicle is digitate with 4-7 branches, 2-5.5 cm long.

### **Habitat**

This non-native species is cultivated extensively as a lawn grass. A weed of roadsides and in pastures.



Inflorescence





## ***Cynodon nlemfuensis* - Bermuda Grass**

### **Derivation**

*nlemfuensis* - from Nlemfu, Zaire.

### **Habit**

A perennial, stoloniferous grass, the culms are 20-80 cm tall.

### **Inflorescence**

The panicle is digitate or subdigitate with 4-13 branches, 4-10 cm long.

### **Habitat**

This non-native species was introduced as a pasture grass, has become a vigorous weed.



Inflorescence





## ***Cynodon radiatus* - Bermuda Grass**

### **Derivation**

*radiatus* - from the Latin *radius* (spoke of a wheel).

### **Habit**

A perennial, stoloniferous grass, the culms are 15-45 cm tall.

### **Inflorescence**

The panicle is digitate with 4-8 branches, 4-9 cm long.

### **Habitat**

This non-native species is a vigorously spreading coloniser of disturbed sites.



Inflorescence



# Dactyloctenium

## Button Grasses

From the Greek *daktylos* (a finger) and *ktenion* (a little comb), alluding to the digitate inflorescence in which the spikelets have a comb-like arrangement.

Annuals or perennials, rhizomatous or stoloniferous, tufted or decumbent grass and native or naturalised. The inflorescence is digitate, with 2-6 branches which are erect or spreading, the end of the branches project beyond the spikelets. The spikelets are sessile and closely overlapping in two rows on one side of the rachis. The spikelets contain 2 or more bisexual florets.

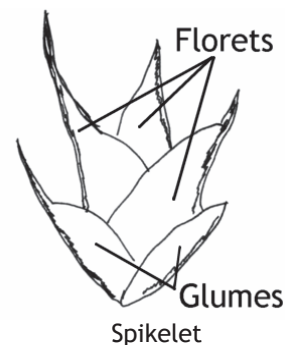
Sometimes grows in saline habitats or dunes, mostly in dry sandy soils.

Subfamily: Chloridoideae; Tribe: Cynodonteae

Species: World = 13, Australia = 5

### Townsville species

- |                                     |                      |
|-------------------------------------|----------------------|
| * <i>Dactyloctenium aegyptium</i>   | Coastal Button Grass |
| <i>Dactyloctenium buchananensis</i> |                      |
| <i>Dactyloctenium radulans</i>      | Native Button Grass  |



### Key to the species of *Dactyloctenium* and similar species

1. Axis of each raceme ending with a spikelet ..... *Eleusine indica*
- Axis of each raceme ending in a point ..... 2



Axis of each raceme ending with a spikelet



Axis of each raceme ending in a point

2. Inflorescence branches are 0.4-0.6 cm mm long.....*Dactyloctenium buchananensis*
- Inflorescence branches are at least 1 cm long ..... 3
3. Inflorescence branches up to 1.5 cm long; spikelets c. 4 mm long..... *Dactyloctenium radulans*
- Inflorescence branches 1-5 cm long, spikelets 2.5-3 cm long .....*Dactyloctenium aegyptium*



*Dactyloctenium buchananensis*



*Dactyloctenium radulans*



*Dactyloctenium aegyptium*



***Dactyloctenium aegyptium* - Coastal Button Grass**

**Derivation**

*aegyptium* - from the Latin *-ium* (characteristic of), from Egypt.

**Habit**

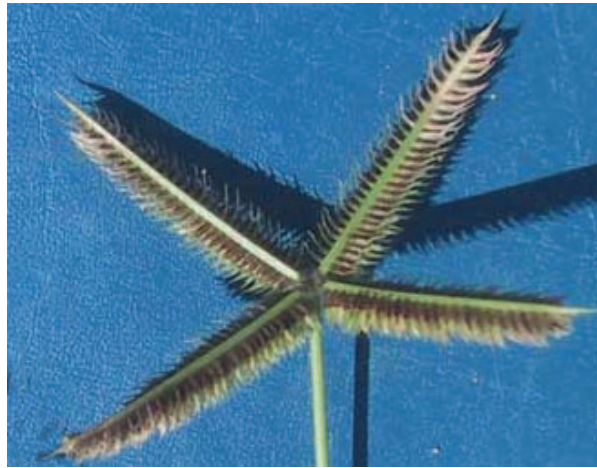
An annual or short-lived perennial grass, the culms are 40-100 cm tall.

**Inflorescence**

The inflorescence branches 2-5, touching only near the base, 1.2-6.5 cm long.

**Habitat**

This non-native species is most common in disturbed areas but also in open *Eucalyptus* forest on a variety of soils, and on coastal dunes.



Inflorescence





## *Dactyloctenium buchananensis*

### Derivation

It grows on the edge of Lakes Buchanan and Galilee in central Queensland.

### Habit

An ephemeral or annual grass, the culms are 8-40 cm tall.

### Inflorescence

The inflorescence branches 8-12, touching for most of length and forming a head-like structure, 0.4-0.6 cm long.

### Habitat

This species grows in waters of high salinity, on saline clay; it is reported as an introduction in the Townsville area.



Inflorescence



## ***Dactyloctenium radulans* - Native Button Grass**

### **Derivation**

*radulans* - from the Latin *radula* (scraper) and *-ans* (assuming the form of), the leaf-blades are scabrid.

### **Habit**

An ephemeral or annual grass, the culms are 7-33 cm tall.

### **Inflorescence**

The inflorescence branches 3-10, touching for most of length and forming a head-like structure, 0.5-1.5 cm long.

### **Habitat**

This species grows on many soil types, but most often on sand and in seasonally wet areas such as creek banks and flood plains, tolerates saline and swampy conditions.



Inflorescence



# Dichanthium

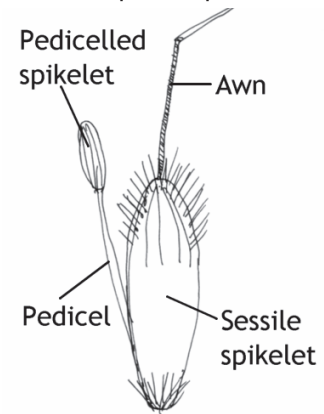
## Bluegrasses

From the Greek *dicha* (in two, apart) and *anthos* (flowers), alluding to the two kinds of spikelet pairs in the raceme.

Tufted, decumbent or stoloniferous perennials, often with branched culms. The inflorescence is digitate or subdigitate or a single raceme. The spikelets are in pairs (with terminal triplets), one sessile and one pedicelled. The sessile spikelet is awned, and in one species (*D. fecundum*), the pedicelled spikelet is also sometimes awned.

*Dichanthium* is closely related to *Bothriochloa*, and the difference between these two genera is described under *Bothriochloa*.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = c 16, Australia = 8



### Townsville species

- \* *Dichanthium annulatum*
- \* *Dichanthium aristatum*
- Dichanthium fecundum*
- Dichanthium sericeum* subsp. *polystachyum*
- Dichanthium sericeum* subsp. *sericeum*

Sheda Grass  
Angleton Grass  
Curly Bluegrass  
Queensland Bluegrass  
Queensland Bluegrass



Inflorescences



## Key to the species of *Dichanthium*, *Bothriochloa* and *Capillipedium*

1. Inflorescence a panicle of racemes.....2  
 Inflorescence digitate or subdigitate or a single raceme .....3
2. Inflorescence, usually an arrangement of racemes on a central axis; racemes with more than 8 spikelet pairs ..... *Bothriochloa bladhii* subsp. *bladhii*

Inflorescence more than once-branched; racemes with 1-8 spikelet pairs ..... *Capillipedium*

Inflorescence, usually an arrangement of racemes on a central axis  
 Racemes with more than 8 spikelet pairs



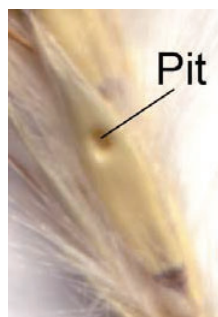
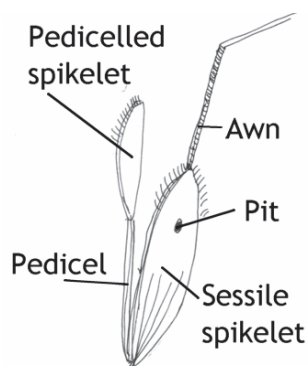
*Bothriochloa bladhii*

Inflorescence more than once-branched  
 Racemes with 1-8 spikelet pairs



*Capillipedium*

3. Lower glumes pitted .....4  
 Lower glumes not or rarely pitted.....5



Spikelet showing pitted lower glume

4. Culms erect or ascending 30-200 cm tall; nodes glabrous and purple; pedicelled spikelet reduced to lower glume..... *Bothriochloa decipiens*

Culms erect, ascending or prostrate 15-70 cm tall and with stolons; nodes glabrous or bearded; pedicelled spikelet similar to sessile spikelet, male or sterile ..... *Bothriochloa pertusa*



*Bothriochloa decipiens*



*Bothriochloa pertusa*

5. Peduncle below inflorescence covered in downy hairs, sometimes has a single raceme .....  
 ..... *Dichanthium aristatum*  
 Peduncle below inflorescence glabrous.....6



*Dichanthium aristatum*  
 Showing downy hairs at the  
 base of inflorescence



*Bothriochloa ewartiana*

6. Racemes bases sessile; lower glume of sessile spikelet with a distinct sub-apical arch of long, fine, simple hairs .....7  
 Raceme bases filiform or sub-sessile; lower glume of sessile spikelet without a sub-apical arch of simple hairs, tubercle-based hairs sometimes present .....8

Racemes bases sessile



Racemes filiform or sub-sessile

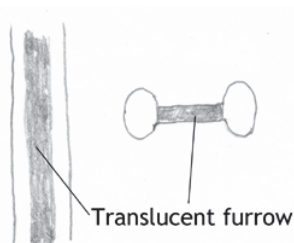


*Dichanthium sericeum*

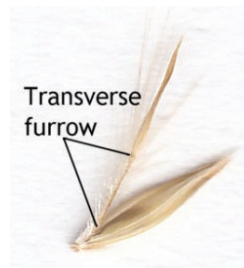


*Dichanthium fecundum*

7. Lower glume of pedicelled spikelet obovate with subapical arch conspicuous, hairs erect from surface; racemes usually 10 or more ..... *Dichanthium sericeum* subsp. *polystachyum*  
 Lower glume of pedicelled spikelet linear to narrowly ovate, hairs not erect from surface; racemes usually 6 or less.....*Dichanthium sericeum* subsp. *sericeum*
8. Pedicels of the companion spikelet with a translucent furrow between thickened margins (need a microscope to see this).....*Bothriochloa ewartiana*  
 Pedicels of the companion spikelet without a translucent mid-line.....9



Pedicels



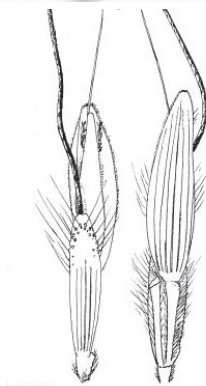
Spikelets pair



9. Spikelets acute; pedicelled spikelets bisexual or male and sometimes awned; stigmas distinctly protruding at maturity..... *Dichanthium fecundum*
- Spikelets obtuse or truncate; pedicelled spikelets sterile or male; stigmas not distinctly protruding at maturity..... *Dichanthium annulatum*



Translucent  
furrow



*Dichanthium fecundum*  
spikelets



*Dichanthium annulatum*  
spikelets



*Bothriochloa ewartiana*  
spikelets

Spikelets taken from (Gardner 1952; Tothill and Hacker 1983; Jacobs *et al.* 2008)

#### References

- Gardner, CA (1952) 'Flora of Western Australia Vol. 1, Gramineae Part 1.' (Government Printer: Perth)
- Jacobs, SWL, Whalley, RDB, Wheeler, DJB (2008) 'Grasses of New South Wales (Fourth Edition).' (University of New England: Armidale)
- Tothill, JC, Hacker, JB (1983) 'The grasses of southern Queensland.' (University of Queensland Press: St Lucia)

## ***Dichanthium annulatum* - Sheda Grass**

### **Derivation**

*annulatum* - from the Latin *annulus* (ring) and *-ata* (possessing).

### **Habit**

A perennial, tufted grass, the culms are decumbent, 25-100 cm tall, the mid-culms nodes are bearded.

### **Inflorescence**

The inflorescence is digitate or subdigitate, with 2 to 9 racemes, 3-7 cm long. The pedicelled spikelet is sterile or male.

### **Habitat**

This non-native grass is found in situations growing in pasture land, roadsides, weedy lawns, sand dunes and open wasteland.



Node



Spikelets pair



## ***Dichanthium aristatum* - Angleton Grass**

### **Derivation**

*aristatum* - from the Latin *arista* (bristle) and *-ata* (possessing); the apices of lemmas, paleas or glumes drawn out into a distinct awn.

### **Habit**

A perennial, tufted grass, the culms are decumbent, 20-100 cm tall, the mid-culm nodes are glabrous or pubescent.

### **Inflorescence**

The inflorescence is a digitate or subdigitate, 2-5 racemes, sometimes only one raceme at the end of the season, 3-8 cm long. The pedicelled spikelet is sterile or male. The peduncles are covered in downy hairs.

### **Habitat**

This non-native grass is tolerant of a wide range of soils, it is a vigorous plant with a tendency to dominate and become a weed.





## ***Dichanthium fecundum* - Curly Bluegrass**

### **Derivation**

*fecundum* - Latin for fruitful, for producing abundant spikelets.

### **Habit**

A perennial, tufted grass, the culms erect or geniculately ascending, 60-150 cm tall, the mid-culm nodes are bearded.

### **Inflorescence**

The inflorescence is digitate or subdigitate, with 3-7 racemes, sometimes only one raceme, 4-6 cm long. The lower glume can sometimes have a transverse fringe of hairs. The pedicelled spikelet is bisexual or male, sometimes with awns.

### **Habitat**

This species is found in clay loam and alluvial areas and along stream banks, and riverflats.



## *Dichanthium sericeum* - Queensland Bluegrass

### Derivation

*sericeum* - from the Latin *sericeus* (silken) which means silky, referring to the hairs on the inflorescence.

### Habit

An annual or perennial, tufted grass, culms 10-120 cm tall, the mid-culm nodes are bearded.

### Inflorescence

The inflorescence is digitate or subdigitate with 2-10 plus racemes, 1.5-7 cm long. The racemes bases are brief. The lower glume of sessile spikelet has a distinct, sub-apical arch of long, fine, simple hairs. The pedicelled spikelet is sterile.



Sessile spikelet  
with sub-apical  
hairs

There are two subspecies found growing in Townsville.

Lower glume has hairs which are erect from surface; racemes usually 10 or more ..... *Dichanthium sericeum* subsp. *polystachyum*

Lower glume has hairs which are not erect from surface; racemes usually 6 or less..... *Dichanthium sericeum* subsp. *sericeum*

### Habitat

*Dichanthium sericeum* subsp. *polystachyum* - This species is found mainly in open wet grassland on wet soil

*Dichanthium sericeum* subsp. *sericeum* - This species is found in open grassland on clay soils.





# Digitaria

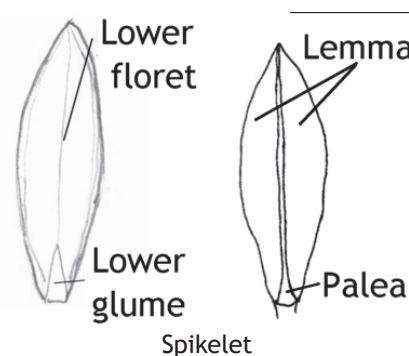
## Finger Grasses

From Latin *digitus* (finger) alluding to the digitate inflorescence and *aria* pertaining to.

Annuals or perennials, rhizomatous or stoloniferous or tufted or decumbent (sometimes sward forming). The inflorescence is digitate, subdigitate or a once-branched panicle. The spikelets are usually in groups of 2 or 3, the lower glume is absent or small and acute at the apex and the palea (the upper bract of the floret enclosing the flower) of the upper floret almost completely clasps the upper lemma (the outer bract of the floret).

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = 220, Australia = 41



Spikelets



Inflorescences

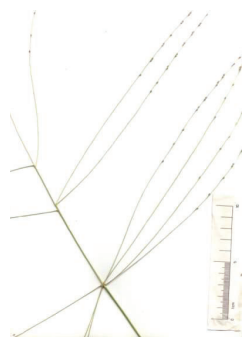
### Townsville species

<i>Digitaria ammophila</i>	Silky Umbrella Grass, Spider Grass
<i>Digitaria brownii</i>	Cotton Panic Grass
* <i>Digitaria ciliaris</i>	Summer Grass, Crab Grass
* <i>Digitaria didactyla</i>	Queensland Bluegrass
<i>Digitaria diffusa</i>	
* <i>Digitaria eriantha</i>	Pangola Grass
<i>Digitaria gibbosa</i>	
<i>Digitaria leucostachya</i>	
<i>Digitaria longiflora</i>	
<i>Digitaria minima</i>	
<i>Digitaria nematostachya</i>	
<i>Digitaria orbata</i>	
<i>Digitaria parviflora</i>	Smallflower Finger Grass
* <i>Digitaria violascens</i>	Purple Crabgrass



## Key to the species of *Digitaria*

1. Racemes all distinctly stalked; inflorescence 50 cm wide ..... 2
- Racemes mostly with spikelets to base ..... 3

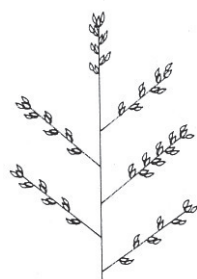


Racemes all distinctly stalked

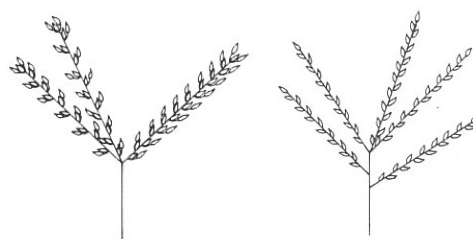


Racemes mostly with spikelets to base

2. Spikelets densely woolly-hairy ..... *Digitaria ammophila*
- Spikelets glabrous ..... *Digitaria nematostachya*
3. Spikelets with long hairs exceeding spikelet ..... 4
- Spikelets glabrous or hairy, if latter then hairs not exceeding spikelet ..... 6
4. Annual; inflorescence of 1 raceme ..... *Digitaria gibbosa*
- Perennials; inflorescence of more than 1 raceme ..... 5
5. Lower glume 1/4 - 1/2 spikelet length ..... *Digitaria brownii*
- Lower glume absent or a minute hyaline rim; common on beach ..... *Digitaria leucostachya*
6. Inflorescence a raceme or once-branched ..... 7
- Inflorescence digitate or subdigitate ..... 9



Inflorescence a raceme or once-branched



Inflorescence digitate or subdigitate

7. Racemes 0.7-3.5 cm long; habit decumbent ..... *Digitaria minima*
- Racemes 6-20 cm long; habit erect ..... 8
8. Lower glume absent; upper glume less than 1/2 of spikelet length ..... *Digitaria orbata*
- Lower glume present, small; upper glume subequal to spikelet length ..... *Digitaria parviflora*
9. Perennial with stolons often forming a dense tuft ..... *Digitaria didactyla*
- Perennial or annual tufted grass ..... 10
10. Spikelets usually arranged in 3s ..... 12
- Spikelets arranged in pairs ..... 11
11. Annuals; common weed in Townsville ..... *Digitaria ciliaris*
- Perennials; not a serious weed; it is utilized as a grass for grazing. .... *Digitaria eriantha*
12. Fertile floret purplish black at maturity; a weed in lawns ..... *Digitaria violascens*
- Fertile floret pale or brown at maturity; native uncommon ..... *Digitaria longiflora*

## ***Digitaria ammophila* - Silky Umbrella Grass, Spiker Grass**

### **Derivation**

*ammophila* - from the Greek *amos* (sand) and *phileo* (love); growing in sandy habitats.

### **Habit**

A perennial, tufted grass, the culms are 15-60 cm tall.

### **Inflorescence**

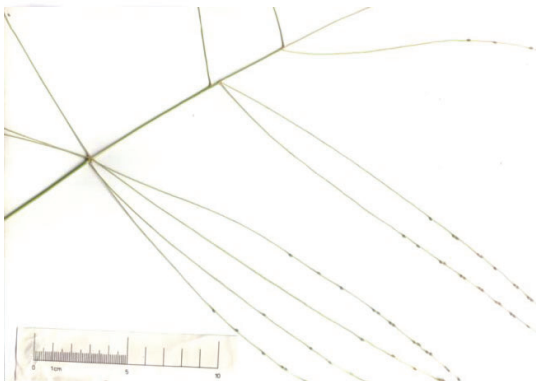
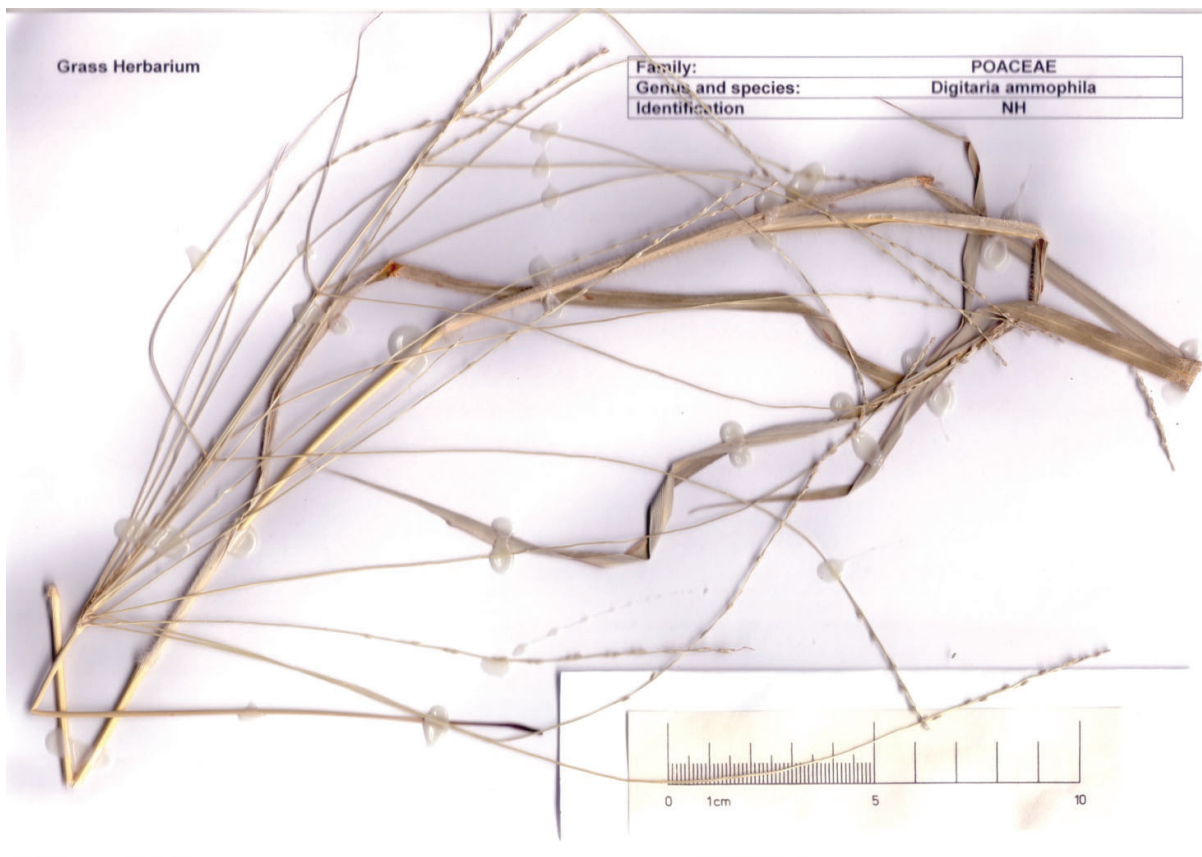
Inflorescence a once-branched panicle with racemose branches. Racemes 5-15, the lowest whorled, the primary branches are lacking spikelets on the basal portion. The spikelets are densely woolly-hairy.

### **Habitat**

This species grows in a range of habitats, usually grasslands or low open vegetation.



Spikelets



Partly of inflorescence

## ***Digitaria brownii* - Cotton Panic Grass**

### **Derivation**

*brownii* - in honour of Robert Brown (1773-1858), a Scottish-born English botanist.

### **Habit**

A perennial, tufted grass, the culms are 30- 100 cm tall.

### **Inflorescence**

A panicle of subdigitate, of 1-7 racemes, 5-18 cm long. The spikelets have long hairs, the lower glume is  $\frac{1}{4}$  -  $\frac{1}{3}$  the length of the spikelet.

### **Habitat**

This species grows in a range of habitats, forest, woodlands, shrublands, and grasslands.



Spikelet





## ***Digitaria ciliaris* - Summer Grass, Crab Grass**

### **Derivation**

*ciliaris* - from the Latin *cilium* (eyelid) and *-are* (pertaining to), the glumes or lemmas ciliate on nerves or margins.

### **Habit**

An annual grass, the culms are 10-100 cm tall.

### **Inflorescence**

The panicle is subdigitate, of 2-12 racemes, 6-22 cm long. The spikelets are hairy, the lower glume is 10%, and the upper glume is 60-75% of the length of spikelets.

### **Habitat**

This non-native species is common weed of cultivation, especially in gardens.



Spikelets



## ***Digitaria didactyla* - Queensland Bluegrass**

### **Derivation**

*didactyla* - from the Greek *dis* (twice) and *daktylos* (finger), the inflorescence of two racemes.

### **Habit**

A perennial, mat forming grass, the culms decumbent or prostrate, 10-60 cm, tall.

### **Inflorescence**

The panicle is digitate; the racemes are 2-4, 3-10 cm long. The spikelets are glabrous, 2-2.7 mm long. The lower glume is 10% of the length of the spikelet.



Spikelet

### **Habitat**

This non-native species grows as a lawn grass and now occurs in disturbed sites and is most competitive in moist sandy soils.



The stolon which form a dense tuft



## ***Digitaria eriantha*- Pangola Grass**

### **Derivation**

*eriantha* - from the Greek *erion* (wool) and *anthos* (flower), it has with hairy glumes, lemmas or awns.

### **Habit**

A perennial, tufted grass. the culms are 40-120 cm tall.

### **Inflorescence**

The panicle is digitate; the racemes are 3-41, 5-20 cm long. The spikelets are hairy, the lower glume is 10%, and the upper glume is 50-60% of the length of spikelets.



Spikelets

### **Habitat**

This non-native species grows relatively well in various soils, but grows especially well in moist soils. It is used for hay, grazing or silage.





## ***Digitaria gibbosa***

### **Derivation**

*gibbosa* - from the Latin *gibba* (swelling) and *-osa* (indicating abundance), the spikelets swollen asymmetrically.

### **Habit**

An annual, erect grass, the culms are 25-40 cm tall.

### **Inflorescence**

The panicle is a raceme, 4-18 cm long. The spikelets have long hairs, the lower glume is usually absent, the upper lemma is keeled (ridged like the keel of a boat).

### **Habitat**

This species grows in woodlands and coastal grasslands.



Spikelet



Inflorescence

## *Digitaria leucostachya*

### Derivation

*leucostachya* - from the Greek *leukos* (white) and *stachys* (ear of corn), the spikelets are white and sometimes invested with copious white hairs.

### Habit

A perennial, densely tufted grass, the culms are 40-100 cm tall.

### Inflorescence

The panicle is digitate or subdigitate, of 1-4 racemes, 12-25 cm long. The spikelets have long hairs, the lower glume is absent or a minute hyaline rim.

### Habitat

This species grows in sandy soils in coastal areas.



Spikelet



## ***Digitaria longiflora***

### **Derivation**

*longiflora* - from the Latin *longus* (long) and *flos* (flower), it has long spikelets.

### **Habit**

An annual or perennial, mat forming grass, the culms are 10-60 cm tall.

### **Inflorescence**

The panicle is digitate; the racemes are 2-4, 1-10 cm long. The spikelets are hairy, the lower glume is absent or obscure, and the upper glume is 100% of the length of spikelets. The fertile floret is pale or brown coloured.

### **Habitat**

This species occurs in diverse habitats.



Spikelets

Grass Herbarium

Family:	POACEAE
Genus and species:	<i>Digitaria longiflora</i>
Identification	NH





## *Digitaria minima*

### Derivation

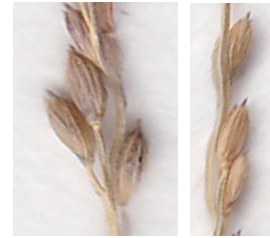
*minima* - Latin for least, the smallest of the known species.

### Habit

A perennial, decumbent grass, the culms are 30-60 cm tall.

### Inflorescence

Inflorescence a once-branched panicle with racemes, 0.7-3.5 cm long. The spikelets are glabrous; they are 1.2-1.55 mm long.



Spikelets

### Habitat

This species grows in woodlands.

Grass Herbarium



Family:	POACEAE
Genus and species:	<i>Digitaria minima</i>
Identification	

## ***Digitaria nematostachya***

### **Derivation**

*nematostachya* - from the Greek *nema* (thread) and *stachys* (ear of corn); the branches of panicle are thread-like.

### **Habit**

A perennial grass, the culms are 35-55 cm tall.

### **Inflorescence**

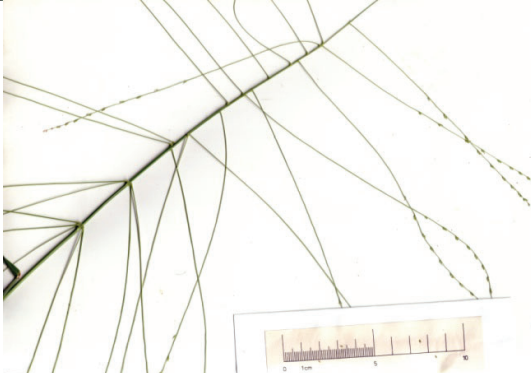
Inflorescence a once-branched panicle with racemose branches. Racemes 10-20, the lowest whorled, and the primary branches are lacking spikelets on the basal portion. The spikelets are glabrous.

### **Habitat**

This species grows in woodlands or grasslands.



Spikelets



Part of inflorescence

## *Digitaria orbata*

### Derivation

*orbata* - from the Latin *orbo* (deprive), the glumes are reduced or absent.

### Habit

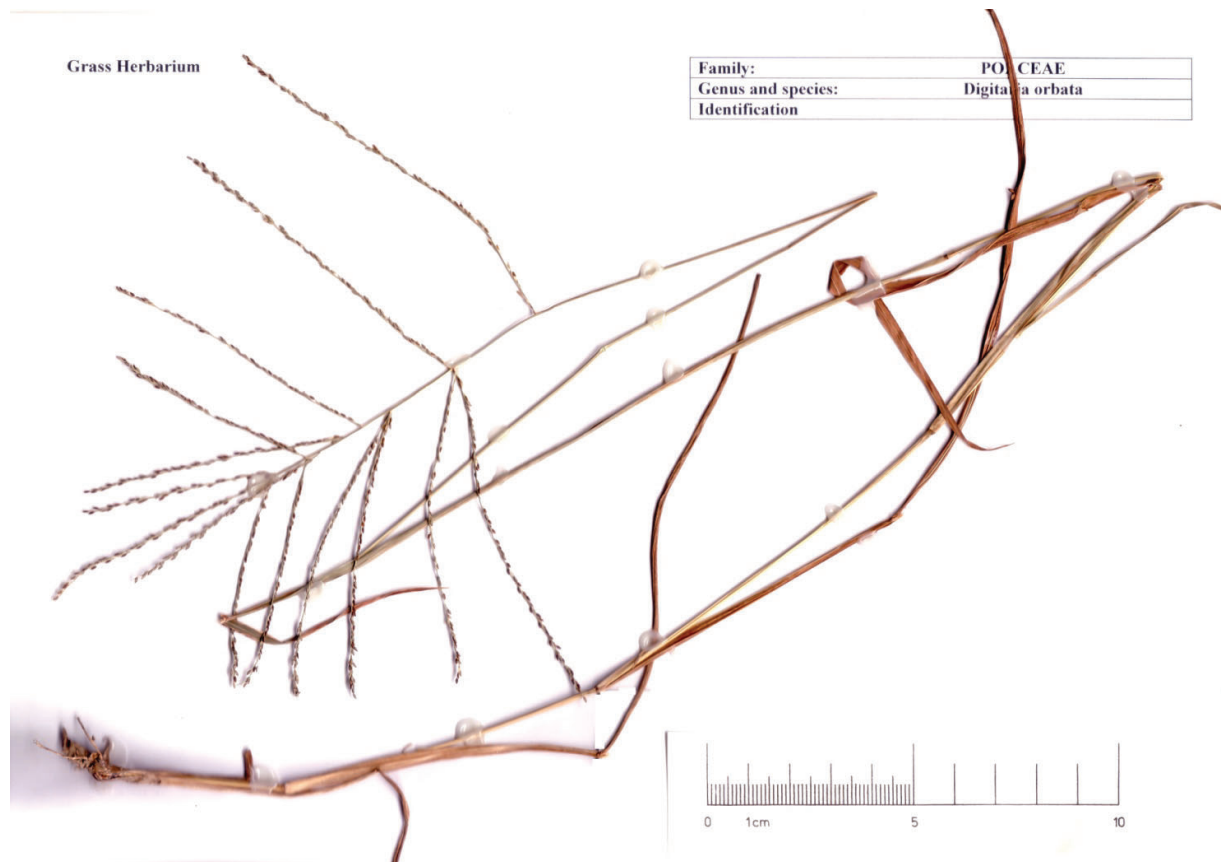
A perennial, tufted grass, the culms are 40-120 cm tall.

### Inflorescence

Inflorescence a once-branched panicle with racemes, 7-16 cm long. The spikelets are glabrous; they are 1.3-1.9 mm long. The lower glume is absent or obscure, the upper glume is 1/4 or less of the length of spikelet.

### Habitat

This species grows in a range of woodlands on a variety of soils.





## *Digitaria parviflora* - Smallflower Finger Grass

### Derivation

*parviflora* - from the Latin *parvus* (small) and *flos* (flower), the spikelets are small or with few florets.

### Habit

A robust, perennial grass, the culms are 40-90 cm tall.

### Inflorescence

Inflorescence a once-branched panicle with racemes, 6-20 cm long. The spikelets are glabrous; they are 1.6-2.1 mm long. The lower glume is 10-40% of length of spikelet; the upper glume is 100% of length of spikelet.

### Habitat

This species grows in coastal woodlands; it is common in shaded forests.



Spikelets  
(the lower glume on  
right)



## ***Digitaria violascens* - Purple Crabgrass**

### **Derivation**

*violascens* - Latin for 'becoming violet' (significance unknown).

### **Habit**

An annual, mat forming grass, the culms are 20-60 cm tall.

### **Inflorescence**

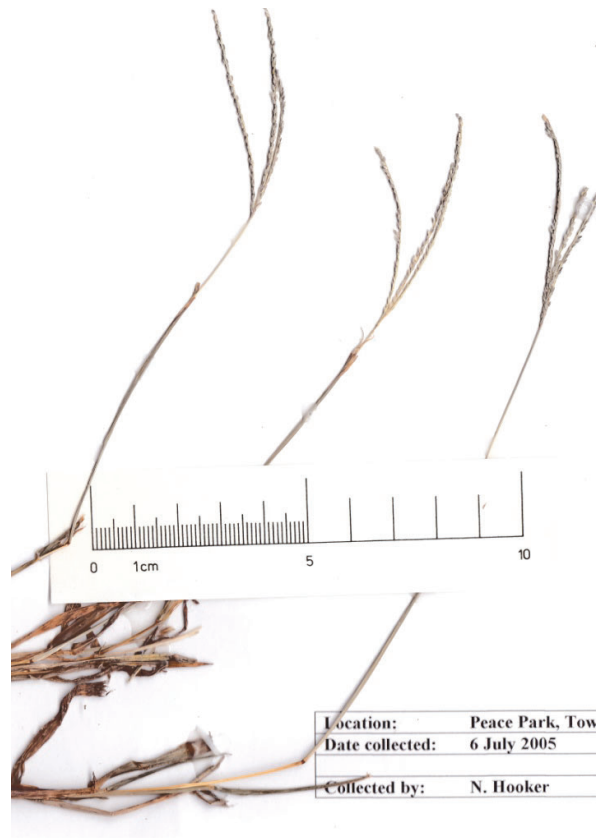
The panicle is digitate or subdigitate; the racemes are 2-6, 3-14 cm long. The spikelets are hairy, the lower glume is absent or obscure, and the upper glume is 80-90% of the length of spikelets. The fertile floret is purplish-black.

### **Habitat**

This non-native species prefers coarse-textured soils in disturbed habitats and woodland margins.



Spikelets



# Dinebra

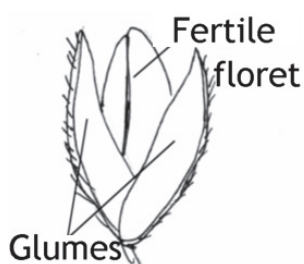
From Arabic *denab* (queue), alluding to the long inflorescence, or a corruption of Arabic *danaiba* (a little tail), alluding to acuminate glumes.

Annual or perennial, tufted to decumbent. The inflorescence is a raceme of numerous small spikes which become deflexed (bent or curving downward or backward) at maturity. The spikelets are laterally compressed. The spikelets are solitary and all similar with 1-several florets per spikelet; they are very similar to the genera *Diplachne* and *Eragrostis*. The species *Dinebra neesii* is usually a one-flowered spikelet and can be confused with *Sporobolus* species.

Subfamily: Chloridoideae; Tribe: Cynodonteae



*Dinebra decipiens*  
spikelet



*Dinebra neesii* spikelet



*Dinebra neesii*  
spikelets with one floret

## Townsville species

*Dinebra decipiens*

Slender Canegrass

*Dinebra neesii*

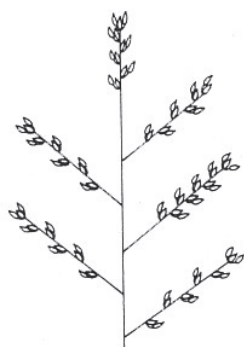
Swamp Grass



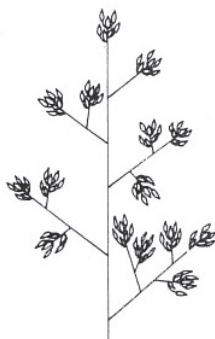


## Key to the species of *Dinebra* and similar species

1. Inflorescence a once-branched open panicle .....2
- Inflorescence a panicle with secondary branches.....4



Inflorescence once-branched



Inflorescence with secondary branches

2. Spikelets are laterally compressed .....3
- Spikelets are dorsally compressed ..... *Diplachne fusca*



Florets

Glumes



Spikelets laterally compressed (glumes and lemmas folded or rounded)



Florets

Glume



Spikelets dorsally compressed (glumes and lemmas flat)

3. Spikelets with one (or two) florets ..... *Dinebra neesii*
- Spikelets with 3-9 florets ..... *Dinebra decipiens*
4. Spikelets with one floret ..... *Sporobolus*
- Spikelets with three or more bisexual florets..... *Eragrostis*

## *Dinebra decipiens* - Slender Canegrass

### Derivation

*decipiens* - from the Latin *decipio* (deceive), it resembling another species, or in some other way deceptive.

### Habit

A perennial, tufted grass, the culms are erect and hollow to wiry, 15-150 cm tall.

### Inflorescence

The inflorescence is a once-branched open or dense. The panicle is 5-50 cm long with and the spikelets with 3-9 florets (2-8 fertile florets).

### Habitat

This species is common in the Brigalow zone and is associated with the margins swamps or creek and river banks.



## *Dinebra neesii* - Swamp Grass

### Derivation

*neesii* - in honour of Christian Daniel Nees von Esenbeck (1766-1858), German botanist.

### Habit

An annual or biennial grass, tufted, short-lived, the culms are erect and hollow, 60-150 cm tall.

### Inflorescence

The inflorescence is a once-branched open or dense panicle. The panicle is 20-40 cm and the spikelets with one (sometimes with two) florets (1 fertile floret).

### Habitat

Almost invariably, plants grow on cracking clay plains and floodplains, usually in gilgais and similar seasonally flooded depressions. In saline situations, the species is often associated with *Sporobolus virginicus*.



Inflorescence





# Diplachne

## Beetle Grasses

From the Greek *diplos* (double) and *achne* (scale), referring to the two-lobed lemma.

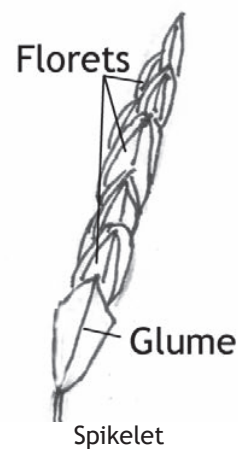
Annuals or perennials, tufted, culms erect, drooping in the upper parts. The inflorescence is a racemose once-branched panicle. The spikelets are solitary and all similar with several florets per spikelet, they are very similar to the genus *Eragrostis*. Lemmas are bifid or minutely notched, very shortly awned or mucronate.

Subfamily: Chloridoideae; Tribe: Cynodonteae

Species: World = c.18 , Australia = 1

### Townsville species

- |  |                     |
|--|---------------------|
| <i>Diplachne fusca</i> var. <i>fusca</i>       | Brown Beetle Grass  |
| * <i>Diplachne fusca</i> var. <i>uninervia</i> | Mexican Sprangletop |



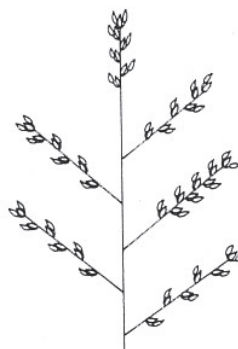
Part of a inflorescence

## Key to the species of *Diplachne* and similar species

1. Inflorescence a panicle with secondary branches ..... *Eragrostis*
- Inflorescence a once-branched open panicle ..... 2



Inflorescence with  
secondary branches



Inflorescence once-  
branched

2. Spikelets are laterally compressed ..... *Dinebra*
- Spikelets are dorsally compressed ..... 3



Florets

Glumes



Spikelets laterally compressed (glumes  
and lemmas folded or rounded)



Florets

Glume



Spikelets dorsally compressed (glumes  
and lemmas flat)

3. Perennial 40-150 cm tall, spikelets 5-13 flowered; lemma of various colours; native common .....  
..... *Diplachne fusca* var. *fusca*

Annual or biennial to 70 cm tall, spikelets 4-6 flowered; lemma dark green or lead coloured;  
non-native not common ..... *Diplachne fusca* var. *uninervia*

## ***Diplachne fusca* var. *fusca* - Brown Beetle Grass**

### **Derivation**

*fusca* - Latin for dark or swarthy, the glumes or lemmas are dark-brown.

### **Habit**

An erect, tufted perennial or sometimes annual grass, the culms are 25-150 cm tall.

### **Inflorescence**

A panicle of racemes, it is usually fewer than 30 branches. The lemma apex usually acute or acuminate, notched or not, mucronate or not; lemma is usually generally not dark green or lead coloured; the lemma is pubescent or silky about midnerve.

### **Habitat**

This native species is usually in or near water or in depressions, it is salt-tolerant. It flowers usually after rain.



*Diplachne fusca* var. *fusca*



## *Diplachne fusca* var. *uninervia* - Mexican Sprangletop

### Derivation

*uninervia* - from the Latin *unus* (one) and *nervus* (nerve).

### Habit

An annual or biennial, sparingly branched grass, the culms 5-70 cm tall.

### Inflorescence

A panicle of racemes, often greater than 30 branches. The lemma apex obtuse to truncated, often notched and mucronate; lemma is dark green or lead coloured.

### Habitat

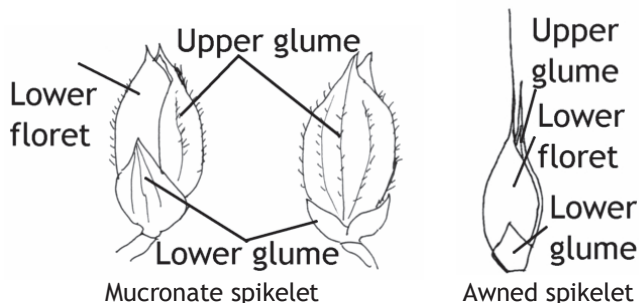
This non-native species grows in disturbed areas.



# Echinochloa

From Greek *echinos* (hedgehog) and *chloe* (grass), alluding to the echinate (with prickles) inflorescence branches.

Annuals or perennials, tufted or decumbent. Ligule (an outgrowth on the inside of the leaf blade/leaf sheath junction) absent or present. The inflorescence is a once-branched or contracted panicle. The spikelets are solitary or clustered, sometimes in distinct rows, awned, mucronate (a sharp, abrupt terminal point) or awnless. The glume and lower lemma usually have stiff, bristly hairs.



Members of this genus are usually found in wet habitats and along roadsides.

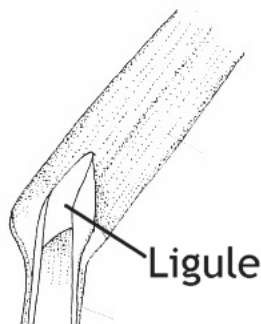
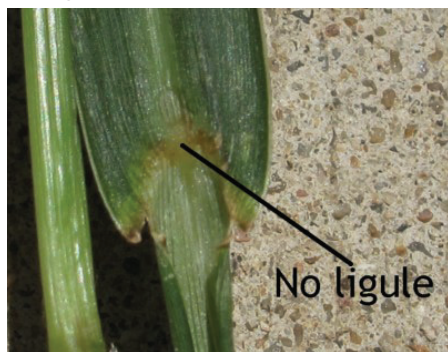
Subfamily: Panicoideae; Tribe: Paniceae  
Species: World = 30-40, Australia = 19

## Townsville species

* <i>Echinochloa colona</i>	Awnless Barnyard Grass
* <i>Echinochloa crus-galli</i>	Barnyard Grass
* <i>Echinochloa esculenta</i>	Japanese Millet
* <i>Echinochloa polystachya</i>	Aleman Grass

## Key to the species of *Echinochloa*

- Plants perennial; ligule a fringe of long stiff hairs. .... *Echinochloa polystachya*  
Plants annual; ligule absent ..... 2



- Spikelets 1.5-3 mm long..... *Echinochloa colona*  
Spikelets 3-4 mm long ..... 3
- Racemes simply spaced..... *Echinochloa crus-galli*  
Racemes closely spaced ..... *Echinochloa esculenta*



Racemes simply spaced



Racemes closely spaced



## ***Echinochloa colona* - Awnless Barnyard Grass**

### **Derivation**

*colona* - Latin for colonist, it was planted as a cereal.

### **Habit**

An annual, tufted grass, the culms are 10-100 cm tall. It does not have a ligule.

### **Inflorescence**

The inflorescence is once-branched panicle; the central axis is 1-15 cm. The spikelets are 4-rowed. The spikelets are 15-3 mm long.

### **Habitat**

This non-native species is a weed in waste areas, agricultural lands, along stream banks and around waterholes.



Spikelets





## ***Echinochloa crus-galli* - Barnyard Grass**

### **Derivation**

*crus-galli* - from the Latin *crus* (foot) and *gallus* (cock), the panicle resembles a cock's foot.

### **Habit**

An annual, tufted grass, the culms are 25-150 cm tall. It does not have a ligule.

### **Inflorescence**

The inflorescence is a once-branched panicle; the central axis is 2-10 cm. The spikelets are 2-4-rowed. The spikelets are 3-4 mm long.

### **Habitat**

This non-native species is a weed in waste areas, agricultural lands, along stream banks and around waterholes.



Spikelets





## ***Echinochloa esculenta* - Japanese Millet**

### **Derivation**

*esculenta* - Latin for edible, the grain is edible.

### **Habit**

An annual, erect grass, the culms are 30-150 cm tall. It does not have a ligule.

### **Inflorescence**

The inflorescence is a once-branched panicle; the central axis is 7-20 cm long. The spikelets are 4-6-rowed. The spikelets are 3-4 mm long.

### **Habitat**

This non-native species is used as a soil stabilizer, often found on roadsides.



Spikelets



Nanette Hooker





## ***Echinochloa polystachya* - Aleman Grass**

### **Derivation**

*polystachya* - from the Greek *polys* (many) and *stachys* (ear of corn), the grass has many-branched culms or inflorescences.

### **Habit**

A perennial, decumbent, aquatic or semi-aquatic grass, the culms are 100-300 cm tall. The ligule is a rim of stiff, yellow hairs.

### **Inflorescence**

The inflorescence is a once-branched panicle; the central axis is 15-30 cm long. The spikelets are 4-rowed. The spikelets are 4.5-6 mm long.

### **Habitat**

This non-native species was introduced to Queensland as a ponded pasture due to its palatability and it has now invaded seasonally flooded areas, swamps, lakeshores and rivers due to its ability to grow in deep water, and reproduce vegetatively.

The cultivar 'Amity' commonly planted in Queensland differs from the species norm, in having flowering culms 100-200 cm long,





# Ectrosia

From the Greek *ectrosis* (miscarriage), referring to the spikelets with only 1 or 2 basal bisexual flowers, with male or empty lemmas above them.

Tufted annuals and perennials. The inflorescence is an open or contracted panicle, sometimes reduced to a few racemes. The spikelets are solitary with 4 or more florets. This genus is readily recognised by the modification of its upper florets into a dispersal device.

Subfamily: Chloridoideae; Tribe: Cynodonteae  
Species: World = 14, Australia = 14 (including the genus *Planichloa*)

## Townsville species

*Ectrosia lasioclada*

*Ectrosia leporina* Hare's Foot Grass



Spikelet, the upper sterile florets act as a dispersal device



Spikelet (not with glumes) of *Ectrosia lasioclada*

## Key to the species of *Ectrosia*

Florets 2-9, lower bisexual or male, upper sterile; awns up to 12 mm long ..... *Ectrosia leporina*

Florets 8-25, all similar, mainly bisexual; awns 0.5-1.5 mm long (not common in Townsville)

..... *Ectrosia lasioclada*



Inflorescences

## *Ectrosia lasioclada*

### Derivation

*lasioclada* - from the Greek *lasios* (shaggy) and *klados* (branch), the leaf-sheaths are hairy.

### Habit

The grass is usually perennial, sometimes annual; the culms are 40-90 cm tall.

### Inflorescence

The inflorescence is a compound panicle, 5-20 cm long. The lemmas awns are usually short and do not increase in length.

### Habitat

This species is mainly on sandy soils on the edge of clay plains, in savanna woodland or forest.

*Ectrosia lasioclada* is the most distinctive species; sometimes it is put in the *Eragrostis* or *Ectrosiopsis* genus.



Spikelet (not with glumes) of *Ectrosia lasioclada*



## ***Ectrosia leporina* - Hare's Foot Grass**

### **Derivation**

*leporina* - from the Latin *lepus* (hare) and *-ina* (belonging to), which refers to the inflorescence which resembles a hare's foot.

### **Habit**

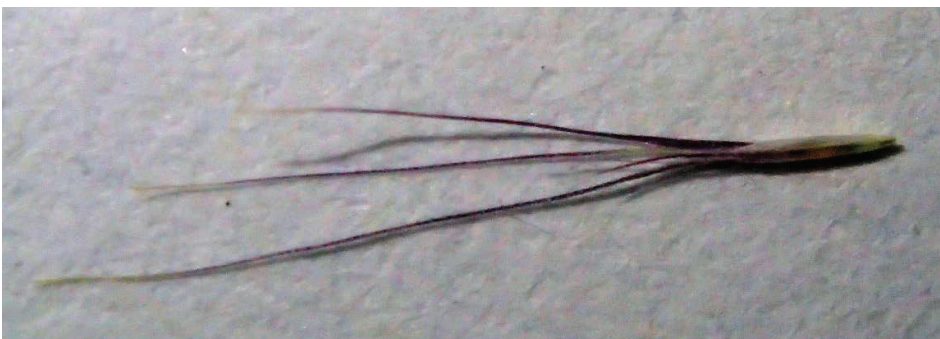
This grass is a slender annual, the culms are 10 to 90 cm tall.

### **Inflorescence**

The mature inflorescence is green-purple and has a “furry” appearance, hence its common name. The inflorescence is very dense and is 5-15 cm long

### **Habitat**

This species grows in sandy soils and in open forest.





# Eleusine

*Eleusis* was named after the Greek town where Demeter, the Greek goddess of agriculture was worshipped, and the Eleusinian festivals, concerning the mysteries of the growth of corn, were celebrated.

Tufted annuals or perennials. The inflorescence is digitate or subdigitate. The spikelets are overlapping in two rows on the underside of the rachis; each spikelet contains 3 or more bisexual florets.

*Eleusine* species are mostly from Africa; the species *Eleusine coracana* (finger millet) is grown in Africa for human food and for making beer.

Subfamily: Chloridoideae; Tribe: Cynodonteae

Species: World = 9, Australia = 3

## Townsville species

*Eleusine indica* Crowsfoot Grass



Spikelets



## Key to the species of *Eleusine indica* and similar species

Axis of each raceme ending with a spikelet ..... *Eleusine indica*  
 Axis of each raceme ending in a point ..... *Dactyloctenium*



Axis of each raceme ending with a spikelet



Axis of each raceme ending in a point

## ***Eleusine indica* - Crowsfoot Grass**

### **Derivation**

*indica* - from India.

### **Habit**

An annual or perennial, erect, prostrate or geniculate, the culms 15-90 cm tall.

### **Inflorescence**

The inflorescence is subdigitate or digitate; it is made up of usually 2-6 digitate racemes at the apex, usually with 1 raceme inserted lower on the culm.

### **Habitat**

A non-native species is usually a weed of roadsides, waste ground and cultivated land.



Spikelets



Inflorescence



# Elionurus

From the Greek *eleuein* (to roll) and *oura* (tail) alluding to the spike-like racemes curling strongly when old.

Tufted perennials, occasionally annuals, leaves sometimes aromatic. The inflorescence is a single raceme or a series of racemes which are subtended by spathe-like leaf sheaths. The spikelets are in pairs, one sessile and one pedicelled.

Subfamily: Panicoideae; Tribe: Andropogoneae

Species: World = 15, Australia = 1

## Townsville species

*Elionurus citreus*      Lemon-scented grass

This species could be confused with *Eremochloa bimaculata*, *Hemarthria uncinata*, *Lepturus repens* and *Mnesithea rottboellioides*. Check the key on page 18.





## ***Elionurus citreus* - Lemon-scented grass**

### **Derivation**

*citreus* - Latin for pure yellow, spikelets invested in yellow hairs.

### **Habit**

An erect, slender perennial grass, the culms 50-100 cm tall. When the leaves are crushed, they give off a lemon scent. *Cymbopogon* is another grass genus with lemon-scented leaves.

### **Inflorescence**

The inflorescence is a raceme or a series of simple racemes covered with white hairs, the spathes below the racemes are not obvious. When the spikelets mature, the pedicelled spikelet sticks out at right angles to the raceme giving it a distinctive appearance. The lower glume of the sessile spikelet is often asymmetrical; the apex is drawn out and forked at the tip.

### **Habitat**

This species grows in sandy soil along rivers and in coastal areas and sand dunes.



Inflorescence

# Elytrophorus

From the Greek *elytron* (sheath or husk) and *phero* (to bear), referring to the large outer glume.

Tufted annuals. The inflorescence is a panicle of dense globular clusters borne at intervals along the central axis. The spikelets are strongly laterally compressed with 2-7 bisexual florets. The lemmas are awned.

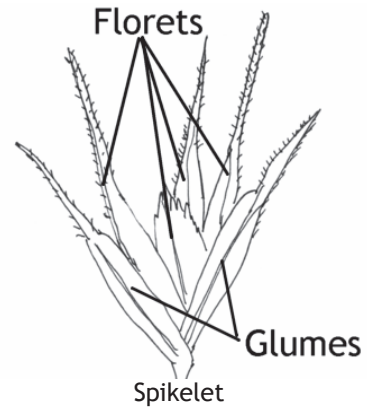
Subfamily: Danthonioideae; Tribe: Danthonieae

Species: World = 2-4, Australia = 1

*Elytrophorus spicatus* is the only Australian species from this genus.

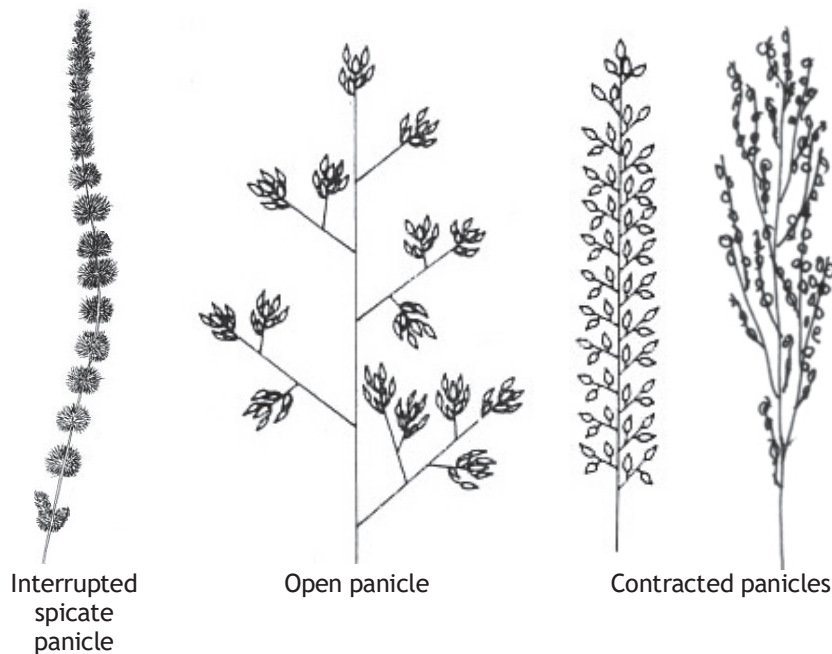
Townsville species

*Elytrophorus spicatus* Spikegrass



## Key to the species of *Elytrophorus* and similar species

1. Inflorescence an interrupted spicate panicle ..... *Elytrophorus spicatus*
- Inflorescence an open or contracted panicle ..... 2



2. Inflorescence a contracted panicle; spikelets with one or two basal bisexual flowers, with male or empty lemmas above them, the upper lemmas reduced to awns..... *Ectrosia*
- Inflorescence an open panicle, spikelets with two bisexual florets only ..... *Eriachne*

## ***Elytrophorus spicatus* - Spikegrass**

### **Derivation**

*spicatus* - from the Latin *spica* (thorn) and *-ata* (possessing), refers to the inflorescence which is a spike or spicate panicle.

### **Habit**

A tufted annual grass, the culms are unbranched, arising from the base, 10-40 cm tall.

### **Inflorescence**

The inflorescence is a distinctly interrupted spicate panicle; it is often  $\frac{3}{4}$  or more of the entire culm. The panicle is 15-35 cm long and 0.5-0.8 cm wide. The spikelets are numerous in dense clusters; each one spikelet has 5-7 florets.

### **Habitat**

This species occurs on clay soils, they are found in damp soils along creeks and damp hollows and seepages.



Inflorescence



# Enneapogon

## Nineawn Grasses

From the Greek *ennea* (nine) and *pogon* (beard), alluding to the nine, plumose lemma awns.

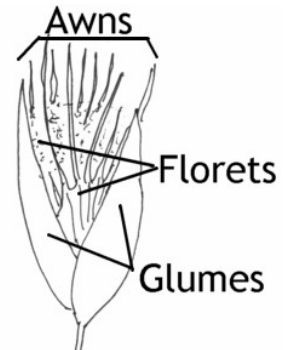
Tufted perennials or annuals. The inflorescence is a spicate panicle (a spike-like panicle with short branches). The spikelets are solitary. The genus is readily recognised by the nine-awned lemmas and with each spikelet having 2 or more florets. The spreading awns form an attractive circular arrangement.

Species from this genus grow in a variety of habitats, from riverbeds to rocky slopes.

Subfamily: Chloridoideae; Tribe: Pappophoreae  
Species: World = 30, Australia = 16

### Townsville species

<i>Enneapogon lindleyanus</i>	Nineawn Grass
<i>Enneapogon nigricans</i>	Black-heads
<i>Enneapogon polyphyllus</i>	Leafy Nineawn
<i>Enneapogon robustissimus</i>	Nineawn Grass
<i>Enneapogon truncatus</i>	
<i>Enneapogon virens</i>	



Spikelet

### Key to the species of *Enneapogon*

1. Body of basal lemma with appressed hairs on its entire surface ..... *Enneapogon virens*  
Body of basal lemma totally covered by long, erect or spreading hairs or partly glabrous ..... 2
2. Body of basal lemma obscured by dorsal hairs which exceed base of awns ..... *Enneapogon polyphyllus*  
Body of basal lemma partly exposed as dorsal hairs do not or scarcely reach base of awns ..... 3
3. Panicle less than 4.0 cm long ..... *Enneapogon lindleyanus*  
Panicle usually more than 4.0 cm..... 4
4. Palea longer than of its lemma by about 1 mm..... *Enneapogon truncatus*  
Palea similar in length to body of its lemma ..... 5
5. Culms pubescent; panicle linear-oblong ..... *Enneapogon nigricans*  
Culms glabrous; ; panicle ovate or pyramidal..... *Enneapogon robustissimus*



## ***Enneapogon lindleyanus* - Nineawn Grass**

### **Derivation**

*lindleyanus* - is from John Lindley (1799-1856), an English botanist.

### **Habit**

A perennial or annual, tufted grass, culms 10-65 cm tall.

### **Inflorescence**

The inflorescence is a spicate panicle, 0.5-2.5 cm long, 0.5-1 cm wide (including awns). The spikelet has 3-5 florets (usually 1 bisexual). It is characterised by small, compactly capitate inflorescence.

### **Habitat**

This species usually grows on hills.





## ***Enneapogon nigricans* - Black-heads**

### **Derivation**

*nigricans* - from the Latin *nigrico* (become blackish), becoming black with maturity, usually of spikelets.

### **Habit**

A perennial, tufted grass, the culms are 30-70 cm tall.

### **Inflorescence**

The inflorescence is a spicate panicle, 0.8-9.5 cm long, 0.8-2.8 cm wide (including awns). The spikelet has 3-5 florets (1 bisexual). The body of basal lemma partly exposed as dorsal hairs do not or scarcely reach base of awn. The glumes apices are obtuse to acuminate.

### **Habitat**

This species is uncommon in Townsville; it has been collected in 1935 from Magnetic Island. It grows in a wide range of communities, often on red and red-brown earths.

*Enneapogon nigricans* is easily misidentified, for the species is variable and lacks any obvious characteristic. Recognition is dependent chiefly on a combination of morphological characters in its fertile floret.

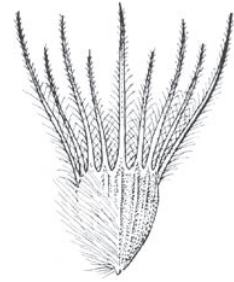


Photo taken from  
<http://plantnet.rbgsyd.nsw.gov.au/>





## *Enneapogon polyphyllus* - Leafy Nineawn

### Derivation

*polyphyllus* - from the Greek *polys* (several) and *phyllon* (leaf), the culms many-leaved in comparison with related species.

### Habit

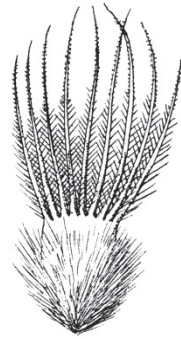
A perennial or annual, tufted grass, culms 3-50 cm tall. The leaf blades are involute or convolute.

### Inflorescence

The inflorescence is a spicate panicle, linear, mostly 4-9 cm long, 1-2 cm wide (including awns). The spikelet has 4-6 (1 bisexual), the 4<sup>th</sup> and 5<sup>th</sup> floret are reduced to lemma and reflexed or horizontal. The body of basal lemma totally covered by long, erect or spreading hairs or partly glabrous. The glumes apices are acute or mucronate.

### Habitat

This species grows mainly on sandy or loamy red earth soils.



## ***Enneapogon robustissimus* - Nineawn Grass**

### **Derivation**

*robustissimus* - Latin for most robust, the culms are very tall for the genus.

### **Habit**

A perennial, tufted grass, culms 30-110 cm tall.

### **Inflorescence**

The inflorescence is a spicate panicle; it is often pyramidal shape, 1.5-10 cm long, 1.5-2.5 cm wide (including awns). The spikelet has 3-5 florets (1 bisexual)

### **Habitat**

This species grow on sandy soils, near creeks and in gullies on rocky hills.



Spikelet drawings from (Gardner 1952; Mallett 2005; Jessop *et al.* 2006; Jacobs *et al.* 2008)

Gardner, CA (1952) 'Flora of Western Australia Vol. 1, Gramineae Part 1.' (Government Printer: Perth)

Jacobs, SWL, Whalley, RDB, Wheeler, DJB (2008) 'Grasses of New South Wales (Fourth Edition).' (University of New England: Armidale)

Jessop, J, Dashorst, GRM, James, FM (2006) 'Grasses of South Australia.' (Wakefield Press: Kent Town, South Australia)

Mallett, K (Ed.) (2005) 'Flora of Australia Volume 44B, Poaceae 3.' (ABRS/CSIRO Publishing: Melbourne)

# Enteropogon

## Windmill Grasses

From the Greek *enteron* (intestine) and *pogon* (a beard), perhaps alluding to the beards on the callus or in the axils of the spikes.

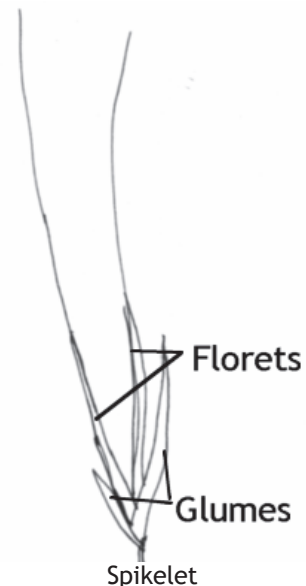
Tufted perennials. The inflorescence is a simple spike or many spikes arranged digitately and spreading at maturity. The spikelets are solitary, dorsally compressed with 2-3 florets and arranged on one side of the spikes. The lemmas are awned.

*Enteropogon* is closely related and easily confused with the genera *Chloris* and *Oxychloris*. The genus *Chloris* also has a superficial similarity to the genus *Pseudopogonatherum*.

Subfamily: Chloridoideae; Tribe: Cynodonteae  
Species: World = 11, Australia = 6

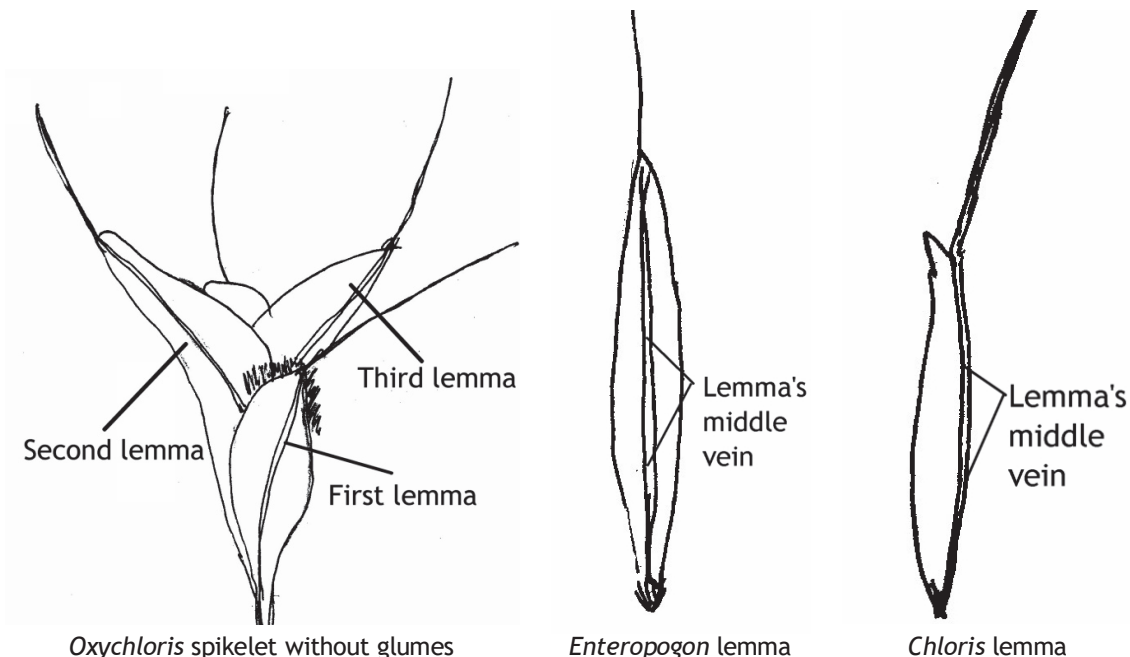
### Townsville species

*Enteropogon ramosus*      Curly Windmill Grass



### Key to the species of *Enteropogon* and similar species

1. Second and third lemmas very broad, sharply recurved at maturity (wing-like)..... *Oxychloris scariosa*  
Lemmas not very broad, not wing-like..... 2
2. Lowest lemma dorsally compressed (lying on front or back when placed on a flat surface)..... *Enteropogon ramosus*  
Lowest lemma laterally compressed (lying on the side when placed on a flat surface) ..... *Chloris*





## *Enteropogon ramosus* - Curly Windmill Grass

### Derivation

*ramosus* - from the Latin *ramus* (branch) and *-osa* (abundance), referring to the much branched inflorescences or culms.

### Habit

A robust, tufted, perennial grass, the culms are 30-100 cm tall.

### Inflorescence

The inflorescence is digitate or subdigitate with 2-10 branches, erect or spreading, 5-15 cm long.

### Habitat

This species grows on sandy loams, red earths and skeletal soils. It is chiefly in arid or semi-arid regions.

*Enteropogon ramosus* florets are like *Chloris pectinata*, *Enteropogon ramosus* lowest lemma is dorsally compressed.



Spikelet without glumes



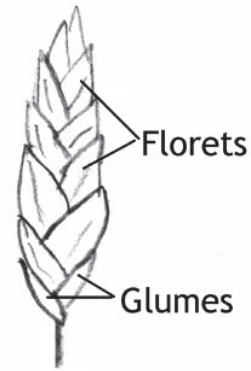
Inflorescence

# Eragrostis

## Lovegrasses

There are several possible derivations of the name of which the three following are the most common, all are from the Greek. 1. *eros* (love) and *agrostis* (a grass). 2. *er* (early), because many species are pioneer invaders of bare ground. 3. *eri* (to strengthen a noun), that is a many flowered *Agrostis*.

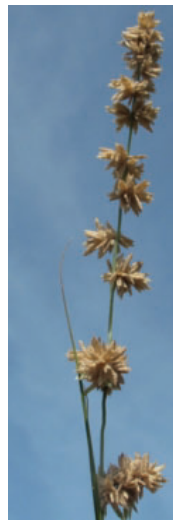
Annuals or perennials, tufted or decumbent or stoloniferous. The inflorescence is an open or contracted panicle with secondary branching. The spikelets are solitary. The genus is characterised by its usually numerous, identical florets (3 or more), and some species have persistent paleas. The photograph to the right shows the persistent paleas at the base of the spikelet.



Spikelet

Species of *Eragrostis* are commonly early invaders of arable land, are often on poor or sandy soils or disturbed ground. There are 25 species in Townsville.

Subfamily: Chloridoideae; Tribe: Cynodonteae  
Species: World = c. 350, Australia = 73



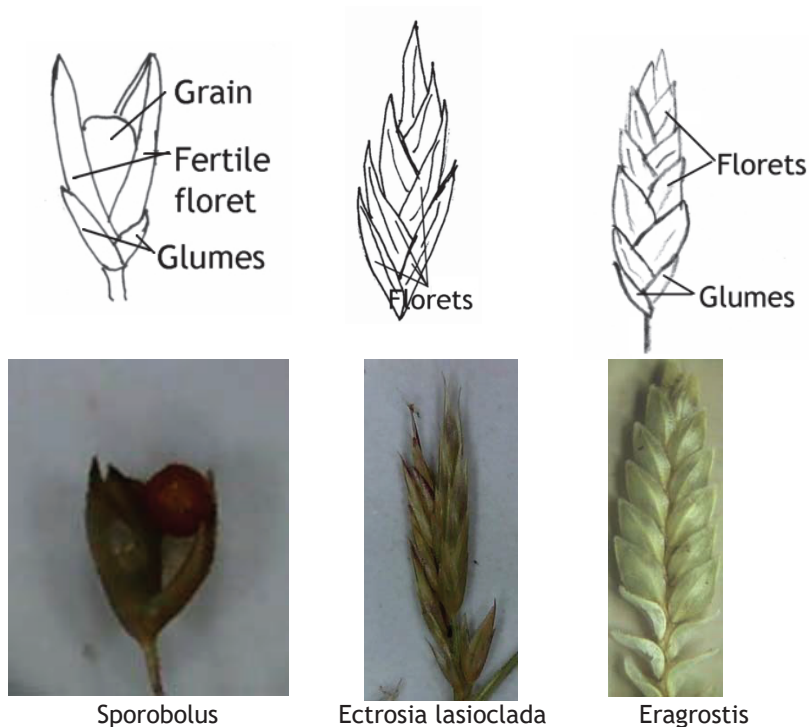
Inflorescences

## Townsville species

<i>Eragrostis basedowii</i>	Neat Lovegrass
<i>Eragrostis brownii</i>	Brown's Lovegrass
* <i>Eragrostis cilianensis</i>	Stinking Lovegrass
<i>Eragrostis cumingii</i>	Cuming's Lovegrass
* <i>Eragrostis curvula</i>	African Lovegrass
<i>Eragrostis dielsii</i>	Mallee Lovegrass
<i>Eragrostis elongata</i>	Clustered Lovegrass
<i>Eragrostis exigua</i>	Delicate Lovegrass
<i>Eragrostis fallax</i>	
<i>Eragrostis interrupta</i>	
<i>Eragrostis lacunaria</i>	Purple Lovegrass
<i>Eragrostis leptostachya</i>	Paddock Lovegrass
* <i>Eragrostis mexicana</i>	Mexican Lovegrass
* <i>Eragrostis minor</i>	Small Stinkgrass
<i>Eragrostis parviflora</i>	Weeping Lovegrass
* <i>Eragrostis pilosa</i>	Soft Lovegrass
<i>Eragrostis pubescens</i>	
<i>Eragrostis schultzei</i>	
<i>Eragrostis sororia</i>	
<i>Eragrostis spartinoides</i>	
<i>Eragrostis stenostachya</i>	
* <i>Eragrostis tenella</i>	Delicate Lovegrass
<i>Eragrostis tenellula</i>	Delicate Lovegrass
* <i>Eragrostis tenuifolia</i>	Elastic Grass
<i>Eragrostis unioloides</i>	

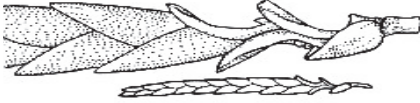




## Key to the species of *Eragrostis* and similar species

1. Spikelets with one floret ..... *Sporobolus*  
Spikelets with three or more florets ..... 2
2. Lemmas with blunted apex ..... *Eragrostis*  
Lemmas with pointed apex ..... *Ectrosia lasioclada*





## Key to Groups in Australian *Eragrostis*

	Group 1	Group 2	Group 3	Group 4	Group 6
Disarticulation	base upwards	base upwards	base upwards	base upwards	apex downwards
Rachilla	rachilla persistent (not developing joints)	rachilla persistent (not developing joints)	rachilla semi persistent (becoming jointed after florets mature)	rachilla persistent (not developing joints)	
					
Lemma	deciduous	deciduous	deciduous	deciduous	deciduous
Palea	persistent	persistent	persistent	deciduous	deciduous
Spikelet compression	terete, biconvex, or turgid	lateral	lateral	lateral	lateral
Special features	lemma falling with grain	lemma falling with grain	palea falling with rachilla segment	lemma & palea falling together	commonly with 2 stamens
Townsville species	<i>E. dielsii</i> <i>E. lacunaria</i>	<i>E. cilianensis</i> <i>E. curvula</i> <i>E. interrupta</i> <i>E. leptostachya</i> <i>E. mexicana</i> <i>E. pubescens</i> <i>E. minor</i> <i>E. tenuifolia</i>	<i>E. cumingii</i> <i>E. fallax</i> <i>E. schultzei</i> <i>E. spartinooides</i> <i>E. stenostachya</i>	<i>E. parviflora</i> <i>E. pilosa</i> <i>E. unioides</i>	<i>E. basedowii</i> <i>E. brownii</i> <i>E. elongata</i> <i>E. exigua</i> <i>E. sororia</i> <i>E. tenella</i> <i>E. tenellula</i>

These groups and the drawings are taken from Flora of Australia Volume 44B Poaceae 3

## Key to species of *Eragrostis* in the groups

### Group 1

- Inflorescence a contracted or spiciform panicle, sometimes a raceme or spike; spikelets sessile or subsessile ..... *Eragrostis dielsii*  
 Inflorescence usually open panicle; spikelets pedicellate ..... *Eragrostis lacunaria*

### Group 2

1. Spikelets never more than 10 mm long and never more than 16-flowered ..... 2  
 At least some of the spikelets more than 10 mm long or more than 16-flowered, or both ..... 3
2. Leaf blade 5-10 mm wide; lemma acute ..... *Eragrostis mexicana*  
 Leaf blade to 4mm wide; lemma obtuse ..... *Eragrostis curvula*
3. Plants with distinct glands on culms, division of the panicle, leaves, glumes or lemma ..... 4  
 Plants eglandular or sometimes sparsely and faintly glandular ..... 6
4. Perennial, not aromatic ..... *Eragrostis leptostachya*  
 Annual, often aromatic ..... 5
5. Spikelets 2-4 mm wide ..... *Eragrostis cilianensis*  
 Spikelets 1-2 mm wide ..... *Eragrostis minor*
6. Palea with flaps (at their widest point) wider than or almost as wide as the body .....  
 ..... *Eragrostis tenuifolia*  
 Palea with flaps (at their widest point) distinctly narrower than body ..... 7
7. Panicles contracted or spiciform, 1-1.5 cm wide; palea keels with spiny hairs for part of all their length ..... *Eragrostis interrupta*  
 Panicles open or contracted, 4 cm or more wide; palea keels smooth or scaberulous for some or all of their length ..... *Eragrostis pubescens*

### Group 3

1. Rachilla straight, rarely weakly flexuose ..... *Eragrostis cumingii*  
 Rachilla distinctly wavy, zig-zagged or flexuose ..... 2
2. Palea  $\frac{1}{2}$  -  $\frac{3}{4}$  as long as its lemma ..... 3  
 Palea  $\pm$ equal to its lemma in length ..... 4
3. Spikelets 2-5 mm wide; lemma 2.3 mm long or more ..... *Eragrostis fallax*  
 Spikelets 1-2.4 mm wide; lemma to 2.3 mm long ..... *Eragrostis schultzei*
4. Lemma apex obtuse ..... *Eragrostis spartinoides*  
 Lemma apex acute or acuminate ..... *Eragrostis stenostachya*

### Group 4

1. Stamens 2 ..... *Eragrostis unioloides*  
 Stamens 3 ..... 2
2. Florets persistent or lemma falling first; lemma  $\pm$ hyaline; grain strongly compressed, narrowly quadrangular ..... *Eragrostis pilosa*  
 Florets falling entire; lemma usually membranous; grain terete to trigonous or sometime quadrangular ..... *Eragrostis parviflora*

## Group 6

1. Spikelets shorter than wide to twice as long as wide, 0.8-2.5 mm long, 0.5-4 mm wide, with 3-9 florets .....2  
Spikelets distinctly longer than wide (usually much more than twice as long), 2-37 (-40) mm long, 0.5-5 mm wide, with 3-64 florets (usually more than 6). .....3
2. Ligule a membrane (often fimbriate), 0.3-0.5 mm long; inflorescences 18-36 cm long ..... *Eragrostis exigua*  
Ligule a fringe of hairs, 0.2-0.3 mm long; inflorescences 3.5-14 cm long ..... *Eragrostis tenella*
3. Palea keels short, dividing palea apex into 3 lobes ..... *Eragrostis tenellula*  
Palea keels not dividing palea apex into 3 lobes .....4
4. Rachilla usually straight, rarely weakly flexuose ..... *Eragrostis basedowii*  
Rachilla distinctly wavy, zig-zagged or flexuose .....5
5. Panicles contracted to open; stamens 2 or 3; spikelets pedicellate ..... *Eragrostis brownii*  
Panicles often spiciform (sometimes open); stamens usually consistently 2; spikelets sessile or almost so .....6
6. Spikelets 6-17 (-30) mm long, 2-3.8 mm wide, 13-38 (-64) flowered; glumes 1.8-3 mm long; inflated, gibbous near base; palea hyaline to membranous, smooth, with body usually orbicular and pouched; anthers 0.3-0.6 mm long ..... *Eragrostis sororia*  
Spikelets 3-12 (-20) mm long, 1.5-2.5 mm wide, 6-27 flowered; glumes 1-2 mm long; lemma 1.5-2 mm long, not inflated, curved on the back; palea membranous to cartilaginous, granular with body spatulate to elliptic and not pouched; anthers 0.2-0.3 mm long ..... *Eragrostis elongata*

In Group 6 the florets falling entire from spikelet apex downwards. Sometimes this is hard to tell.



Florets shed from apex of downwards, e.g. *Eragrostis brownii*



Florets ripening and shed from base of spikelets upwards, e.g. *Eragrostis spartinoides*





## Other groups of *Eragrostis* species

A	B	C	D	E
Spikelets terete or biconvex	Small spikelets, 1 mm wide, 4-10 florets	Florets falling entire from spikelets apex downwards	Plants distinctly glandular on culms below nodes or on leaf margins, inflorescence branches, pedicels, glumes and/or lemmas	Florets disarticulating from the base of the spikelets
<i>E. dielsii</i> <i>E. lacunaria</i>	<i>E. exigua</i> <i>E. tenella</i> <i>E. tenellula</i>	<i>E. basedowii</i> <i>E. brownii</i> <i>E. elongata</i> <i>E. exigua</i> <i>E. sororia</i> <i>E. tenella</i> <i>E. tenellula</i>	<i>E. cilianensis</i> <i>E. leptostachya</i> <i>E. mexicana</i> <i>E. minor</i> <i>E. pilosa</i> <i>E. tenella</i>	<i>E. cumingii</i> <i>E. curvula</i> <i>E. fallax</i> <i>E. interrupta</i> <i>E. parviflora</i> <i>E. pilosa</i> <i>E. pubescens</i> <i>E. schultzii</i> <i>E. spartinoides</i> <i>E. stenostachya</i> <i>E. tenuifolia</i> <i>E. unioloides</i>

	Native <i>Eragrostis</i>	Weedy <i>Eragrostis</i>
<i>Eragrostis basedowii</i>	<i>Eragrostis leptostachya</i>	<i>Eragrostis cilianensis</i>
<i>Eragrostis brownii</i>	<i>Eragrostis parviflora</i>	<i>Eragrostis curvula</i>
<i>Eragrostis cumingii</i>	<i>Eragrostis pubescens</i>	<i>Eragrostis mexicana</i>
<i>Eragrostis dielsii</i>	<i>Eragrostis schultzii</i>	<i>Eragrostis minor</i>
<i>Eragrostis elongata</i>	<i>Eragrostis sororia</i>	<i>Eragrostis pilosa</i>
<i>Eragrostis exigua</i>	<i>Eragrostis spartinoides</i>	<i>Eragrostis tenella</i>
<i>Eragrostis fallax</i>	<i>Eragrostis stenostachya</i>	<i>Eragrostis tenuifolia</i>
<i>Eragrostis interrupta</i>	<i>Eragrostis tenellula</i>	
<i>Eragrostis lacunaria</i>	<i>Eragrostis unioloides</i>	

## Key to all the species of *Eragrostis*

- Plants distinctly glandular on culms below nodes or on leaf margins, inflorescence branches, pedicels, glumes or lemmas .....2  
Plants not or sometimes faintly glandular .....6
- Annuals .....3  
Perennials ..... *Eragrostis leptostachya*
- Plants glandular on inflorescence branches, pedicels, glumes or lemmas .....4  
Plants glandular on culms below nodes and/or on leaf margins ..... *Eragrostis mexicana*
- Spikelets 2-4 mm wide ..... *Eragrostis cilianensis*  
Spikelets less than 2 mm wide .....5
- Palea keels as long as the palea and not dividing at apex; glumes keeled ..... *Eragrostis minor*  
Palea keels shorter than the palea and dividing apically into 3 small lobes; glumes rounded on back ..... *Eragrostis pilosa*
- Spikelets terete or  $\pm$  biconvex .....7  
Spikelets  $\pm$  laterally compressed .....8
- Lemma with lateral nerves closer to margin than to mid-nerve ..... *Eragrostis lacunaria*  
Lemma with lateral nerves mid-way between margin and mid-nerve or sometimes closer to latter ..... *Eragrostis dielsii*

8. Spikelets to 1 mm wide and 10-flowered or less .....	9
Spikelets wider than 1 mm.....	11
9. Spikelets 1 mm long, 3-5-flowered .....	<i>Eragrostis exigua</i>
Spikelets more than 2 mm long, 4-9-flowered .....	10
10. Palea margins distinctly ciliate; A=3 .....	<i>Eragrostis tenella</i>
Palea margins not ciliate; A=2.....	<i>Eragrostis tenellula</i>
11. Lateral nerve of lemma distinct .....	12
Lateral nerve of lemma indistinct .....	24
12. Lemma 2.5-3.5 mm long .....	13
Lemma less than 2.5 mm long.....	15
13. Annual; rachilla straight; palea $\frac{1}{2}$ - $\frac{2}{3}$ as long as lemma .....	<i>Eragrostis cumingii</i>
Perennials; rachilla flexuose; palea more than $\frac{2}{3}$ as long as lemma .....	14
14. Pedicels less than 0.5 mm long; inhabits coastal dunes.....	<i>Eragrostis interrupta</i>
Pedicels more than 0.5 mm long.....	<i>Eragrostis pubescens</i>
15. Spikelets on pedicels 0.1-0.5 mm long .....	16
Spikelets on pedicels more than 0.5 mm long .....	21
16. Spikelets arranged in an open inflorescence .....	<i>Eragrostis stenostachya</i>
Spikelets bunched in clusters.....	17
17. Rachilla disarticulating between florets .....	18
Rachilla not disarticulating between florets .....	20
18. Palea prominently ciliate .....	<i>Eragrostis basedowii</i>
Palea glabrous or minutely ciliate .....	19
19. Spikelets 1.5-2 mm wide, 6-14-flowered .....	<i>Eragrostis elongata</i>
Spikelets 2.2-3 mm wide, 16-36-flowered.....	<i>Eragrostis sororia</i>
20. Spikelet $\pm$ 2 mm wide.....	<i>Eragrostis schultzei</i>
Spikelet $\pm$ 3 mm wide.....	<i>Eragrostis fallax</i>
21. Spikelets $\pm$ appressed to primary branches.....	<i>Eragrostis spartinoides</i>
Spikelets not appressed to primary branches .....	22
22. Palea deciduous with lemmas .....	<i>Eragrostis unioides</i>
Palea not deciduous with lemmas .....	23
23. Spikelets 0.5-1.5 mm wide.....	<i>Eragrostis mexicana</i>
Spikelets more than 1.5 mm wide .....	<i>Eragrostis brownii</i>
24. Inflorescence $\pm$ weeping.....	<i>Eragrostis parviflora</i>
Inflorescence erect.....	25
25. Basal leaf-sheaths compressed; inflorescence branches ciliate in their axils.....	<i>Eragrostis tenuifolia</i>
Basal leaf-sheaths not compressed; inflorescence branches not ciliate in their axils .....	<i>Eragrostis curvula</i>

## ***Eragrostis basedowii* - Neat Lovegrass**

### **Derivation**

*basedowii* - in honour of Herbert Basedow (1881-1933) a South Australian geologist.

### **Habit**

A tufted annual grass, the culms 5-30 cm tall.

### **Inflorescence**

The panicle are terminal and axillary, 2.5-10 cm long and 1-6 cm wide. The terminal panicles spiciform, sometimes interrupted in lower part. The florets are 10-30, the palea keels with spiny hairs. The rachilla of the spikelet is straight. The spikelets are usually 11-16 mm long.

### **Habitat**

This species occurs in or near watercourses, clay plans, lagoons, saline depressions and sand ridges.





## ***Eragrostis brownii* - Brown's Lovegrass**

### **Derivation**

*brownii* - in honour of Robert Brown (1773-1858), a Scots-born English botanist.

### **Habit**

A slender compactly tufted perennial grass, the culms are striate or ribbed, 10-60 cm tall.

### **Inflorescence**

The panicle is open or contracted, 5-30 cm long and 2-20 cm wide. The florets are 8-25, these are falling entire from spikelets apex downwards. The spikelets are 4-12.5 mm long.

### **Habitat**

The species occurs in sandy, red earth, loamy soils; it occurs often on skeletal and stony or gravelly hillslopes.

A polymorphic species, highly variable which appears to intergrade with *Eragrostis elongata* and *Eragrostis sororia*. In the past, the name was widely misapplied to several other species e.g. *Eragrostis spartinoides*, *Eragrostis cumingii* and *Eragrostis pubescens*.



## *Eragrostis cilianensis* - Stinking Lovegrass

### Derivation

*cilianensis* - from Cigliano Italy.

### Habit

An annual, tufted grass, the culms are erect or geniculating ascending 10-90 cm tall, often odorous. The nodes are often are purple-black, there are pit-like or warty glands on the stems, just below the nodes and on the leaves.

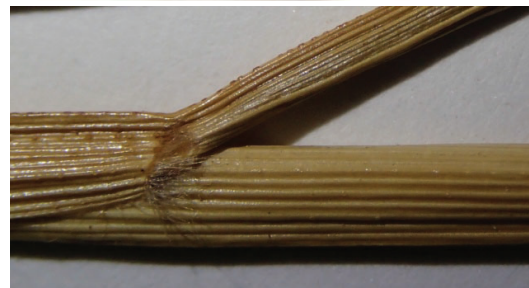
### Inflorescence

The panicle is open or dense, 4-30 cm long and 1.5-10 cm wide. The inflorescence are glandular. The spikelets are 5-20 mm long and 2-4 mm wide, the florets are 5-35, these are olive-green.

### Habitat

The species is non-native and grows as a weed of lawns, gardens, roadsides and cultivated crops. It occurs in red and brown soils, sandy and clayey loams, heavy clay clays, alluvial and red basaltic soils.

There are similarities to *Eragrostis minor*, the spikelets are wider, 2-4 mm wide.



## *Eragrostis cumingii* - Cuming's Lovegrass

### Derivation

*cumingii* - in honour of Hugh Cuming (1791-1865), English naturalist and traveller.

### Habit

An annual, variable in habit, 14-70 cm tall.

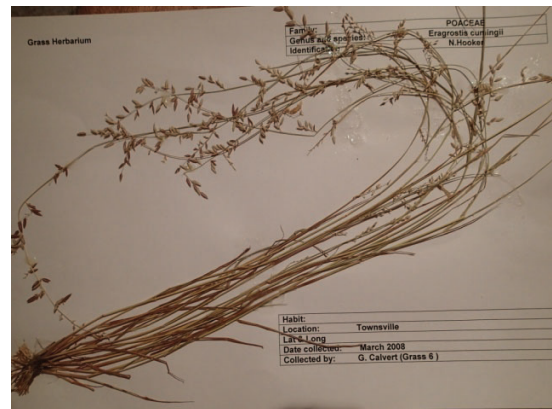
### Inflorescence

The panicle is open or spiciform, 4-70 cm long and 1.5-11.5 cm wide. It is often the inflorescence comprises half height of plant. The florets are 10-20, and the rachilla of the spikelet is straight. The spikelets are 4.5-35 mm long.

### Habitat

The species is widespread in seasonally wet, sometimes saline sites. It occurs in deep often alluvial sands, clays, loams or in shallow soils.

A polymorphic species, they are very variable in size, branching habit and panicle structure. It intergrades with *Eragrostis basedowii*. It is confused with the perennial *Eragrostis spartinoides* and *Eragrostis brownii*.





## ***Eragrostis curvula* - African Lovegrass**

### **Derivation**

*curvula* - from the Latin *curvus* (bent) and *-ula* (diminutive) and refers to the curved leaf-blades.

### **Habit**

A densely tufted perennial grass, the culms 30-120 cm tall. The basal leaf sheath are hairy on the back

### **Inflorescence**

The panicle is open or dense, 6-30 cm long and to 20 cm wide. The spikelets are dark olive-grey becoming cream. The florets are 4-13. The lateral nerve of the lemma are indistinct. The spikelets are 4-10 mm long.

### **Habitat**

This non-native species occurs on disturbed sites.

A variable species complex. It is regarded as a serious weed.



## ***Eragrostis dielsii* - Mallee Lovegrass**

### **Derivation**

*dielsii* - in honour of Friedrich Ludwig Emil Diels (1874-1945), a German botanist.

### **Habit**

A tufted annual or short-lived perennial grass, the culms erect or prostrate 3-55 cm tall.

### **Inflorescence**

The panicle is contracted or spiciform, 2-17 cm long and 1-7 cm wide. The spikelets are biconvex or terete, and they are 4.5-50 mm long.

### **Habitat**

This species is found on seasonally flooded clays to sandy and saline soil. In Townsville it is found in the salt pans in Rowes Bay's wetlands.





## ***Eragrostis elongata* - Clustered Lovegrass**

### **Derivation**

*elongata* - Latin for elongated. Inflorescence elongated.

### **Habit**

A tufted perennial, culms erect 21-80 cm tall.

### **Inflorescence**

The panicle is a spiciform with spikelets in compact, interrupted clusters, 9-20 cm long and 1-7.5 cm wide. The spikelets are 3-20 mm long and with 6-27 florets.

### **Habitat**

This species grows on a wide range of soil types, often in or near alluvial, well-watered habitats, also on disturbed sites.

*Eragrostis elongata* can hybridize with *Eragrostis sororia*.





## ***Eragrostis exigua* - Delicate Lovegrass**

### **Derivation**

*exigua* - Latin for wanting in size or number, the spikelets or inflorescence branches few.

### **Habit**

An annual, slender, tufted grass, the culms are 15-70 cm tall.

### **Inflorescence**

The panicle is loosely contracted, often occupying 2/3-5/6 of the plant, 18-36 cm long and 3-7 cm wide. The spikelets are 0.8-2 mm long and with 3-7 florets.

### **Habitat**

The species is usually found in seasonally flooded, alluvial habitats with heavy clay (rarely sandy) soils.

It is similar to *Eragrostis tenellula*, but the spikelets are smaller. *Eragrostis exigua* has spikelets 2 mm or shorter and has 3-7 florets.



## *Eragrostis fallax*

### Derivation

*fallax* - Latin for deceptive, closely resembling another species.

### Habit

A perennial, densely tufted grass, the culms are 40-90 cm tall.

### Inflorescence

The inflorescence are terminal and axillary. The axillary panicle are especially near the base of the plant. The terminal inflorescence is 10-20 cm long and 4-6 cm wide. The spikelets are 2-3.3 mm wide and with 11-56 florets.

### Habitat

The species occurs in or nearly seasonally flooded sites (lagoons, swamps, floodplains, streams) in alluvial clay or sandy soils.



Inflorescence showing terminal and axillary panicles





## *Eragrostis interrupta*

### Derivation

*interrupta* - Latin for not continuous, spikelets or inflorescence branches clustered at intervals along an axis.

### Habit

A perennial, often prostrate, grass, the culms are 50-150 long, often pruinose or glaucous. The leaves are blue-green.

### Inflorescence

The panicle is contracted or spiciform, usually interrupted, 20-60 cm long and 1-1.5 cm wide. The spikelets are 10-35 mm and with 14-50 florets.

### Habitat

The species occur in coastal and subcoastal areas on beach sands and dunes.

The species resemble *Eragrostis pubescens*, but the foliage and panicle are glabrous.





## ***Eragrostis lacunaria* - Purple Lovegrass**

### **Derivation**

*lacunaria* - from the Latin *lacuna* (cavity) and *-aria* (pertaining to), surface of grain pitted.

### **Habit**

An annual or short-lived perennial grass, the culms are 12-60 cm tall.

### **Inflorescence**

The panicle is open often comprising about  $\frac{1}{2}$  the plant, 4-24 cm long and 2-12 cm wide. The spikelets are biconvex or terete, are often purple-coloured, are 5-22.5 mm long and with 9-43 florets.

### **Habitat**

The species occurs in deep, red or brown, often alluvial loams; often also occurs in skeletal sands on rocky sandstones and granite ridges and hills.



## *Eragrostis leptostachya* - Paddock Lovegrass

### Derivation

*leptostachya* - from the Greek *leptos* (narrow) and *stachys* (ear of corn).

### Habit

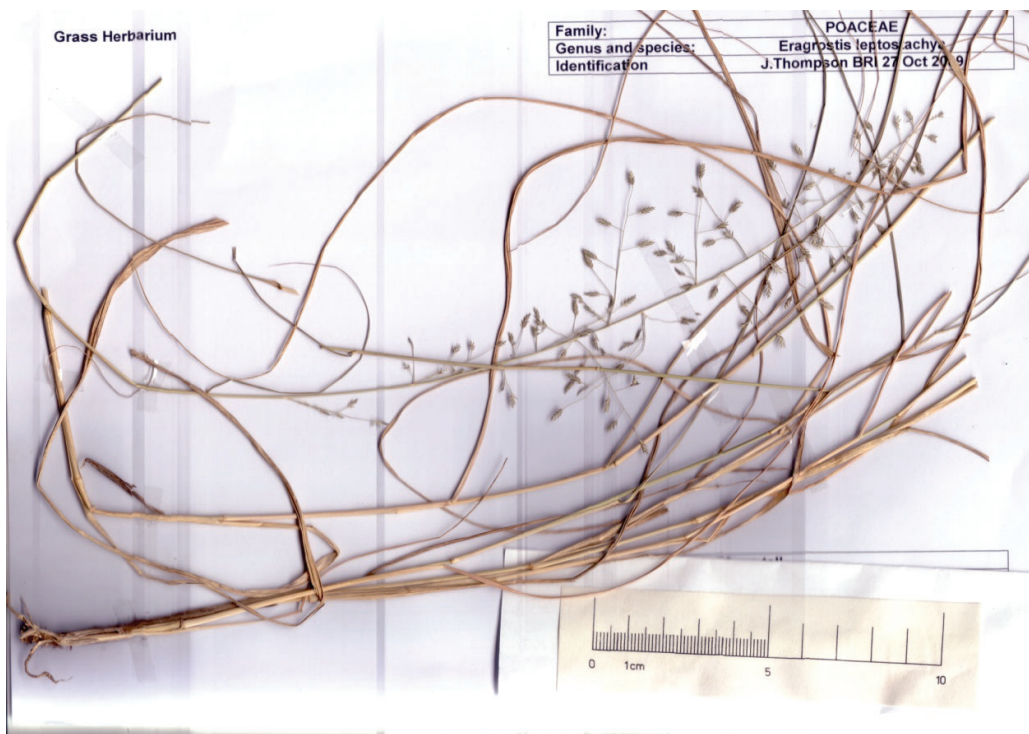
A perennial, compactly, tufted grass, the culms are 20-90 cm tall. The culms and leaf sheaths are glandular.

### Inflorescence

The panicle is open, often comprising about ½ the plant, 9-40 cm long and 3-21 cm wide. The spikelets are 4-14 mm long and with 6-20 florets. The spikelets are often olive-green. The pedicel usually has a glandular band.

### Habitat

Occurs in a variety of soils in association with basalt, granite and laterite, in forest and grassland clearings, waste ground and plantations.



The spikelets have glandular bands.



The ring of glands below the brown node.

### ***Eragrostis minor* - Small Stinkgrass**

#### **Derivation**

*minor* - Latin for smaller, lesser, plants small in comparison with related species.

#### **Habit**

An annual, tufted grass, the culms 6-60 cm tall. The leaves often with pit-like or warty glands especially on nerves.

#### **Inflorescence**

The panicle is rather dense or open, 4-20 mm long and 1.5-12 cm wide. The spikelets are 3-15 mm long and with 6-20 florets. Often glandular on the divisions and with a single crateriform gland on the pedicel.

#### **Habitat**

The non-native species is a weed of railway tracks, habitation and cultivation. This plant is often odorous.



## ***Eragrostis minor* - Small Stinkgrass**

### **Derivation**

*minor* - Latin for smaller, lesser, plants small in comparison with related species.

### **Habit**

An annual, tufted grass, the culms 6-60 cm tall. The leaves often with pit-like or warty glands especially on nerves.

### **Inflorescence**

The panicle is rather dense or open, 4-20 mm long and 1.5-12 cm wide. The spikelets are 3-15 mm long and with 6-20 florets. Often glandular on the divisions and with a single crateriform gland on the pedicel.

### **Habitat**

The non-native species is a weed of railway tracks, habitation and cultivation. This plant is often odorous.

There are similarities to *Eragrostis cilianensis*, the spikelets are narrower, 1.3-2 mm wide.



The leaves with pit-like or warty glands.



The pedicels with glands on the pedicels.

## ***Eragrostis parviflora* - Weeping Lovegrass**

### **Derivation**

*parviflora*- from the Latin *parvus* (small) and *flos* (flower), spikelets small or with few florets.

### **Habit**

An annual or short-lived perennial, the culms 30-90 cm tall.

### **Inflorescence**

The panicle is open and often weeping, 20-60 cm long and 11-30 cm wide. The spikelets are 4-10 mm long and with 5-15 florets. The lateral nerve of lemma are indistinct.

### **Habitat**

The species occur in a wide range of soils, often alluvial, in usually flat to gently sloping country, often in well-watered sites and seasonally flooded flats; sometimes on roadsides, in saline soils and disturbed ground.

This species resembles *Eragrostis pilosa*.





## *Eragrostis pilosa* - Soft Lovegrass

### Derivation

*pilosa* - from the Latin *pilus* (a hair) and *-osa* (abundance), the whole plant or any of its organs invested with long spreading hairs.

### Habit

An annual, erect grass, sometimes with glandular striations, tubercles or pustules on culms, leaves and panicles. The culms are 8-50 cm tall.

### Inflorescence

The panicle is contracted or open, 5-20 cm long and 1.5-5 cm wide. The axis sometimes with glandular striations, tubercles or pustules clustered or scattered about the basal whorl of branches. The spikelets are 2.5-9.5 mm and with 4-10 florets.

### Habitat

The non-native species occurs as a weed of railway tracks, on roadside, in gardens; in sandy alluvial, loams and lateritic soils.

This species resembles *Eragrostis parviflora*, but *Eragrostis pilosa* has the basal panicle branches often whorled.



The glands are showed below the basal whorl of panicle branches.





## *Eragrostis pubescens*

### Derivation

*pubescens* - from the Latin *pubesco* (become hairy), plant whole or in part hairy.

### Habit

A perennial, erect or sprawling grass, the culms 100-200 cm tall. The leaves often pilose to hirsute with simple and tubercle-based hairs.

### Inflorescence

The panicle is open and interrupted, 46-85 cm long and 5-22 cm wide. The branches often have tubercle-based hairs. The spikelets are 8-50 mm long and with 12-90 florets.

### Habitat

The species occurs chiefly in sandy often alluvial soils; on river levees, margins of swamps coastal flats and dunes.

The species resemble *Eragrostis interrupta* and *Eragrostis brownii*.



This photograph shows the hairy culms and leaves.

## *Eragrostis schultzii*

### Derivation

*schultzii* - in honour of Frederick Schultze (period of activity 1869) who collected in northern Australia.

### Habit

A perennial, robust, tussock-forming grass, the culms 80-150 cm tall.

### Inflorescence

The panicle is spiciform, rather loose to open, and often interrupted, 11-45 cm long and 1-4 cm wide. The spikelets are 5-15 mm long and with 9-35 florets.

### Habitat

The species occurs often in low-lying alluvial habitats; in usually sandy or loam soils.



## ***Eragrostis sororia***

### **Derivation**

*sororia* - from the Latin *soror* (sister). Readily confused with related species.

### **Habit**

A perennial, leafy and compact near base, the culms 20-70 cm tall.

### **Inflorescence**

The panicle contracted, usual spiciform often interrupted in the lower part, 5-25 cm long and 1-2.5 cm wide. The spikelets are 6-20 mm long with 13-40 florets. The spikelets are 6-20 mm long with 13-40 florets.

### **Habitat**

The species occurs in flat to undulating country with usually deep sands, clay and sandy loams; it occurs on alluvial soils on river levees and banks and disturbed ground.

A polymorphic species which intergrades into *Eragrostis elongata*, producing plants with a wide range of intermediate characters.





## *Eragrostis spartinoides*

### Derivation

*spartinoides* - superficially similar to *Spartina*, a genus of Poaceae found in Victoria, South Australia and Tasmania.

### Habit

A perennial, tufted grass, the culms are 20-85 cm tall.

### Inflorescence

The panicle is open, 7-44 cm long and 3-6 cm wide. The spikelets are 5-28 mm and with 8-55 florets. The spikelets are appressed to primary branches.

### Habitat

The species occurs in a range of sandy and clayey, often shallow soils.

It is confused with *Eragrostis brownii*, *Eragrostis cumingii* and *Eragrostis schultzei*.



## *Eragrostis stenostachya*

### Derivation

*stenostachya* - from the Greek *stenos* (narrow) and *stachys* (ear of corn), the inflorescence a narrow or spike-like panicle.

### Habit

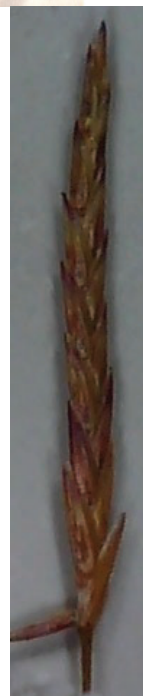
A perennial, erect or stoloniferous grass, often purplish near the base, the culms 20-60 cm tall.

### Inflorescence

The panicle is open, spiciform upwards, 5-15 cm long and 2-7.5 cm wide. The panicle and spikelets branches are stiffly spreading or reflexed. The spikelets are 7-21 mm long and with 9-27 florets.

### Habitat

The species occurs in saline meadows and on sandy loam soils.





## ***Eragrostis tenella* - Delicate Lovegrass**

### **Derivation**

*tenella* - from the Latin *tenellus* (tender or delicate).

### **Habit**

An annual grass, the culms 5-60 cm tall.

### **Inflorescence**

The panicle is open that is sometimes pilose in axils of the axis, 3.5-14 cm long and 0.8-5.5 cm wide. The inflorescence is often sticky because of small glands on the pedicels. The spikelets are 1-2.3 mm long with 4-7 florets.

### **Habitat**

This non-native grass is a weed of gardens, lawns and roadsides; it occurs in sandy soils.





## *Eragrostis tenellula* - Delicate Lovegrass

### Derivation

*tenellula* - from the Latin *tenellus* (tender or delicate) and *-ula* (diminutive).

### Habit

An annual, tufted, erect to semi-prostrate grass, the culms 5-50 cm tall.

### Inflorescence

The panicle is open, often comprising about  $\frac{1}{2}$  to  $\frac{3}{4}$  of plant, 6-25 cm long and 1.5-7.5 cm wide. The inflorescence has perfectly arranged, spreading branches. The spikelets 2-5 mm long and with 3-12 florets.

### Habitat

The species occur almost always in seasonally flooded sites, often in grassland plains, and in heavy clays or loams.

It is similar to *Eragrostis exigua*, but the spikelets are longer. *Eragrostis tenellula* has spikelets more than 2 mm long and with 3-12 florets.



## ***Eragrostis tenuifolia* - Elastic Grass**

### **Derivation**

*tenuifolia* - from the Latin *tenuis* (slender) and *folium* (leaf), the leaf-blades are narrow.

### **Habit**

A compactly leafy, tufted perennial, the culms 15-90 cm tall.

### **Inflorescence**

The panicle is open and erect, 5-28 cm long and 5-15 cm wide. The axils of inflorescence branches and the pedicles with tufts of hairs present at all nodes, and with purple-black, bearded pulvini. The spikelets are olive-green, they are 4-16 mm long with 4-16 florets. The lateral nerve of lemma indistinct.

### **Habitat**

The non-native species occurs as a weed of roadsides, lawns and habitation.

Similar to *Eragrostis pilosa* but the lower nodes are not whorled.



## *Eragrostis unioloides*

### Derivation

*unioloides* - with spikes resembling those of *Uniola*, a genus of Poaceae not found in Australia, but occur in Americas.

### Habit

A tufted, annual grass, mostly glabrous, the culms 8-70 cm tall.

### Inflorescence

The panicle is open or rather densely branched, 8-20 cm long and 4-10 cm wide. The spikelets are usually yellowish but with reddish-purple a tinge, and have a distinct shape. The spikelets are 4-15 cm long and with 9-70 florets.

### Habitat

The species occurs in seasonally wet grey sandy silt.





# Eremochloa

From Greek *eremos* (solitary) and *chloa* (grass), referring to the single terminal spike.

Tufted perennials. The inflorescence is a spike or raceme. The spikelets are in pairs, one sessile and one pedicelled, the pedicelled spikelet is rudimentary and often reduced to a pedicel.

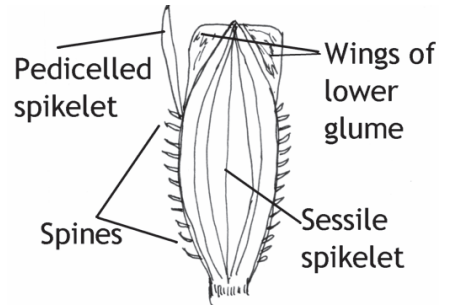
Subfamily: Panicoideae; Tribe: Andropogoneae.

Species: World = 9, Australia = 3

## Townsville species

*Eremochloa bimaculata*

Poverty Grass



This species could be confused with *Lepturus repens*, *Elionurus citreus*, *Hemarthria uncinata*, *Ophiuros exaltatus* and *Mnesithea rottboellioides*. Check the key on page 18.



Part of inflorescence, drawing from Jacobs et al. (2008)

## Reference:

Jacobs, S. W. L., Whalley, R. D. B. and Wheeler, D. J. B. (2008) Grasses of New South Wales (Fourth Edition), University of New England, Armidale.

## *Eremochloa bimaculata* - Poverty Grass

### Derivation

*bimaculata* - from the Latin *bi* (twice), *macula* (spot or stain) and *-ata* (possessing), i.e. possessing two spots, which appears to be rather baffling?

### Habit

An erect, tufted, perennial grass, the culms are 30-80 cm tall. It will have a distinctive rootstock; the basal leaf sheaths are flattened and keeled.

### Inflorescence

The inflorescence is a solitary terminal spike. The lower glume of the sessile spikelet has curved spines on the lower margins and wings at the apex. The pedicelled spikelet is reduced to a narrow glume or absent.

### Habitat

The species grows in open woodlands and forests.



Rootstock



Spikelets



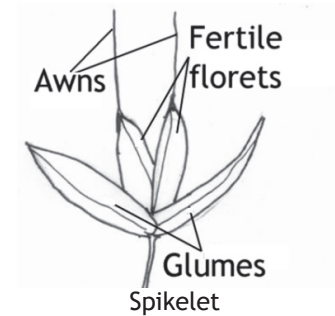
# *Eriachne*

## Wanderrie Grasses

From the Greek *erion* (wool) and *achne* (chaff or scale), possibly referring to the florets being hairy.

Annuals or perennials, rhizomatous or tufted. The inflorescence is an open or contracted panicle. The spikelets are solitary and the glumes spread at maturity to reveal two bisexual florets which are awned or unawned. The glumes often persist after the florets have fallen and often spread out.

Subfamily: Micrairoideae; Tribe: Eriachneae  
Species: World = 48, Australia = 48



Spikelets

### Townsville species

*Eriachne ciliata*  
*Eriachne mucronata*  
*Eriachne obtusa*  
*Eriachne pallescens*  
*Eriachne rara*  
*Eriachne triodioides*

Slender Wanderrie Grass  
Mountain Wanderrie Grass  
Northern Wanderrie Grass  
Wanderrie Grass  
  
Wanderrie Grass



## Key to the species of *Eriachne*

1. Lemma unawned or sometimes mucronate (a sharp, abrupt terminal point), mucro to 0.6 mm long .....2  
 Lemma with a distinct (although sometimes short) awn 1.5-30 mm long .....3
2. Glumes equal; florets often longer than the glumes; lemma with a mucronate (a sharp, abrupt terminal point) apex ..... *Eriachne mucronata*  
 Glumes slightly unequal; florets slightly shorter than the longer glume; lemma with an acute apex ..... *Eriachne obtusa*
3. Awns strongly reflexed and curved ..... *Eriachne rara*  
 Awns straight .....4
4. Perennial, spikelets 7-10.5 mm long (commonly on coastal sand dunes).....*Eriachne triodioides*  
 Annual, spikelets 2.5-6 mm long .....5
5. Glumes open wide when mature and light coloured.....*Eriachne ciliata*  
 Glumes not open when mature and dark coloured .....*Eriachne pallescens*

Spikelets with distinct awns



*Eriachne ciliata*



*Eriachne pallescens*



*Eriachne mucronata*



*Eriachne rara*



*Eriachne triodioides*



*Eriachne obtusa*

Spikelets awnless or sometimes mucronate

## ***Eriachne ciliata* - Slender Wanderrie Grass**

### **Derivation**

*ciliata* - from the Latin *cilium* (eyelid) and *-ata* (possessing), the plant is hairy overall or in part.

### **Habit**

A slender annual or ephemeral grass, the culms are 10-30 cm tall.

### **Inflorescence**

The panicle is open at maturity, 4-7 cm long and 1.5-4 cm wide. The glumes are open wide when mature and light coloured. The lemma's awn is short, 1.5-3 mm long

### **Habitat**

This species is common of shallow and skeletal sandy or loam soils.



## ***Eriachne mucronata* - Mountain Wanderrie Grass**

### **Derivation**

*mucronata* - from the Latin *mucro* (sharp point) and *-ata* (possessing), with glumes or lemmas contracted into a short hard point or a bifid and shortly awned from between the teeth.

### **Habit**

A perennial grass, the culms are 10-80 cm tall, the base is knotty or thickened, pubescent or woolly. This species is highly variable in habit.

### **Inflorescence**

The panicle is usually open 3-8 cm long and 0.5-1 cm wide. The glumes are equal to florets; the lemmas are acute or mucronate. The lemma is 5.8-7 mm long.

### **Habitat**

The species is a widespread and adaptable species, occurs on various soils.

*Eriachne mucronata* closely resembles *Eriachne obtusa*. This species has lemmas which are mucronate and 11-13 nerves.





## ***Eriachne obtusa* - Northern Wanderrie Grass**

### **Derivation**

*obtusa* - Latin for blunt, the glumes or lemmas apically rounded.

### **Habit**

A perennial grass, sometimes glaucous, culms are 30-60 cm tall.

### **Inflorescence**

The panicle is rather contracted, 4-10 cm long and 1.5-3 cm wide. The glumes are open wide when mature and light coloured. The lemmas are not awned, and are 3.8-5 mm long.

### **Habitat**

This species grows in skeletal, shallow and deep soils.

*Eriachne obtusa* closely resembles *Eriachne mucronata*. This species has lemmas which are muticous and have 5-7 nerves.



## ***Eriachne pallescens* - Wanderrie Grass**

### **Derivation**

*pallescens* - from the Latin *pallesco* (become pale), they are losing colour at maturity, especially spikelets.

### **Habit**

A perennial grass, mostly glabrous on culms and foliage; base knotty or slightly thickened, sparsely pubescent. The culms are 25-105 cm tall.

### **Inflorescence**

The panicle is open, sometimes drooping, 6-15 cm long and 3-9 cm wide. The glumes are erect when mature. The lemmas awn is 1.5-8 mm long.

### **Habitat**

This species usually grows in deep sandy soils, often in low-lying sites such as swamps and flood channels. It also grows on coastal dunes and skeletal and shallow often stony soils.





## ***Eriachne rara***

### **Derivation**

*rara* - Latin for far apart, the spikelets far apart in panicle.

### **Habit**

A short-lived perennial grass, the culms are 15-60 cm tall.

### **Inflorescence**

The panicle is open, 3.5-10 cm long and 0.5-5 cm wide. The glumes are erect when mature. The lemmas awn are 13-3 mm long, they are flexuose (bent).

### **Habitat**

This species occurs in deep or shallow sandy, sometimes gritty or stony soils.





## ***Eriachne triodioides* - Wanderrie Grass**

### **Derivation**

*triodioides* - resembling *Triodia* species.

### **Habit**

A robust, perennial grass, the culms are 75-120 cm tall, the base not thickened, pubescent.

### **Inflorescence**

The panicle contracted or eventually open, 8-15 cm long, 1.5-6 cm wide (including awns). Lemmas usually awned, the awn is 2-13 mm long.

### **Habitat**

This species is commonly on islands and coastal mainland. It is chiefly of coastal sand dunes and deep, sandy inland sands.



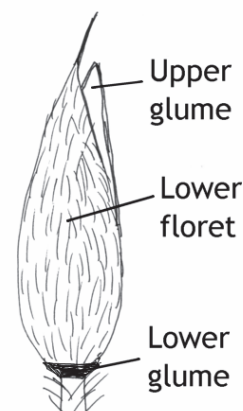
# *Eriochloa*

## Spring or Cup Grasses

From Greek *erion* (wool) and *chloe* (grass), referring to the hairy spikelets and pedicels.

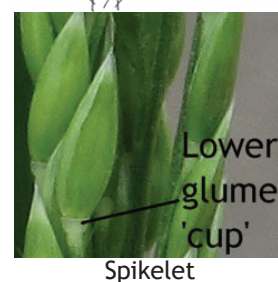
Annuals or perennials, stoloniferous or tufted to decumbent. The inflorescence is a once-branched panicle with racemes appressed at first, spreading later. The spikelets are solitary or in pairs. The glumes are unequal, the lower glume usually reduced to a cup-like ring at the base of the spikelet. The genus is distinguishable by this 'cup' which is formed from the lower rachilla (the axis of the spikelet) internode which becomes swollen and fused to the lower glume.

Subfamily: Panicoideae; Tribe: Paniceae  
Species: World = 30, Australia = 7



### Townsville species

<i>Eriochloa crebra</i>	Tall Cupgrass
<i>Eriochloa procera</i>	Cup Grass
<i>Eriochloa pseudoacrotricha</i>	Early Spring Cupgrass



### Key to the species of *Eriochloa*

1. Spikelets with apices drawn out into bristles ..... *Eriochloa pseudoacrotricha*
- Spikelets with apices acute to acuminate ..... 2



Apices drawn out into bristles



Apices acute to acuminate

2. Spikelets lightly overlapping on racemes, 3.7-5.5 mm long ..... *Eriochloa crebra*
- Spikelets ± loose on racemes, 2.5-4.0 mm long ..... *Eriochloa procera*



## ***Eriochloa crebra* - Tall Cupgrass**

### **Derivation**

*crebra* - from the Latin *creber* (pressed together), the racemes held erect appressed to inflorescence axis.

### **Habit**

A perennial, tufted grass, the culms 35-100 cm.

### **Inflorescence**

A panicle of racemes, the 5-25 racemes are 1.5-5 cm long. The spikelets are 3.7-5.5 mm long, the apices are acute to acuminate.

### **Habitat**

This species usually grows in temporarily wet places such as creek banks and floodplains.



Spikelet





## ***Eriochloa procera* - Cupgrass**

### **Derivation**

*procera* - Latin for tall, the culms are tall.

### **Habit**

An annual or perennial, tufted grass, the culms are 20-120 cm tall.

### **Inflorescence**

A panicle of racemes, the 3-10 racemes are 2-10 cm long. The spikelets are 2.5-4 mm long.

### **Habitat**

This species usually grows on disturbed ground in wetter areas.



Spikelet



## ***Eriochloa pseudoacrotricha* - Early Spring Cupgrass**

### **Derivation**

*pseudoacrotricha* - from the Greek *pseudos* (false), resembling *Eriochloa racemosa* var. *acrotricha*.

### **Habit**

A perennial, loosely tufted grass, the culms are 20-100 cm tall.

### **Inflorescence**

A panicle of racemes, the 2-10 racemes are 2-10 cm long. The spikelets are 3.6-6 mm long.

### **Habitat**

This species usually associated with temporarily wet places such as creeks and floodplains.



Spikelet





# Eulalia

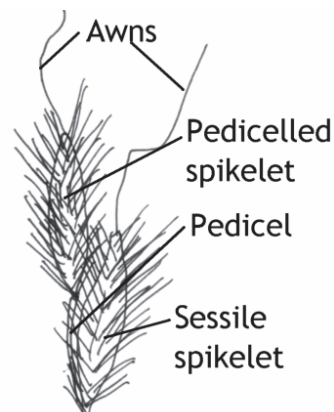
Named to honour Eulalia Delile, a botanical artist.

Tufted perennial grasses. The inflorescence is digitate or subdigitate; the branches are very hairy or silky, often brown or purple. The spikelets are in pairs and similar, one sessile, the other pedicelled, each with one bisexual floret, both awned.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 30, Australia = 4

## Townsville species

*Eulalia aurea* Silky Browntop



Spikelets

This grass is easily recognised by its fluffy, golden-yellow-brown inflorescences. However, this species could be confused with the closely-related annual grass *Pseudopogonatherum contortum*.

## Key to the species of *Eulalia* and related genera

Perennial; awns not intertwining at maturity; sessile spikelets usually more than 3 mm long ..... *Eulalia*  
Delicate annual; awns intertwining at maturity; all spikelets very small, 1.5-2.5 mm long .....  
..... *Pseudopogonatherum*



*Pseudopogonatherum*,  
the awns often fall off



*Eulalia*



## ***Eulalia aurea* - Silky Browntop**

### **Derivation**

*aurea* - the Latin for golden-yellow which refers to the spikelets or pedicels or other parts with golden-yellow hairs.

### **Habit**

A perennial, tufted grass with slender, erect stems, the culm is 40-150 cm tall.

### **Inflorescence**

The inflorescence is digitate with 2-3 branches, 3-12 cm long. The racemes are clothed with fluffy, dark brown hairs 1-2 mm long. The spikelets are 3.5-5 mm long,

### **Habitat**

This species is often in ephemeral water courses in drier areas.



# Hemarthria

From Greek *hemi* (half) and *arthron* (jointed) i.e. half-jointed, referring to the raceme internodes articulated but not breaking up.

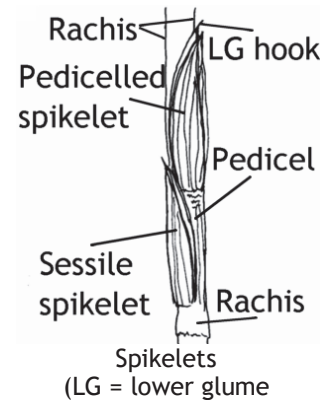
Perennials, often with stolons and rhizomes. The inflorescence is a single flattened raceme, usually subtended by an inflated leaf sheath. The spikelets in pairs, one sessile and one pedicelled and partially embedded in the rachis, the pedicelled spikelet resembles the sessile spikelet and the pedicel is fused to the internode.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 12, Australia = 1

## Townsville species

*Hemarthria uncinata*

Mat Grass



This species could be confused with *Elionurus citreus*, *Eremochloa bimaculata*, *Lepturus repens*, *Ophiuros exaltatus* and *Mnesithea rottboellioides*. Check the key on page 18.



Herbarium scan Botanic Gardens Trust (1999 - 2008)



Raceme drawing from Gardner (1952)



## References

- Botanic Gardens Trust (1999 - 2008) PlantNET - The Plant Information Network System of Botanic Gardens Trust, Sydney, Australia (version 2.0).
- Gardner, C. A. (1952) Flora of Western Australia Vol. 1, Gramineae Part 1, Government Printer, Perth.



## *Hemarthria uncinata* - Mat Grass

### Derivation

*uncinata* - from the Latin *uncinus* (hook) and *-ata* (possessing), the upper glume drawn out into a hook.

### Habit

A tufted perennial often rhizomatous or stoloniferous grass, stems prostrate or erect. The culms are 20-100 cm tall and often form a coarse matted sward.

### Inflorescence

The inflorescence is a raceme, 6-14 cm long. The lower glume similar to that of the sessile spikelet with a straight or hooked apex; upper asymmetric, narrowly winged.

### Habitat

This grass grows on a range of soils, usually in damp areas, swamps, near coastal estuaries, sand dunes and stream banks.



Spikelets



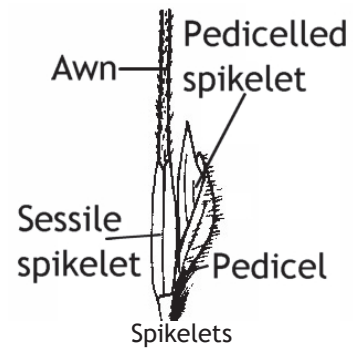
# Heteropogon

## Speargrasses

From the Greek *heteros* (different) and *pogon* (beard), referring to the difference between the awnless male and awned female spikelets.

Tufted perennials. The inflorescence is a raceme of paired spikelets. The lower paired spikelets are alike, unawned, and either male or neuter. The upper paired spikelets are dissimilar, one sessile and awned and one pedicelled and unawned. The awns of the sessile spikelet are long and extend above the raceme and when the seeds mature, the awns tangle.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 7, Australia = 2



### Townsville species

<i>Heteropogon contortus</i>	Black Speargrass
<i>Heteropogon triticeus</i>	Giant Speargrass

### Key to the species of *Heteropogon* and similar species

1. Inflorescence spike-like, but composed of 2 erect, closely adpressed racemes ..... *Ischaemum*  
Inflorescence is a raceme ..... 2



*Ischaemum*



*Sehima nervosum*



*Heteropogon triticeus*



*Heteropogon contortus*



2. Awns are 20-40 mm long; pedicelled spikelets is the same length as fertile ..... *Sehima nervosum*  
Awns are 50-140 mm long; pedicelled spikelet longer than fertile ..... 3
3. Moderately tall grass (usually less than 1 m tall); racemes less than 6 cm long;  
fertile spikelets 6-10 mm long ..... *Heteropogon contortus*  
Very tall grass (usually greater than 1 m tall); racemes more than 9 cm;  
fertile spikelets 10-15 mm long ..... *Heteropogon triticeus*

## ***Heteropogon contortus* - Black Speargrass**

### **Derivation**

*contortus* - awns hygroscopic and so twisted when dry.

### **Habit**

A perennial, tufted grass, the culms are 30-100 cm tall.

### **Inflorescence**

The inflorescence is a raceme, 3-6 cm long. The sessile is 6-9 mm long and the pedicelled spikelet is 5-15 mm long. The awns, 50-80 mm long, and the way they become twisted as the seeds mature are a characteristic trait of spear grass.

### **Habitat**

This species is widespread in fire-prone open forest and woodland.



Spikelets



Inflorescence showing a tangled awns





## *Heteropogon triticeus* - Giant Speargrass

### Derivation

*triticeus* - resembling *Triticum* with respect to the inflorescence.

### Habit

A perennial, tufted grass, the culms are 100-160 cm tall. The base is fan-shaped.

### Inflorescence

The inflorescence is a raceme, 9-14 cm long. The sessile is 10-15 mm long and the pedicelled spikelet is 18-25 mm long. The awn is 70-140 mm long.

### Habitat

This species grows in *Eucalyptus* forests and woodlands.



This is a raceme of pedicelled spikelets, the seeds have dropped off.



Spikelets





# Hymenachne

From the Greek *hymen* (membrane) and *achne* (chaff or scale), alluding to membranous glumes, lemmas and paleas.

Decumbent, spreading perennial aquatic grasses. The stems produce roots at the nodes. The inflorescence is a spicate panicle (spike-like with short branches). The spikelets are solitary.

Subfamily: Panicoideae; Tribe: Paniceae

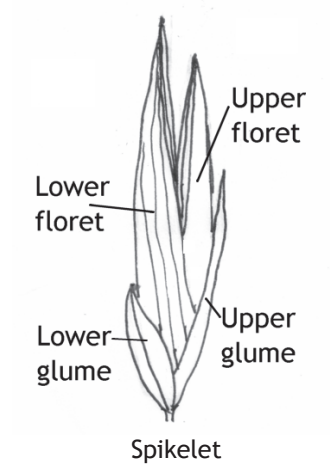
Species: World = 5, Australia = 2

*Hymenachne* invades permanent water bodies and seasonally inundated wetlands.

## Townsville species

*Hymenachne acutigluma*

\* *Hymenachne amplexicaulis*      *Hymenachne*



## Key to the species of *Hymenachne*

Spikelets 3-4 mm long; leaf-base amplexicaul (having lobes, usually auriculate, that completely surround the stem)..... *Hymenachne amplexicaulis*  
 Spikelets 4.5-5.5 mm long; leaf-base not amplexicaul.....*Hymenachne acutigluma*



## *Hymenachne acutigluma*

### Derivation

*acutigluma* - from the Latin *acuo* (sharpen) and *gluma* (husk), the glumes tapering.

### Habit

A perennial, aquatic or subaquatic grass. The culms are decumbent, 30-200 cm tall. The stems are spongy, rooting from lower nodes. The leaf-base not amplexicaul.

### Inflorescence

The panicle is spiciform, 8-50 cm long and 1–3.5 cm wide. The spikelets are dorsally compressed 4.5-5.5 mm long.

### Habitat

This native grass is a swamp grass, more or less independent of rainfall.



Leaf blade bases of *Hymenachne* spp.

Left to right: *H. amplexicaulis*, *H. x calamitosa* and *H. acutigluma*

John Clarkson photograph

Naturally occurring hybridisation between the introduced species *Hymenachne amplexicaulis* and the Australian native species *H. acutigluma* is reported from two widely separated locations in tropical Australia. This has been named *Hymenachne x calamitosa*.



## *Hymenachne amplexicaulis* - Hymenachne

### Derivation

*amplexicaulis* - from the Latin *implexus* (encircling) and *caulis* (stem), the bases of the leaf-blades encircle the stem.

### Habit

A perennial, aquatic or subaquatic grass. The culms are decumbent, 200-350 cm tall. The stems are spongy, rooting from lower nodes. The leaf-base is amplexicaul (having lobes, usually auriculate, that completely surround the stem).

### Inflorescence

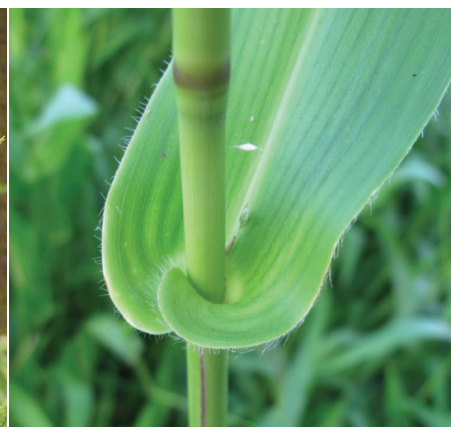
The panicle is spiciform, 10-40 cm long and 1-2 cm wide. The spikelets are dorsally compressed 3-4 mm long.

### Habitat

This non-native species was released in Queensland in 1988 for use as 'ponded pasture'. It has since escaped from cultivation and is now considered a Weed of National Significance (WONS). It is regarded as one of the worst weeds in Australia because of its invasiveness, potential for spread, and economic and environmental impacts.



Spikelet





# Hyparrhenia

## Thatch Grasses

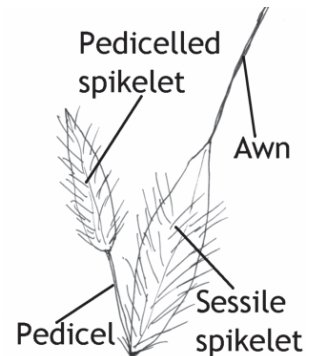
From the Greek words *hypo* (below) and *arrhen* (male), referring to the pair of male spikelets at the base of each raceme.

Tufted perennials or annuals. The inflorescence is composed of a few to many pairs of racemes subtended by spatheoles (small bracts or modified leaves which enclose the inflorescence). The spikelets are in pairs, one sessile and usually awned and the other pedicelled and awnless.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = c.55, Australia = 3

### Townsville species

- \* *Hyparrhenia rufa* subsp. *rufa* Thatch Grass



*Hyparrhenia rufa* subsp. *rufa* grows mainly along roadsides and in disturbed areas. It could be confused with Grader Grass (*Themeda quadrivalvis*), Giant Spear Grass (*Heteropogon triticeus*) and Gamba Grass (*Andropogon gayanus*), especially before flowering.

These species are tall grasses, and their increase in height before flowering is caused by a section of pale yellow culm being pushed upwards until it protrudes well above the green leaf sheath that previously enclosed it. The pale sections of the internodes alternate with the green sheaths giving these grass species a conspicuously banded appearance.

### Key to the species of *Hyparrhenia* and similar genera

1. Inflorescence is a raceme ..... *Heteropogon triticeus*  
Inflorescence with branches ..... 2
2. Fertile spikelets within an involucre of four male or barren spikelets ..... *Themeda quadrivalvis*  
Fertile spikelets without an involucre of spikelets ..... 3
3. Spikelets covered with red or brown hairs ..... *Hyparrhenia rufa* subsp. *rufa*  
Spikelets covered with white hairs ..... *Andropogon gayanus*



Spikelets covered with brown or red hairs  
*Hyparrhenia rufa* subsp. *rufa*



Spikelets covered with white hairs  
*Andropogon gayanus*

## *Hyparrhenia rufa* - Thatch Grass

### Derivation

*rufa* - Latin for reddish, the inflorescence is purple to red.

### Habit

A perennial, tufted grass, the culms are 30-300 cm tall.

### Inflorescence

The panicle is subtended by a spatheole. The rames are paired and are 1.5-4 cm long. The sessile spikelet is 3.5-5.5 mm long. The sessile spikelet is awned.

### Habitat

This non-native species is mainly a weed of roadsides and disturbed sites.

There are two species, only one is found in Townsville, *Hyparrhenia rufa* subsp. *rufa*.



Spikelets





# Imperata

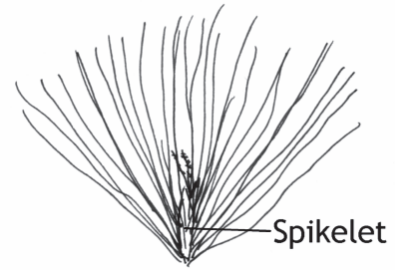
In honour of Ferrante Imperato (1550–1625), a Neopolitan naturalist/pharmacist.

Perennial grasses with rhizomes; leaves mostly basal. The inflorescence is a fluffy, spicate (spike-like with short inflorescence branches) panicle. The spikelets are solitary or paired, all alike, if paired pedicels unequal.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 10, Australia = 1

## Townsville species

*Imperata cylindrica* Blady Grass



Spikelets





## ***Imperata cylindrica* - Blady Grass**

### **Derivation**

*cylindrica* - refers to the shape of the inflorescence.

### **Habit**

A tufted, perennial grass with stiff, erect leaves, the culms is 10-120 cm tall.

### **Inflorescence**

The fluffy, white inflorescence is 3-20 cm long. The very small spikelets are hidden by long, silky, white hairs. The spikelets are 2.2-6 mm long and 1 mm wide.

### **Habitat**

Often grows in damp or weedy places. After burning it rapidly resprouts from the rhizomes.



# Ischaemum

From the Greek *ischo* (to restrain) and *haima* (blood), as woolly seeds of this type species were reported as being used to stop bleeding.

Erect or sprawling annuals or perennials. The inflorescence is usually of paired digitate appressed racemes, thus appearing spike-like. At maturity, the racemes split open. The spikelets are paired, one sessile and one pedicelled, and are partially embedded in rachis. The sessile spikelet is awned, the pedicelled spikelet is sometimes awned.

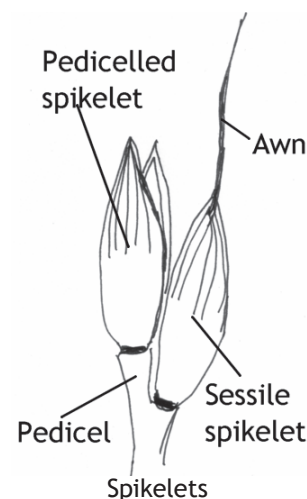
Subfamily: Panicoideae; Tribe: Andropogoneae

Species: World = 60, Australia = 11

## Townsville species

*Ischaemum australe* Large Bluegrass

*Ischaemum rugosum*



## Key to the species of *Ischaemum* and similar species

1. Inflorescence is a raceme ..... 2
- Inflorescence spike-like, but composed of 2 erect, closely appressed raceme ..... 3



*Ischaemum*



*Sehima nervosum*



*Heteropogon triticeus*



*Heteropogon contortus*

2. Awns are 20-40 mm long; pedicelled spikelet is the same length as fertile ..... *Sehima nervosum*
- Awns are 50-140 mm long; pedicelled spikelet longer than fertile ..... *Heteropogon*
3. Lower glume of sessile spikelet transversely rugose ..... *Ischaemum rugosum*
- Lower glume of sessile spikelet not transversely rugose ..... *Ischaemum australe*



## *Ischaemum australe* - Large Bluegrass

### Derivation

*australe* - from the South (Australia).

### Habit

A perennial, tufted grass, the culms are 50-150 cm tall.

### Inflorescence

The inflorescence is spike-like, but is paired, digitate, appressed racemes, 3-10 cm long. The sessile spikelet is 6-7 mm long and the awn is 8-10 mm long. The lower glume of the sessile spikelet is smooth.

### Habitat

This species is usually found in wet situations often confined to poor soils.



Spikelets

There are three varieties

1. Nodes glabrous..... *Ischaemum australe* var. *arundinaceum*  
Nodes hairy..... 2
2. Leaves, rachis internodes and pedicels hairy..... *Ischaemum australe* var. *villosum*  
Leaves, rachis internodes and pedicels glabrous..... *Ischaemum australe* var. *australe*





## *Ischaemum rugosum*

### Derivation

*rugosum* - from the Latin *ruga* (wrinkle) and *-osa* (abundance), usually with sculptured glumes.

### Habit

An annual, decumbent grass, the culms are 10-100 cm tall.

### Inflorescence

The inflorescence is spike-like, but is paired, digitate, appressed racemes, 3-14 cm long. The sessile spikelet is 4-6 mm long and the awn is 15-20 mm long. The lower glume of the sessile spikelet is transversely ridged.

### Habit

This species grows in wet sites.



Spikelets

There are two varieties

1. Pedicelled spikelet developed.....*Ischaemum rugosum* var. *rugosum*  
 Pedicelled spikelet much reduced.....*Ischaemum rugosum* var. *segetum*



# Leersia

Named for Johan Daniel Leers, a German apothecary and botanist (1727-1774).

Perennials, rarely annuals usually growing in marshland, stream banks and shallow water. The inflorescence is an open or contracted panicle. The spikelets are solitary and strongly laterally compressed. Glumes are rudimentary, apparently represented by a narrow rim at the pedicel apex. *Leersia* is closely-related to rice (*Oryza*).

Subfamily: Ehrhartoideae; Tribe: Oryzeae

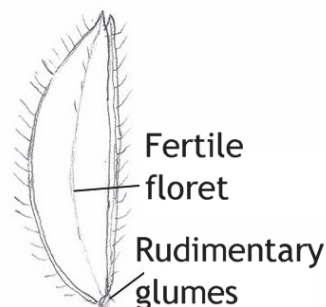
Species: World = 18, Australia = 2

## Townsville species

*Leersia hexandra* Swamp Ricegrass



Spikelet



## Key to the species of *Leersia* and *Oryza*

Spikelets 1-flowered with a bisexual floret and without sterile florets..... *Leersia*  
 Spikelets 3-flowered, the lower 2 reduced to sterile lemmas..... *Oryza*



## ***Leersia hexandra* - Swamp Ricegrass**

### **Derivation**

*hexandra* - from the Greek *hexa* (six) and *aner* (man), the florets possess six stamens.

### **Habit**

Aquatic or semi aquatic perennial, rhizomatous grass, the culms are erect or floating on water 0.3-1.5 m tall.

### **Inflorescence**

The inflorescence is a contracted to open panicle, 5-10 cm long and 1-4 cm wide. Each floret has six stamens.

### **Habitat**

This species grows in swamps, on river and creek banks into shallow water, waterholes channels and drains, in sand, clay and peat.





# Leptochloa

From the Greek *leptos* (slender) and *chloe* (grass), referring to the inflorescences.

Annuals or perennials, tufted to decumbent, sometimes rhizomatous or stoloniferous. The inflorescence is a spike-like panicle or a racemose once-branched panicle or digitate or subdigitate. The spikelets are solitary and all similar with 1-several florets per spikelet, they are very similar to the genus *Eragrostis*.

Subfamily: Chloridoideae; Tribe: Cynodonteae

## Townsville species

<i>Leptochloa decipiens</i> subsp. <i>decipiens</i>	now	<i>Dinebra decipiens</i> var. <i>decipiens</i>
<i>Leptochloa fusca</i> subsp. <i>fusca</i>	now	<i>Diplachne fusca</i> var. <i>fusca</i>
<i>Leptochloa fusca</i> subsp. <i>uninervia</i>	now	<i>Diplachne fusca</i> var. <i>uninervia</i>
<i>Leptochloa neesii</i>	now	<i>Dinebra neesii</i>



Inflorescence  
*Diplachne fusca* var. *fusca*



Spikelet  
*Diplachne fusca* var. *fusca*



Part of a inflorescence  
*Diplachne fusca* var. *fusca*



*Dinebra neesii*  
spikelets with one  
floret



*Dinebra neesii*



*Diplachne fusca* var. *fusca*

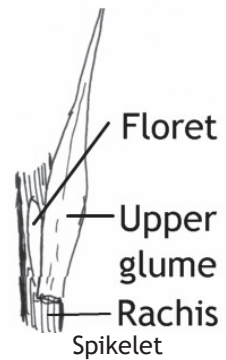
# Lepturus

From the Greek *leptos* (slender) and *oura* (tail), referring to the slender inflorescence.

Annuals or perennials, tufted and stoloniferous. Grows on sandy beaches, with some species extending to coastal hinterlands. The inflorescence is a solitary, bilateral spike (almost cylindrical). The spikelets are solitary and partially embedded in the rachis. The lower glume is absent or obscure.

Subfamily: Chloridoideae; Tribe: Cynodonteae

Species: World = 10, Australia = 5



This species could be confused with *Elionurus citreus*, *Eremochloa bimaculata*, *Hemarthria uncinata* and *Mnesithea rottboellioides*. Check the key on page 18.

## Townsville species

*Lepturus repens*



Spikelets





## *Lepturus repens*

### Derivation

*repens* - from the Latin *repo* (crawl), referring to the well-developed rhizome.

### Habit

A tufted and creeping perennial grass, the culms are 10-60 cm tall.

### Inflorescence

The inflorescence is a cylindrical spike 3.5-7 cm long and about 3 mm wide. The spikelets are contained within the cavities of the axis and at maturity it is falling apart.

### Habitat

A coastal plant growing close to water in sand, especially coral sand, or in shallow soil creeping over rocks, or in *Casuarina* woodland.



Inflorescence



# Megathyrsus

## Guinea Grass or Green Panic

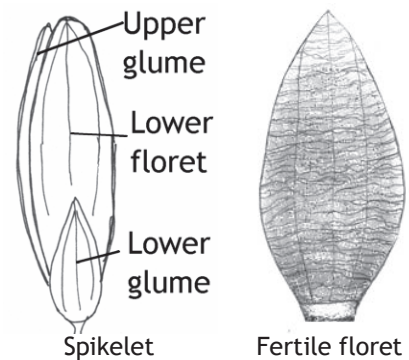
From *mega* (large) and *thyrsus* (a dense flower cluster; much-branched indeterminate inflorescence with pedicellate flowers).

*Megathyrsus maximus* was previously known as *Panicum maximum* and *Urochloa maxima*, and is distinguished by its large open panicle and rugose (wrinkled) fertile floret.

Densely tufted perennials, culms usually erect, 60-250 m tall. The panicle is 12-60 cm long and whorled at the lower nodes. The spikelets are solitary or in pairs.

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = 2, Australia = 1



*Megathyrsus maximus* is the only Australian species from this genus; *maximus* - Latin for greatest.

It can be confused with the species *Panicum mitchellii*. *Megathyrsus maximus* have a fertile lemma transversely rugulose (with a wrinkled appearance).



### Townsville species and varieties

- \* *Megathyrsus maximus* var. *coloratus*
- \* *Megathyrsus maximus* var. *maximus*
- \* *Megathyrsus maximus* var. *maximus* 'Hamil'
- \* *Megathyrsus maximus* var. *pubiglumis*

Purple-topped Guinea Grass  
Common Guinea Grass  
Hamil Grass  
Green Panic



## ***Megathyrsus maximus* - Guinea Grass, Green Panic**

### **Derivation**

*maximus* - Latin for greatest, the culms are very tall.

### **Habit**

A perennial, tufted grass, the culms are 25-200 cm tall, the cultivar 'Hamil' is 2.5-3.5 m tall.

### **Inflorescence**

The panicle is open, 12-60 cm long. The fertile lemma has a wrinkled appearance.

### **Habitat**

This non-native species has been widely cultivated as a pasture grass, but it is a very common, widespread weed of roadsides and disturbed sites.



Spikelet



### **Key to *Megathyrsus maximus* varieties**

1. Plant 2.5-3.5 m tall..... *Megathyrsus* var. *maximus* 'Hamil'
- Plant 0.5-2.5 m tall.....2
- 2 Leaf glabrous at sheath and blade..... *Megathyrsus* var. *maximus*
- Leaf hairy at junction of sheaths and blade .....3



Leaf glabrous at sheath and blade



Leaf hairy at junction of sheaths and blade

- 3 Spikelets indistinctly hairy (needs hand lens) ..... *Megathyrsus* var. *pubiglumis*
- Spikelets glabrous..... *Megathyrsus* var. *coloratus*

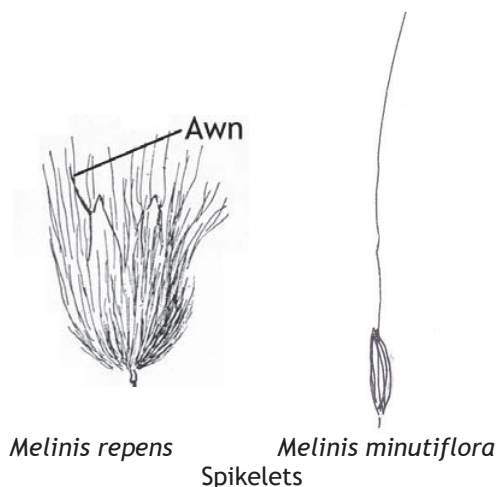
# Melinis

From the Greek *meline* (a cereal, probably millet).

Stoloniferous or tufted, aromatic annuals or perennials. The inflorescence is an open panicle, red, white or purple-coloured. The spikelets are solitary; the lower glume is absent or obscure and the lower lemma has an awn arising from the apical lobes, which is sometimes obscured by hairs on the spikelet.

Subfamily: Panicoideae; Tribe: Paniceae  
Species: World = 23, Australia = 2

Based on inflorescence colour and shape, *Melinis* could be confused with *Capillipedium* and *Chrysopogon zizanioides* however the spikelets are very different.



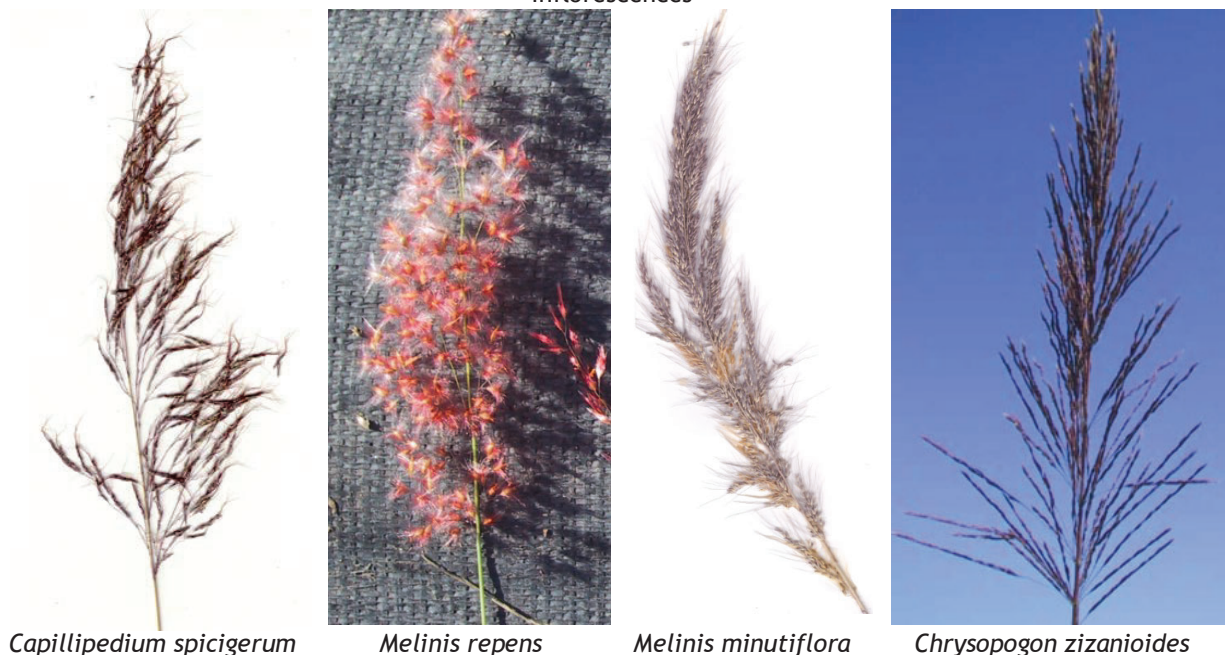
## Townsville species

- \* *Melinis minutiflora* Molasses Grass
- \* *Melinis repens* Red Natal Grass

## Key to the species of *Melinis* and similar genera

1. Plant 150-300 cm tall ..... *Chrysopogon zizanioides*  
Plant 10-140 cm tall ..... 2
2. Spikelets in pairs, one sessile and the other (companion) spikelet pedicelled in threes ..... *Capillipedium*  
Spikelets solitary ..... 3
3. Spikelets covered with long, red, silky hairs; leaves not sticky ..... *Melinis repens*  
Spikelets more or less hairless; leaves sticky and smelling of molasses ..... *Melinis minutiflora*

## Inflorescences



*Capillipedium spicigerum*

*Melinis repens*

*Melinis minutiflora*

*Chrysopogon zizanioides*



## ***Melinis minutiflora* - Molasses Grass**

### **Derivation**

*minutiflora* - from the Latin *minutis* (very small) and *flos* (flower), the spikelets or florets are very small.

### **Habit**

A perennial, tufted grass, the culms are 30-120 cm tall. The leaves are minutely to densely cover with glandular hairs exuding drops of viscid oil, with characteristic molasses odour.

### **Inflorescence**

The panicle is compound, dense or open, 6-30 cm long, it is purple in colour. The spikelets are 1.5-2.4 mm long.

### **Habitat**

This non-native species has been cultivated as a pasture grass and for erosion control in warmer and wetter areas. It is now a weed of roadsides, forest margins, open woodlands, pastures, disturbed sites, waste areas.



Spikelet





## ***Melinis repens* - Red Natal Grass**

### **Derivation**

*repens* - from the Latin *repo* (crawl), the rhizome well developed.

### **Habit**

An annual or perennial, tufted grass, the culms are 20-130 cm tall.

### **Inflorescence**

The panicle is compound, open, 5-20 cm long; it is pink, red or shining white in colour. The spikelets are 3-5 mm long.

### **Habitat**

This non-native species is a very common weed of roadsides, railways, parks, gardens, footpaths, disturbed sites, waste areas, pastures and crops.



Spikelet



# Mnesithea

Named after Mnesitheus (4<sup>th</sup> century BC), a Greek herbalist.

A genus of variable habit ranging from robust perennials to delicate annuals. The inflorescence is a single raceme or panicle, and subtended by a spathe. The spikelets are paired, and partially embedded in rachis, which breaks into segments at maturity. The pedicelled spikelet is sometimes different in shape and size from the sessile spikelet.

Subfamily: Panicoideae; Tribe: Andropogoneae

In 1986, based on cladistic studies, the genera *Coelorachis*, *Hackelochloa* and *Heteropholis* were included in *Mnesithea*. This broad concept (*sensu lato*) of the genus is not widely accepted.

Species: Australia = 5

World: *Mnesithea* = 5, *Coelorachis* = c. 20, *Hackelochloa* = 2, *Heteropholis* = 6

## Townsville species

*Mnesithea formosa*

*Mnesithea granularis* Pit Scale Grass

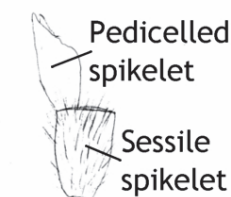
*Mnesithea rottboellioides* Northern Canegrass

*Mnesithea formosa* could be confused with *Schizachyrium* species.

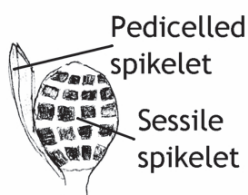
*Mnesithea rottboellioides* could be confused with *Elionurus citreus*, *Eremochloa bimaculata*, *Hemarthria uncinata*, *Ophiuros exaltatus* and *Lepturus repens*. Check the key on page 18.

## Key to the species of *Mnesithea*

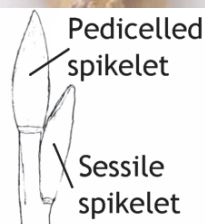
1. Perennial, robust, 100-300 cm tall; the pedicelled spikelet is similar to the sessile spikelet.....  
..... *Mnesithea rottboellioides*  
Annual, erect 10-75 cm tall; the pedicelled spikelet is not like the sessile spikelet.....2
2. Sessile spikelet with ornate sculturing..... *Mnesithea granularis*  
Sessile spikelet smooth and with white hairs..... *Mnesithea formosa*



*Mnesithea formosa*



*Mnesithea granularis*



*Mnesithea rottboellioides*



## *Mnesithea formosa*

### Derivation

*formosa* - Latin for handsome, it is attractive in appearance.

### Habit

An erect, annual grass, the culms are 10-60 cm tall.

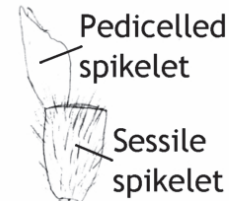
### Inflorescence

The panicle is subtended by an inflated leaf-sheath; the racemes are 2-8 cm long. The sessile spikelet is terete and densely white hairy. The pedicelled spikelet is sterile and is reduced to two unequal glumes.

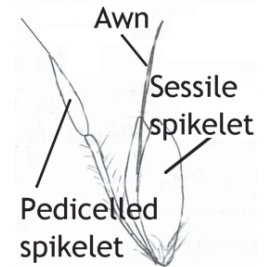
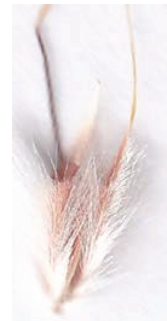
### Habitat

This species grows in gravelly silt, alluvium, pink or red clayey sand. Occurs in savanna woodlands.

*Mnesithea formosa* could be confused with *Schizachyrium fragile*. The spikelets of *Schizachyrium fragile* have awns.



*Mnesithea formosa*



*Schizachyrium fragile*



## *Mnesithea granularis* - Pit Scale Grass

### Derivation

*granularis* - from the Latin *granum* (grain) and *-aris* (pertaining to), it has segments of the inflorescence resemble beads.

### Habit

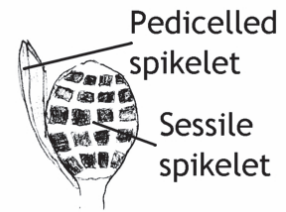
An erect, annual grass, the culms are 10-75 cm tall.

### Inflorescence

The panicle is a series of spike-like racemes up to 2.5 cm long, each partly enclosed by spathes. The sessile spikelet is very rounded and with a distinctive, sculptured patterning on the back. The pedicelled spikelet is narrow and is sterile (rarely male).

### Habitat

This species usually grows on open sands, coastal salt marshes, clays, moist places and roadsides.



*Mnesithea granularis*





## ***Mnesithea rottboellioides* - Northern Canegrass**

### **Derivation**

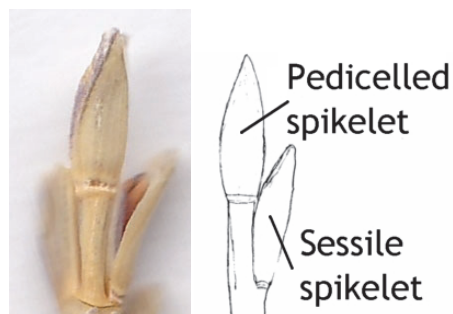
*rottboellioides* - resembling the genus *Rottboellia* with respect to the inflorescence.

### **Habit**

A perennial, robust grass, the culms are 100-300 cm tall.

### **Inflorescence**

The panicle is terminal and axillary, subtended by a spatheole. The cylindrical racemes, 5-10 cm long, are crowded at one or several nodes. The pedicelled spikelet is similar to the sessile spikelet.



*Mnesithea rottboellioides*

### **Habitat**

This species grows on hills, in grasslands or open forests.

*Mnesithea rottboellioides* could be confused with *Elionurus citreus*, *Eremochloa bimaculata*, *Hemarthria uncinata*, *Ophiuros exaltatus* and *Lepturus repens*. Check the key on page 18.





# Ophiuros

From the Greek *ophis* (serpent) and *oura* (tail), alluding to the smooth spikes with the scale-like appressed lower glumes of the spikelets.

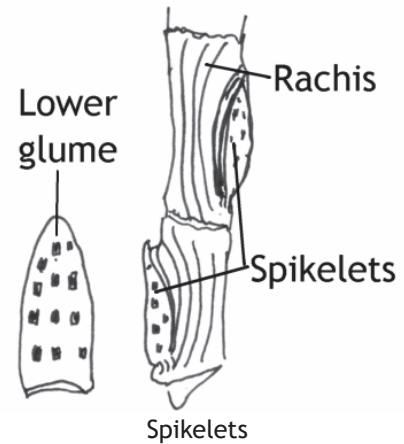
Tufted perennials or annuals, culms woody and persistent. The inflorescence is a compound panicle composed of aggregated cylindrical racemes. The spikelets are sunken into the rachis and are borne alternately on opposite sides. The lower glume is sculptured when the spikelet is mature.

Subfamily: Panicoideae; Tribe: Andropogoneae.

Species: World = 4, Australia = 1

## Townsville species

*Ophiuros exaltatus* Canegrass



This species resembles *Mnesithea rottboellioides*, however *Ophiuros exaltatus* has spikelets that appear to be solitary and the lower glume is pitted in rows. This species may also be confused with *Eremochloa bimaculata*. Check the key on page 18.



## *Ophiuros exaltatus* - Canegrass

### Derivation

*exaltatus* - from the Latin for raised up, tall.

### Habit

A perennial, erect grass, the culms are 150-300 cm tall.

### Inflorescence

The inflorescence is a clustered panicle of slender racemes, each subtended by a short spathe.

### Habitat

The inflorescence is a clustered panicle of slender racemes, each subtended by a short spathe.



Spikelets





# Oplismenus

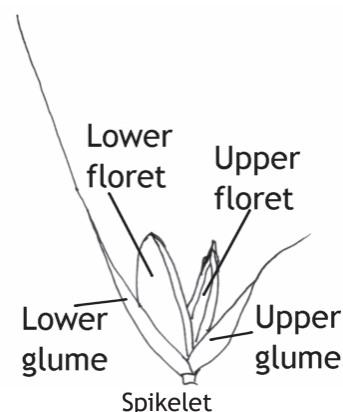
From the Greek *hoplismenus* (bearing arms), referring to the armed spikelets.

Shade-loving, decumbent annuals or perennials. The inflorescence is a once-branched panicle, with spikelets on one side of a slender axis, or branches are reduced to fascicles (clusters) of spikelets. The lower glume is awned and is often sticky at the tip, and by sticking to passing animals, acts as a fruit dispersal mechanism.

*Oplismenus* species are commonly found in rainforest or in damp shady places.

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = 9, Australia = 5



## Townsville species

*Oplismenus aemulus* Australian Basket Grass

*Oplismenus compositus* Running Mountain Grass

## Key to the species of *Oplismenus*

1. Most leaves less than 7 times as long as wide .....2
- Most leaves 10 or more times as long as wide .....3



Most leaves less than 7 times as long  
as wide



Most leaves 10 or more times as long as wide

2. Basal racemes more than 4 cm long (2.5-11 cm)..... *Oplismenus compositus*
- Basal racemes less than 2 cm long (2.5-3.5 cm long) .....*Oplismenus aemulus*
3. Racemes in distinct clusters; leaf blade indumentum dense ..... *Oplismenus mollis*
- Racemes not in distinct clusters; leaf blade indumentum sparse..... *Oplismenus imbecillis*



## *Opismenus aemulus* - Australian Basket Grass

### Derivation

*aemulus* - Latin for more or less equalling, subtending glumes more or less equal.

### Habit

A perennial, prostrate grass, the culms are 5-50 cm long. The leaf-blades 4-18 mm wide

### Inflorescence

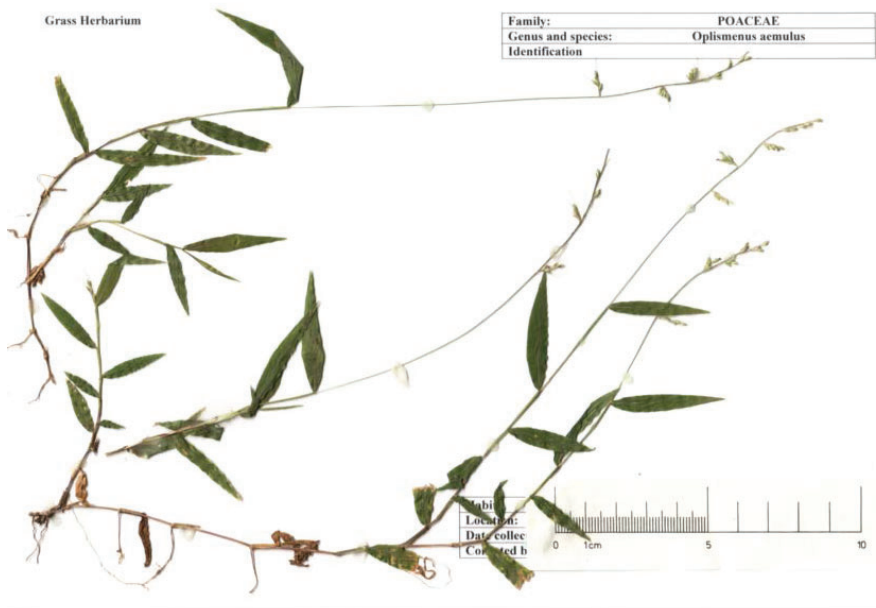
The inflorescence is a once branched panicle; it has 3-9 racemes, which are 2.5-3.5 cm long.

### Habitat

This species is common in shady, damp places in or near rainforest and along stream lines.



Spikelets





## ***Oplismenus compositus* - Running Mountain Grass**

### **Derivation**

*compositus*- from the Latin *compono* (bring together).

### **Habit**

A perennial, prostrate grass, the culms are 15-80 cm long. The leaf-blades are 8-27 mm wide.

### **Inflorescence**

The inflorescence is a once branched panicle; it has 4-12 racemes, which are 2.5-11 cm long.

### **Habitat**

This species grows in moist places in rainforests, vine forest, vine thicket and along forest margins.



Spikelet



# Oryza

## Rice

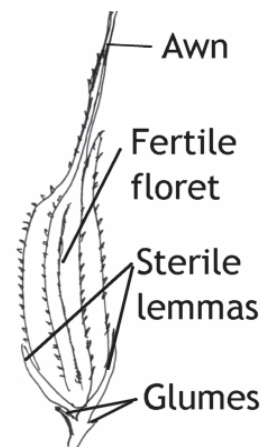
Latin from the Arabic *uruz* (rice), whence Greek *oruza* is also derived.

Tufted annuals or perennials often growing in open swamps. The inflorescence is an open or contracted panicle. The spikelets are solitary, strongly laterally compressed, usually with a long awn (the cultivated rice *Oryza sativa* is not of awned). The spikelet consists, two rudimentary, scale-like glumes, two basal florets reduced to lemmas and a terminal fertile (bisexual) floret. The fertile floret contains 6 stamens. Most Australian grass genera contain 1-3 stamens, *Leersia hexandra* also has 6 stamens.

*Oryza* species usually grow in swampy areas or seasonally inundated clay soils. During the dry season the grass dies back and the above-ground parts of the plant are not visible.

Subfamily: Ehrhartoideae; Tribe: Oryzeae

Species: World = c.25, Australia = 5



Spikelet

### Townsville species

*Oryza australiensis*

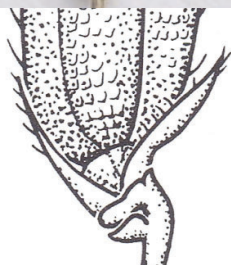
Australian Wild Rice

*Oryza meridionalis*

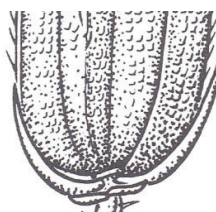
Australian Wild Rice

### Key to the species of *Leersia* and *Oryza* species

1. Spikelets 1-flowered with a bisexual floret and without sterile florets ..... *Leersia*  
Spikelets 3-flowered, the lower 2 reduced to sterile lemmas ..... 2
2. Awn 30-150 mm long; spikelets inserted at an angle to the pedicel; ligule split, apex two lobed .....  
..... *Oryza meridionalis*
- Awn 10-60 mm long; spikelets inserted more or less horizontal on their pedicels; ligule not split  
..... *Oryza australiensis*



*Oryza meridionalis*



*Oryza australiensis*



## ***Oryza australiensis* - Australian Wild Rice**

### **Derivation**

*australiensis* - from Australia.

### **Habit**

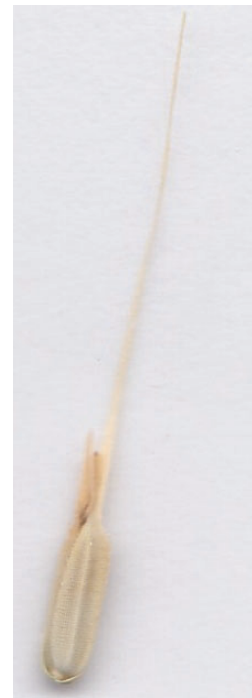
A perennial, rhizomatous grass, the culms are erect, 0.8-2.5 m tall. The ligule apex is acute, abuse or truncate (shorten or reduce).

### **Inflorescence**

The panicle is open or sometimes contracted, 13-45 cm long. The lemma awn is 10-60 mm long; the spikelet is inserted more or less horizontal on their pedicels.

### **Habitat**

The species grows in or at the edge of water, in swamps, lagoons, creeks, drainage channels or seasonally inundated areas, often in black or grey clays.



## ***Oryza meridionalis* - Australian Wild Rice**

### **Derivation**

*meridionalis* - from the Latin *meridies* (meridian) and *-ale* (pertaining to), on the same meridian (line of longitude) as a related species.

### **Habit**

An annual or sometimes perennial grass, the culms are erect to decumbent, 0.3-2 m tall. The ligule apex two lobed.

### **Inflorescence**

The panicle is open or sometimes contracted, 9-30 cm long. The lemma awn is 30-150 mm long; the spikelet is inserted more or less horizontal on their pedicels.

### **Habitat**

The species grows in shallow or sometimes deeper water, in aquatic to drying conditions, on margins of lagoons, waterholes and creeks, include seasonal swamps, often in cracking clay, sometimes in loams and sandy soils.



Inflorescence



Spikelet

# Oxychloris

## Windmill Grasses

From Greek *oxys* (sharp) referring to the pungent callus, and the generic name *Chloris* (in which it was formerly included).

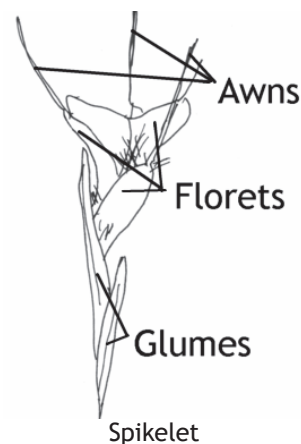
Tufted annuals or short-lived perennials. The inflorescence is digitate with 3-6 spikes. The spikelets are laterally compressed with 4-6 florets and arranged on one side of the rachis. The upper florets are inflated and each floret is awned, therefore each spikelet has 4-6 awns.

*Oxychloris* is closely related and easily confused with the genera *Chloris* and *Enteropogon*.

Subfamily: Chloridoideae; Tribe: Cynodonteae  
Species: World = 1, Australia = 1

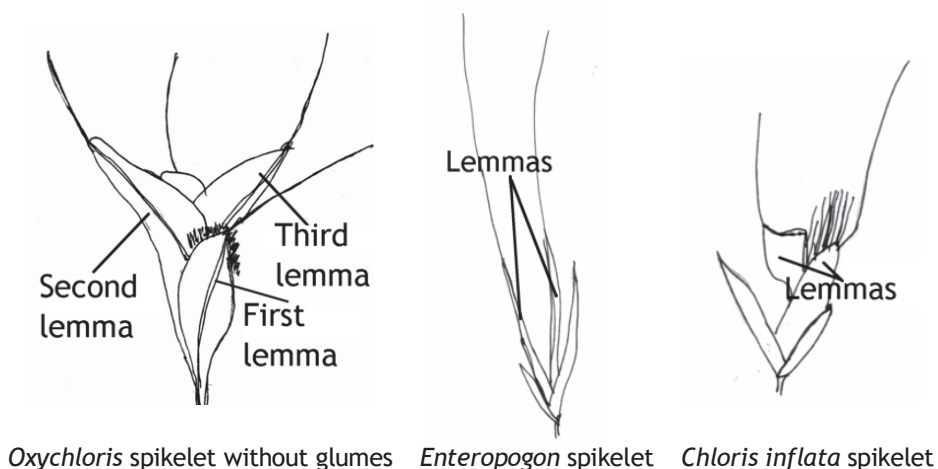
### Townsville species

*Oxychloris scariosa*      Winged Windmill Grass,  
Winged Chloris



### Key to the species of *Oxychloris* and similar species

1. Second and third lemmas very broad, sharply recurved at maturity (wing-like)..... *Oxychloris scariosa*  
    Lemmas not very broad, not wing-like.....2
2. Lowest lemma dorsally compressed (lying on front or back when placed on a flat surface).....  
    ..... *Enteropogon ramosus*  
    Lowest lemma laterally compressed (lying on the side when placed on a flat surface) ..... *Chloris*



*Oxychloris* spikelet without glumes    *Enteropogon* spikelet    *Chloris inflata* spikelet



## *Oxychloris scariosa* - Winged Windmill Grass, Winged Chloris

### Derivation

*scariosa* - Latin for thin, referring to the texture of the glumes or lemmas.

### Habit

An annual or short-lived perennial grass, the culms are 15-50 cm tall.

### Inflorescence

The inflorescence is digitate with 3-6 branches, erect to spreading, 1-8-6 cm long. The spikelets are 5.5-9 long with 4-9 florets, the second and third lemmas are very broad and wing-like.

### Habitat

This species are usually on clay soils in depressions, often with saline conditions, but also found on sandy and loam soils, especially in disturbed areas such as roadsides.



Inflorescence



Part of inflorescence



Spikelet

# Panicum

Latin name for common millet, from Latin word *panis* (bread).

Annuals or perennials, of various habit but commonly tufted. The inflorescence is an open or contracted panicle, with secondary branches. The spikelets are solitary or in pairs, the surfaces of the fertile floret are smooth and often shiny. The lower glume varies from being very short to equal to the spikelet.

Species from this genus are from diverse habitats, including aquatic grasses.



Spikelets

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = c 370, Australia = 35

Members of this genus could be confused with *Urochloa*, *Megathyrsus*, *Whiteochloa* and *Arthrargrostis*.



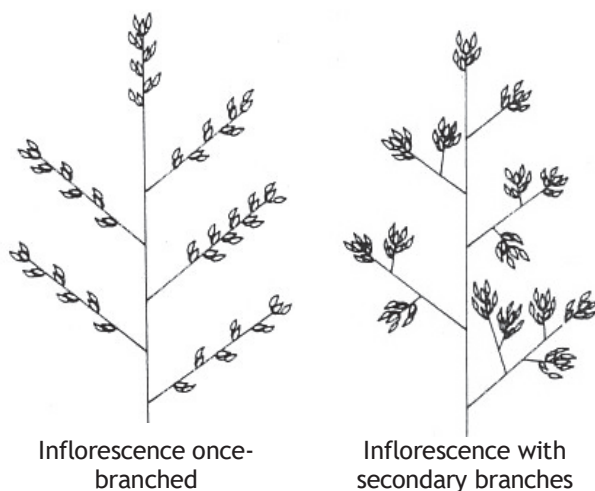
Inflorescence

## Townsville species

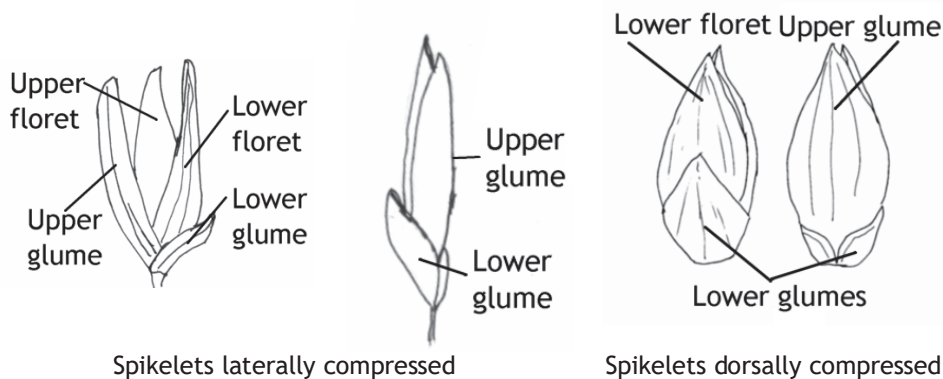
<i>Panicum decompositum</i> var. <i>decompositum</i>	Australian Millet
<i>Panicum decompositum</i> var. <i>tenuius</i>	Australian Millet
<i>Panicum effusum</i>	Hairy Panic
<i>Panicum laevinode</i>	Pepper Grass
<i>Panicum mitchellii</i>	
<i>Panicum paludosum</i>	Swamp Panic
<i>Panicum seminudum</i>	
<i>Panicum simile</i>	Two-coloured Panic
<i>Panicum trichoides</i>	

## Key to the species of *Panicum* and related genera

1. Inflorescence once-branched ..... *Urochloa*  
 Inflorescence with secondary branches ..... 2



2. Fertile lemma transversely rugulose (with a wrinkled appearance) ..... *Megathyrsus maximum*  
 Fertile lemma smooth and shiny ..... 3
3. Spikelets laterally compressed ..... 4  
 Spikelets dorsally compressed ..... 5



4. Plant 45-110 cm tall; grows on sandy, alluvial soils; inflorescence open or contracted, branches persistent ..... *Whiteochloa airoides*  
 Plant 17-60 cm; grows on rocky hillsides; inflorescence open; branches deciduous ..... *Arthragrostis deschampsoides*



5. Plants aquatic or growing in swamp..... *Panicum paludosum*  
Plants not aquatic, not growing in swamps, .....6
6. Spikelets 0.8-1.4 mm long..... *Panicum trichoides*  
Spikelets 2 mm or more long .....7
7. Culms 1-2 m tall.....*Panicum mitchellii*  
Culms less than 1 m tall .....8
8. Leaf blades hairy (use a hand lens).....9  
Leaf blades glabrous ..... 10
9. Perennial; culms vastly hairy .....*Panicum effusum*  
Annual; culms glabrous or slightly hairy; .....*Panicum seminudum*
10. Inflorescence branches, lower ones usually whorled.....*Panicum decompositum*  
Inflorescence branches, lower ones solitary ..... 11
11. Lower glume 1/8 - 1/3 of spikelet length.....*Panicum laevinode*  
Lower glume 1/2 - 2/3 of spikelet length..... *Panicum simile*

### Key to the species of *Panicum*

The lower glume length compared with the spikelet length is a good way to identify the species.

#### Lower glume 1/3 and less of spikelet length

Found over a wide area of woodlands  
A perennial; leaf-blades 25-50 cm  
long; inflorescence with whorled  
branches at lower nodes



*Panicum decompositum*

An annual; leaf-blades 5-20 cm  
long; inflorescence not with  
branches whorled



*Panicum laevinode*

Aquatic or swamp grasses  
Rhizomes thick and  
spongy



*Panicum paludosum*

**Lower glume 1/3 - 2/3 of spikelet length**

Inflorescence small, 4-20 cm long,  
Spikelet small, 1-1.5 mm long  
Culms 15-100 cm tall



*Panicum trichoides*

Inflorescence 8-50 cm long  
Spikelet 2-3 mm long  
Culms 2-100 cm tall  
Culm internodes and base distinctly hairy



*Panicum effusum*

Inflorescence a fairly narrow panicle  
Spikelet 2.25-3.5 mm long  
Culms 20-70 cm tall,



*Panicum simile*

Inflorescence a large open panicle  
Spikelet 2.5-3 mm long  
Culms 100-200 cm tall



*Panicum mitchellii*

**Lower glume at least 3/4 of spikelet length**  
Lower glume shorter than spikelet (0.75-0.95)



*Panicum seminudum*

## *Panicum decompositum* - Australian Millet

### Derivation

*decompositum* - Latin for much divided, the inflorescence is much branched.

### Habit

A perennial, densely tufted grass, the culms are 30-80 cm tall.

### Inflorescence

The panicle is open, it is usually whorled at lower nodes, 15-35 cm long. The spikelet is 2.3-3.5 mm long. The lower glume is 25-33% of length of spikelet.

### Habitat

The species occur over a wide area of woodlands.



Spikelet

There are two varieties

Spikelets 2.3-2.8 mm long ..... *Panicum decompositum* var. *tenuis*

Spikelets 3-3.5 mm long ..... *Panicum decompositum* var. *decompositum*





## ***Panicum effusum* - Hairy Panic**

### **Derivation**

*effusum* - Latin for spread out, the inflorescence an open panicle.

### **Habit**

A perennial, tufted grass, the culms are 2-100 cm tall. The stems and leaf sheaths are hairy, they are usually tubercle-based.

### **Inflorescence**

The panicle is open, 8-50 cm long. The spikelet is 2-3 mm long. The lower glume is 50-65 % of length of spikelet.

### **Habitat**

The species is widespread in woodland and on disturbed sites.



Spikelet





## ***Panicum laevinode* - Pepper Panic**

### **Derivation**

*laevinode* - Latin for (*laevis*) smooth and (*nodus*) nodes.

### **Habit**

An annual or perennial short-lived, tufted grass, the culms are 15-120 cm tall.

### **Inflorescence**

The panicle is open, 5-30 cm long. The spikelet is 2.3-3.5 mm long. The lower glume is 33-50 % of length of spikelet.

### **Habitat**

The species is spread a widespread on good soils.



Spikelet



## *Panicum mitchellii*

### Derivation

*mitchellii* - in honour of Thomas Livingstone Mitchell (1792-1855), a Scots-born Australian surveyor and explorer.

### Habit

A robust, erect, perennial grass, the culms are 100-200 cm tall.

### Inflorescence

The panicle is open, 20-40 cm long. The spikelet is 2.5-3 mm long. The lower glume is 50-60% of length of spikelet.

### Habitat

This species grows in tropical and subtropical rainforest and in woodlands.



Spikelet





## ***Panicum paludosum* - Swamp Panic**

### **Derivation**

*paludosum* - from the Latin *palus* (swamp) and *-osa* (abundance), it is growing in swampy places.

### **Habit**

A perennial, aquatic, spongy grass, the culms are 25-130 cm tall.

### **Inflorescence**

The panicle is open, 10-30 cm long. The spikelet is 3.2-4.1 mm long. The lower glume is 10-25% of length of spikelet.

### **Habitat**

This species grows in still and slowing water.



Spikelet





## ***Panicum seminudum***

### **Derivation**

*seminudum* - from the Latin *semi-* (half) and *nuda* (bare), only part of the plant bearing hairs.

### **Habit**

An erect, annual grass, the culms are 40-90 cm tall. The leaves and culms can be glabrous or hairy.

### **Inflorescence**

The panicle is open, 15-30 cm long. The spikelet is 3.1-3.7 mm long. The lower glume is 75-95% of length of spikelet.

### **Habitat**

This species grows in rainforests and woodlands



Spikelet



## ***Panicum simile* - Two-coloured Panic**

### **Derivation**

*simile* - Latin for like, it is readily confused with one or more other species, e.g. *Panicum effusum*.

### **Habit**

A slender, annual grass, the culms are 20-70 cm tall.

### **Inflorescence**

The panicle is open, 4-20 cm long. The spikelet is 2.25-3.5 mm long. The lower glume is 50% of length of spikelet. The spikelets are pale to golden and purple or irregularly blotched with purple.

### **Habitat**

This species grows in poor soil in woodlands.



Spikelet





## *Panicum trichoides*

### Derivation

*trichoides* - from the Greek *thrix* (hair) and *-oides* (resembling), the spikelets are sparsely hirsute.

### Habit

An annual grass, the culms are 15-100 cm tall. The leaves are short, 1.5-8 cm long and 0.5-2 cm wide.

### Inflorescence

The panicle is open, 4-20 cm long. The spikelet is 1-1.5 mm long. The lower glume is 25-50% of length of spikelet.

### Habitat

This species grows well in moist, shaded forested areas at lower elevations.



Spikelet



# Paspalidium

From the Greek *eidos* (shape) and *Paspalum* (another grass genus) 'shaped like *Paspalum*'; or a diminutive of *Paspalum*.

Annuals or perennials (often aquatic), rhizomatous or tufted to decumbent. The inflorescence is usually a once-branched panicle; however the racemes are appressed to the main axis or a single raceme. The rachis of each raceme extending as a bristle beyond the point of attachment of the last spikelet. The spikelets are solitary or in pairs.

Other genera with a single bristle subtending the spikelet are *Pseudoraphis* and some species of *Setaria*.

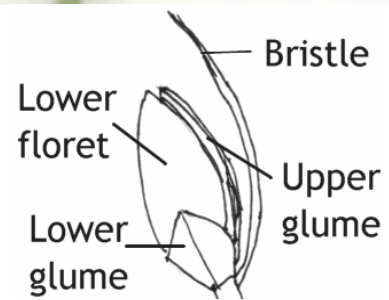
Subfamily: Panicoideae; Tribe: Paniceae  
Species: World = c. 40, Australia = 23

## Townsville species

<i>Paspalidium distans</i>	Spreading Panic Grass
<i>Paspalidium flavidum</i>	
<i>Paspalidium gracile</i>	Slender Panic
<i>Paspalidium rarum</i>	Rare Panic

V *Paspalidium udum*

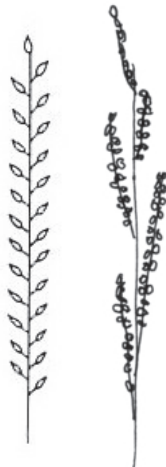
Vulnerable species (V) are threatened plants.



Spikelet at the end of the inflorescence

## Key to the species of *Paspalidium* and related genera

1. Primary branches of panicle alternate on opposite sides of the main axis or from one side of main axis .....3
- Primary branches of panicle originate from all sides.....2



Primary branches from one or two sides



Primary branches from all sides

2. Inflorescence is an open panicle ..... *Pseudoraphis spinescens*  
 Inflorescence is a constricted panicle..... *Setaria*



*Pseudoraphis*



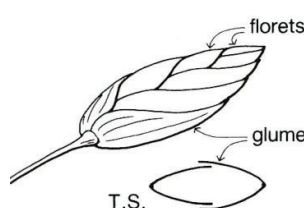
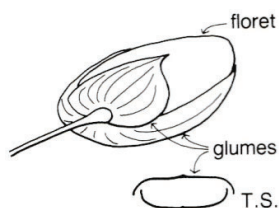
*Setaria*

3. Racemes reduced to 1 or 2 spikelets ..... *Paspalidium rarum*  
 Racemes with more than 2 spikelets ..... 4  
 4. Aquatic or semi-aquatic; culms thick and spongy..... *Paspalidium udum*  
 Terrestrial; culms are slender and not spongy ..... 5



*Paspalidium udum* culms are spongy

5. Culms wiry; leaves 1-4 mm wide; leaves convolute ..... *Paspalidium gracile*  
 Culms firm; leaves 2-8 mm wide; leaves flat ..... 6  
 6. Leaves width 1-6.5 mm; spikelets dorsally compressed, 1.8-2.2 mm long..... *Paspalidium distans*  
 Leaves width 4-8 mm; spikelets laterally compressed or terete, 2.5-3 mm long  
 ..... *Paspalidium flavidum*



Spikelet dorsally compressed    Spikelet laterally compressed  
 T.S. = transverse section



## ***Paspalidium distans* - Spreading Panic Grass**

### **Derivation**

*distans* - from the Latin *disto* (be apart), the spikelets widely separated in inflorescence.

### **Habit**

A perennial, tufted grass, the culms are 30-70 cm tall. The leaves are 1-6.5 mm wide.

### **Inflorescence**

The panicle is of racemes 4-10, distant. The inflorescence is 6-16 cm long. The spikelet is 1.7-2.2 mm long.

### **Habitat**

This species grows in forest, woodland and shrub woodlands.



Spikelet



## ***Paspalidium flavidum***

### **Derivation**

*flavidum* - from the Latin *flavidus* (pale yellow), the spikelets yellow.

### **Habit**

A perennial, tufted grass, the culms are 10-100 cm tall. The leaves are 4-8 mm wide.

### **Inflorescence**

The panicle is of racemes 4-9, distant. The inflorescence is 7-30 cm long. The spikelet is laterally compressed or terete and is 1.9-3 mm long.

### **Habitat**

This species grows in rainforest and woodlands.



Spikelets



## ***Paspalidium gracile* - Slender Panic**

### **Derivation**

*gracile* - Latin for slender, the culms or inflorescences slender.

### **Habit**

A perennial, wiry, tufted grass; the culms are 10-90 cm tall. The leaves are 1-4 mm wide.

### **Inflorescence**

The panicle is of racemes 5-10, with a marked constriction. The inflorescence is 5-10 cm long. The spikelet is 2-3 mm long.

### **Habitat**

This species grows in wet sclerophyll forests, woodlands, shrublands and grasslands.



Spikelet





## ***Paspalidium rarum* - Rare Panic**

### **Derivation**

*rarum* - Latin for far apart, the spikelets far apart in panicle.

### **Habit**

An annual, tufted grass, the culms are 15-45 cm tall. The leaves are 1-3.5 mm wide.

### **Inflorescence**

The inflorescence of this species is unique; typically the lateral branches are reduced to a single spikelet. The inflorescence is a raceme, 5-13 cm long. The spikelets are 2.7-3.5 mm long.

### **Habitat**

This species grows in woodlands, shrublands and grasslands.



Spikelet





## *Paspalidium udum*

### Derivation

*udum* - Latin for damp, growing in swampy areas.

### Habit

A perennial, semi-aquatic or aquatic grass, with elongated rhizomes. The culms are 40-90 cm tall, they are spongy. The leaves are 5-11 mm wide.

### Inflorescence

The panicle is of racemes 10-16, they are close together. The inflorescence is 12-19 cm long. The spikelet is 2.7-3 mm.

### Habitat

It is considered a vulnerable plant.



Spikelet



Spongy culm



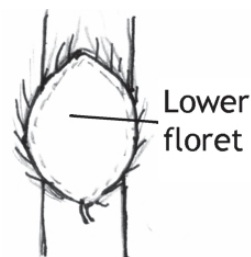
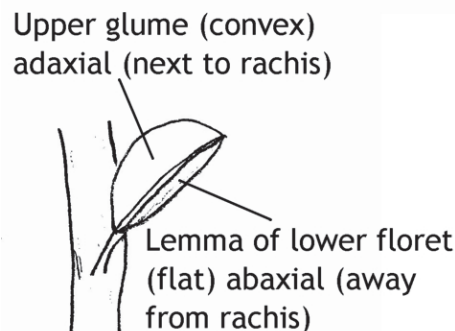
# Paspalum

From the Greek word *paspalos* (a kind of millet).

Perennials (usually) or annuals, rhizomatous or stoloniferous or tufted or decumbent. The inflorescence is either digitate or a racemose once-branched panicle. The spikelets are solitary or paired, and arranged along one side of rachis (the axis or branch of the inflorescence). The genus is best recognised by its plano-convex spikelets with the upper glume adaxial (the side facing to the rachis), often with a hemispherical or oblong shape. The lower glume is usually absent.

Some species are similar to the genus *Axonopus*; however this genus has the upper glume abaxial (the side facing away from the rachis).

Subfamily: Panicoideae; Tribe: Paniceae  
Species: World = 320 , Australia = 19



## Townsville species

- \* *Paspalum conjugatum* Sour Grass, Johnson River Grass
- \* *Paspalum dilatatum* Paspalum
- Paspalum distichum* Water Couch
- \* *Paspalum notatum* Bahia Grass
- Paspalum scrobiculatum* Ditch Millet
- Paspalum vaginatum* Saltwater Couch

## Key to the species of *Paspalum* and related genera

1. Lower floret adjacent to the inflorescence axis .....*Axonopus*  
Lower floret positioned away from the inflorescence axis.....2
2. Inflorescence of 2 racemes at end of a culm, sometimes with a third one below .....3  
Inflorescence of 1 - many racemes along a common elongated axis .....7
3. Spikelets 1.2-1.8 mm long .....*Paspalum conjugatum*  
Spikelets 2.5-4.5 mm long .....4
4. Upper glume finely pubescent..... *Paspalum distichum*  
Upper glume glabrous.....5
5. Plants tufted .....*Paspalum scrobiculatum*  
Plants stoloniferous or rhizomatous .....6
6. Spikelets about twice as long as broad; usually aquatic ..... *Paspalum vaginatum*  
Spikelets almost circular .....*Paspalum notatum*
7. Plant usually less than 1 m tall; Spikelet without long silky hairs around margin.....  
.....*Paspalum scrobiculatum*  
Robust plant 1-2 m tall; Spikelets conspicuously silky-hairy around margin, hairs as long as or  
exceeding spikelet length ..... *Paspalum dilatatum*



***Paspalum conjugatum* - Sour Grass, Johnson River Grass**

**Derivation**

*conjugatum* - from the Latin *conjugo* (yoke together), the inflorescence branches paired.

**Habit**

A perennial, stoloniferous grass, the culms are 20-100 cm tall.

**Inflorescence**

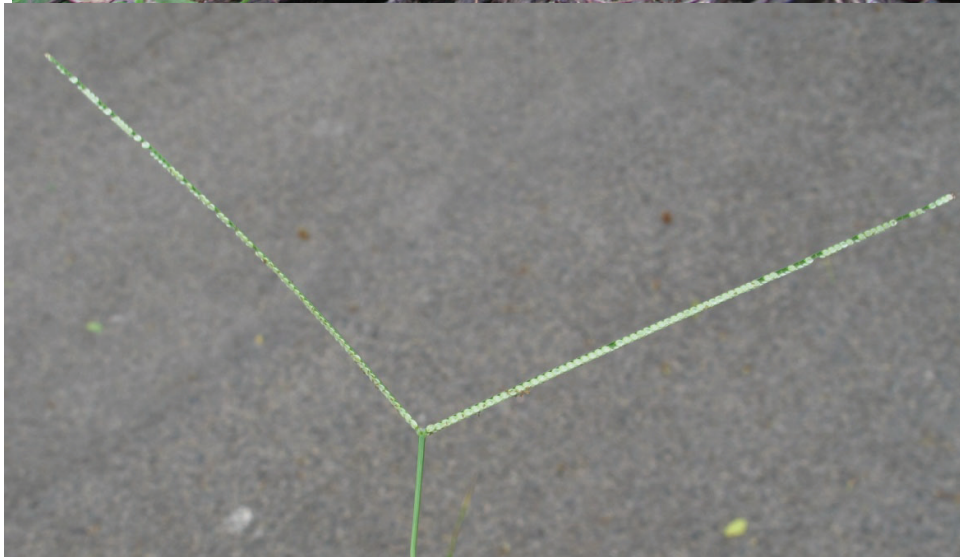
The panicle is digitate with 2 branches, 4-17 cm long. The spikelets are 1.2-1.8 mm long.

**Habitat**

This non-native species grows in wet roadsides or ditches and spreads quickly by stolons.



Spikelets





## ***Paspalum dilatatum* - Paspalum**

### **Derivation**

*dilatatum* - from the Latin *differe* (spread abroad) and *-ata* (possessing), the racemes spreading in pseudo-vercitics.

### **Habit**

A perennial, tufted grass, the culms are 25-180 cm tall.

### **Inflorescence**

The panicle is once-branched of 3-10 racemes, 4-12.5 cm long. The spikelets are 2.7-3.9 mm long.

### **Habitat**

This non-native species is a weed, preferring moist ditches, disturbed areas, and is a common invader of gardens.



Spikelets





## ***Paspalum distichum* - Water Couch**

### **Derivation**

*distichum* - from the Greek *distichos* (two-rowed), it has conspicuously two-rowed spikelets or leaves.

### **Habit**

A perennial, stoloniferous grass, the culms are 8-60 cm tall.

### **Inflorescence**

The panicle is digitate with 2 to 3 branches, 1.5-8 cm long. The spikelets are 2.6-4 mm long.

### **Habitat**

This species prefers moist ditches or coastal areas and is associated with fresh or salt water.



Spikelets





## ***Paspalum notatum* - Bahia Grass**

### **Derivation**

*notatum* - from the Latin *noto* (mark), the spikelets are multi-coloured.

### **Habit**

A perennial, rhizomatous grass, the culms are 15-75 cm tall.

### **Inflorescence**

The panicle is digitate with 2 to 3 branches, 2.5-13 cm long. The spikelets are 2.5-3.8 mm long.

### **Habitat**

This non-native species can dominate disturbed soils, pastures and roadsides.



Spikelet





## ***Paspalum scrobiculatum* - Ditch Millet**

### **Derivation**

*scrobiculatum* - from the Latin *scrobis* (ditch), *-ulus* (diminutive) and *-atus* (possessing), the glumes or lemmas furrowed.

### **Habit**

A perennial tufted grass; the culms are 10-150 cm tall.

### **Inflorescence**

The panicle is digitate with 2 branches or is once-branched of 1-20 racemes, 2-15 cm long. The spikelets are 1.4-3 mm long.

### **Habitat**

This species grows in poor soil, damp soils; open cultivated places and wastelands.

This is a widespread, morphologically variable species. This species is notoriously difficult to treat taxonomically as it is possibly an aggregate swarm of apomicts.



Spikelets



## ***Paspalum vaginatum* - Saltwater Couch**

### **Derivation**

*vaginatum* - from the Latin *vagina* (sheath) and *-ata* (possessing), the inflorescences concealed or partially concealed in uppermost leaf-sheaths.

### **Habit**

A perennial, stoloniferous and rhizomatous grass, the culms are 8-60 cm tall.

### **Inflorescence**

The panicle is digitate with 2 branches or is once-branched of 3-5, 1.5-7.5 cm long. The spikelets are 2.5-4.5 mm long.

### **Habitat**

This species grows in wet areas near saline or brackish water, chiefly coastal habitats. This grass is sometimes called non-native in Australia.



Spikelets





# Perotis

From the Greek *peros* (deficient, mutilated) and *ous* (an ear), the lemma is awnless.

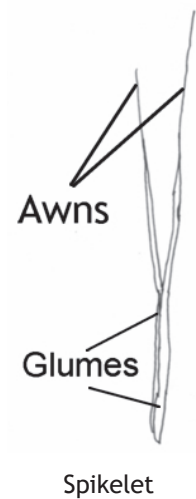
Tufted annuals or rarely perennials. The inflorescence is a single raceme or spike. The spikelets are solitary and both glumes are long and awned. The single fertile floret is very small and held within the glumes.

Subfamily: Chloridoideae; Tribe: Cynodonteae

Species: World = 10, Australia = 3

## Townsville species

*Perotis rara* Comet Grass



## ***Perotis rara* - Comet Grass**

### **Derivation**

*rara* - is Latin for far apart and refers to the spikelets being spaced out along the inflorescence.

### **Habit**

An annual grass, the culms are 15-40 cm tall. The leaves are erect.

### **Inflorescence**

The inflorescence is 10-28 cm and about 2.5 cm wide. The spikelets are often pointing downwards at maturity, hence the common name, Comet Grass.

### **Habitat**

This species occurs in a variety of habitats from coastal dunes and vine thickets to open *Eucalyptus* forests, often on sandy soils near streams or waterholes or in other disturbed areas.





# Phragmites

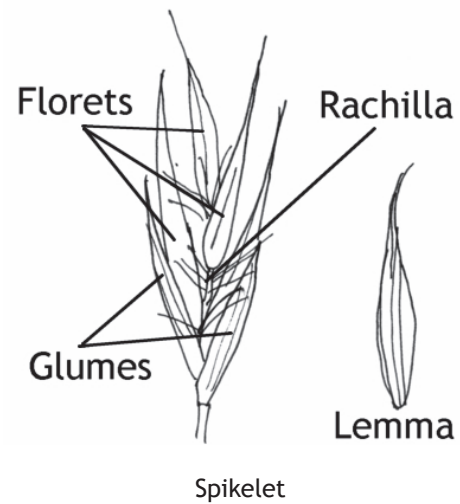
## Reed Grasses

From the Greek *phragma* (a hedge or screen) and *-ites* (resembling), referring to the way in which the grass grows like a fence along a river bank.

Tall rhizomatous perennials, often forming dense stands, culms erect, reed-like, 1-5 m tall. Grows in permanently wet places, especially along the banks of slow-running streams and swamps. The inflorescence is a large 10-50 cm, fairly dense feathery panicle. The spikelets are solitary, and comprising of numerous, 3-12 florets; the rachilla (the axis of the grass spikelet) is covered with long silky hairs and the lemma is glabrous. Once the spikelets have fallen, the inflorescence remains on the plant and therefore does not look feathery.

Closely related and similar to *Arundo donax*

Subfamily: Arundinoideae; Tribe: Arundineae  
Species: Australia = 2; World: = 3



### Townsville species

*Phragmites australis*  
*Phragmites karka*

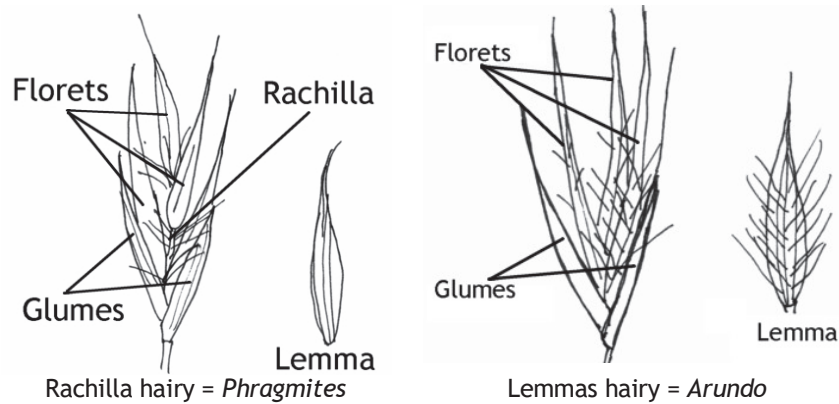
Cane Grass, Bamboo Reed  
Tropical Reed



Inflorescence

## Key to the species of *Phragmites* and similar species

1. Lemmas hairy; rachilla not hairy ..... *Arundo donax*
- Lemmas not hairy (glabrous); rachilla (axis of spikelet) hairy ..... 2



2. Glabrous around the ligules; leaf blades scabrid beneath (at least in the upper half); the upper glumes are up to 6 mm long ..... *Phragmites karka*

Hairs around the ligules; leaf blades smooth beneath; the upper glumes longer than 6 mm  
 ..... *Phragmites australis*

The taxonomy of *Phragmites* is difficult due to the extensive geographical variation.



*Arundo donax*



*Phragmites karka*



*Phragmites australis*



## ***Phragmites australis* - Cane Grass, Bamboo Reed**

### **Derivation**

*australis* - of the south.

### **Habit**

A perennial grass, culms erect, reed-like, 1-3 m tall. The leaf blades are smooth beneath.

### **Inflorescence**

The panicle is erect and dense, with lower branches spikelet-bearing to base, with 200-500 peduncles per sheath; 20-50 cm long, 6-15 cm wide.

### **Habitat**

This grass grows along rivers and streams in temperate zones of the planet; sometimes found in semi-salt water and tidal systems, and along saline springs, commonly along rivers or in floodplains.



Ligule with hairs



## *Phragmites karka* - Tropical Reed

### Derivation

*karka* - origin obscure.

### Habit

A perennial grass with culms erect, reed-like, 1.5-4 m tall. The leaf blade surface is scabrid beneath (at least in the upper half).

### Inflorescence

The panicle is diffuse and partially drooping, with lower branches for 1-4 cm; 30-50 cm long, 10-20 cm wide.

### Habitat

Commonly along rivers or in floodplains.



Ligule without hairs



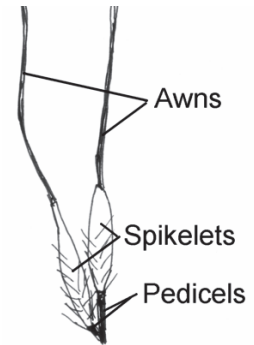


# Pseudopogonatherum

From Greek *pseudo* (false) and *Pogonatherum*, referring to the similarity to the genus *Pogonatherum*.

Tufted, slender annuals, usually to less than 1 m tall, the thin leaves are mostly basal. The inflorescence is digitate or subdigitate and the racemes are erect. The spikelets are in pairs, similar and unevenly pedicelled. The spikelets are very small (1-2.5 mm long) and have long awns (15-30 mm long), they break up at maturity making it difficult to see the pairing.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 2, Australia = 2



## Townsville species

*Pseudopogonatherum contortum*

## Key to the species of *Pseudopogonatherum* and similar species

1. Each spikelet consists of 2-4 florets with the basal floret bisexual and the upper florets reduced; fertile florets fall from glumes.....*Chloris*  
Each spikelet consists of 2 florets with the basal floret sterile and the upper floret fertile; fertile floret fall with glumes.....2



*Chloris*



*Pseudopogonatherum*



*Eulalia*

2. Perennial; awns not intertwining at maturity; sessile spikelets usually more than 3 mm long  
.....*Eulalia*  
Delicate annual; awns intertwining at maturity; all spikelets very small, 1.5-2.5 mm long  
.....*Pseudopogonatherum*

## *Pseudopogonatherum contortum*

### Derivation

*contortum* - awns are twisted when dry.

### Habit

An annual, tufted, slender, erect grass, the culms are 20-100 cm tall.

### Inflorescence

The digitate inflorescence consists of 3-20 racemes each 3-7 cm long. The spikelets and awns are dark brown and the inflorescence branches and spikelets are covered with white hairs. The spikelets are 1.5-2.5 mm long.

### Habitat

This species occurs sporadically in open woodland following summer rainfall.

*Pseudopogonatherum contortum* can be mistaken for the genus *Chloris pumilio*.





# *Pseudoraphis*

## Mud Grasses

From the Greek *pseudo* (false) and *raphis* (needle), referring to the bristle-like point protruding beyond the uppermost spikelet.

Perennial aquatic or marsh grasses, culms mostly prostrate and often floating in water. The inflorescence is a racemose or contracted panicle; the slender branches are often reduced to one or two spikelets. The spikelets are solitary, narrow and awned or unawned. The apex of the spikelets is acuminate and a bristle protrudes beyond the uppermost spikelet. Other genera with a single bristle subtending the spikelet are *Paspalidium* and some species of *Setaria*.

Subfamily: Panicoideae; Tribe: Paniceae

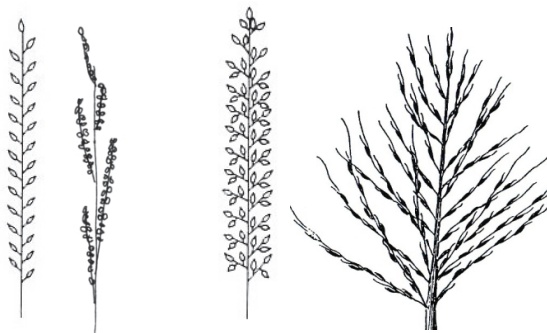
Species: World = 7, Australia = 4

### Townsville species

*Pseudoraphis spinescens* Spiny Mudgrass

### Key to the species of *Pseudoraphis spinescens* and related genera

1. Primary branches of panicle alternate on opposite sides of the main axis or from one side of main axis ..... *Paspalidium*  
 Primary branches of panicle originate from all sides.....2



Primary branches  
from one or two sides

Primary branches from all  
sides

2. Inflorescence is an open panicle ..... *Pseudoraphis spinescens*  
 Inflorescence is a constricted panicle..... *Setaria*



*Pseudoraphis  
spinescens*



*Setaria*

## *Pseudoraphis spinescens* - Spiny Mudgrass

### Derivation

*spinescens* - from the Latin *spinesco* (become thorny), the inflorescence branches terminally pungent.

### Habit

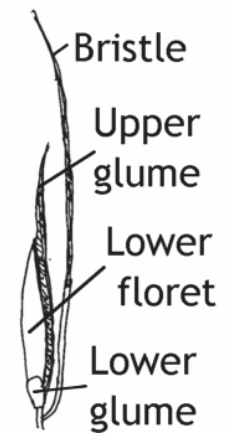
A semi-aquatic perennial grass, with the stems floating in shallow water or forming a sward on mud. The culms are 10-50 cm tall.

### Inflorescence

The inflorescence is a panicle of racemes; the central inflorescence axis is 3-11 cm long. A bristle is formed beyond the uppermost spikelet.

### Habitat

This species grows in shallow water or mud beside rivers and lagoons.



Spikelet at the end of the inflorescence





# Sacciolepis

From the Greek *sakkion* (small bag) and *lepis* (scale), alluding to the shape of the upper glume.

Annual or perennials grasses. Recognised by the spiciform (spike-like panicle with short branches) inflorescences and the gibbous (hump-backed), ribbed spikelets. Species from this genus grow in or near water or in wet places.

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = 30, Australia = 2

## Townsville species

*Sacciolepis indica* Indian Cupscale Grass

## *Sacciolepis indica* - Indian Cupscale Grass

### Derivation

*indica* - from India.

### Habit

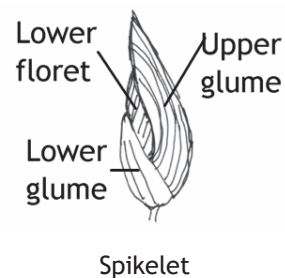
An annual, erect or creeping grass, the culms 10-80 cm tall.

### Inflorescence

The panicle is spicate, 1-13 cm long, the spikelets are solitary and 2-3.5 mm long.

### Habitat

This species may be found growing among more vigorous grasses which give the plants some support and protection. This grass is found growing in damp areas.



# Sarga Sorghum

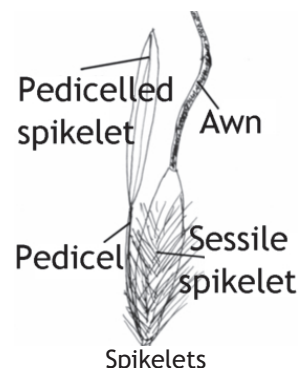
The meaning of *Sarga* is not given by the author and so is obscure. Recent studies of the Australian *Sorghum* species, have suggested three distinct lineages, and these species have been divided into three genera, *Sorghum*, *Sarga* and *Vacoparis*.

Tufted annuals or perennials. The inflorescence is an open or contracted panicle. The spikelets are in pairs (with terminal triplets), one sessile and one pedicelled. The mature sessile spikelets are dark reddish brown almost black. The sessile spikelets usually have long awns (1.5-8.5 cm long) and the pedicelled spikelet is well-developed.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 8, Australia = 5

## Townsville species

*Sarga plumosum*



## Key to the species of *Sarga*, *Sorghum* and *Vacoparis*

1. Pedicelled spikelet reduced to narrow, linear glumes ..... *Vacoparis laxiflorum*  
Pedicelled spikelet containing empty lemmas or male ..... 2
2. Awn on sessile spikelet 25-80 mm long ..... *Sarga plumosum*  
Awn on sessile spikelet 0-20 mm long ..... *Sorghum*



*Vacoparis laxiflorum*



*Sarga plumosum*



*Sorghum nitidum*  
*f. aristatum*



*Sorghum x alnum*



## ***Sarga plumosum* - Plume Sorghum**

### **Derivation**

*plumosum* - from the Latin for feathery, referring to the long hairs giving the pedicels a feathery appearance.

### **Habit**

A perennial, tufted grass, the culms are 100-300 cm tall. The stems have distinctive bearded nodes. Leaves usually have a white mid-rib, and vary in colour from shiny green to blue-green.

### **Inflorescence**

The inflorescence is usually a dense panicle 12-45 cm long, with dark red-brown spikelets. The pedicelled spikelets containing empty or male lemmas; the sessile spikelets are 6-18 mm long, the lemma awn is 2.5-8 cm long.

### **Habitat**

This species is found on sands, red earths and heavy loams, it grows in swamps, claypans, watercourses, waterholes and valleys.



Spikelets



Bearded node



# Schizachyrium

From the Greek *schizen* (to split) and *achuron* (chaff), alluding to the bilobed lemma of the sessile spikelet. *Schizachyrium* can be pronounced “shize-ah-KIR-ee-um”.

Perennials or annuals, tufted to decumbent. The inflorescence is a single raceme or a panicle with a spathe subtending each raceme. The spathe is sometimes not obvious and the inflorescence looks like a spike. The spikelets are in pairs, one sessile and one pedicelled, which is much reduced. The sessile spikelet is awned and arises from a bilobed lemma.

The spikelets are usually clothed in silky white hairs, similar to *Mnesithea formosa*, however *Schizachyrium* spikelets are awned

Subfamily: Panicoideae; Tribe: Andropogoneae

Species: World = c. 60, Australia = 8

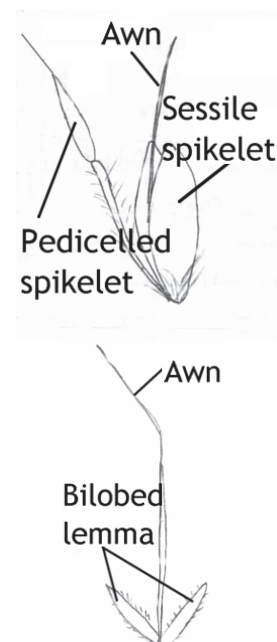
## Townsville species

*Schizachyrium fragile*

Fire Grass, Red Spathe Grass

*Schizachyrium occultum*

*Schizachyrium pseudeulalia*

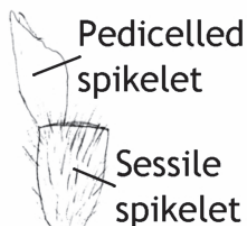


## Key to the species of *Schizachyrium* and similar species

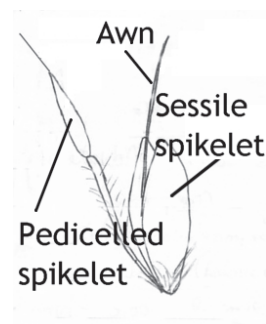
1. Spikelets not distinctly awned ..... *Mnesithea formosa*
- Spikelets sessile distinctly awned.....2



*Mnesithea formosa* spikelets



*Schizachyrium fragile* spikelets



2. Lower glume of sessile spikelet winged, at least above middle...  
..... *Schizachyrium fragile*
- Lower glume of sessile spikelet not winged..... 3
3. Culms to 90 cm; leaves 1-9 cm long, 0.8-5.5 mm wide; sessile  
spikelet dorsally compressed 5.5-8 times as long as wide.....  
..... *Schizachyrium pseudeulalia*

Culms 10-30 cm; leaves 1.5-3.5 cm long, 0.6-2 mm wide; sessile  
spikelet +/- laterally compressed 9-13 times as long as  
wide ..... *Schizachyrium occultum*



Lower glume winged



Lower glume not winged



## *Schizachyrium fragile* - Fire Grass, Red Spathe Grass

### Derivation

*fragile*- Latin for weak, the inflorescences readily disarticulating.

### Habit

An annual, tufted grass, the culms are 10-75 cm tall. The leaves are 2-8 mm long and 1-3 mm wide.

### Inflorescence

The panicle is nearly completely enclosed in the spathes. The sessile spikelet is dorsally compressed and is 5-8 as long as wide; the lower glume is winged at least above the middle.

### Habitat

This species is a fairly common annual on sandy soils from the savanna regions.

*Schizachyrium fragile* could be confused with *Mnesithea formosa*. The spikelets of *Schizachyrium* have awns



Spikelet



## *Schizachyrium occultum*

### Derivation

*occultum* - from the Latin *occultus* (hidden).

### Habit

The annual, slender grass, the culms are 10-30 cm tall. The leaves are 1.5-3.5 cm long and 0.6-2 mm wide.

### Inflorescence

The panicle is subtended by a spatheole. The sessile spikelet is laterally compressed and is 9-13 times as long as wide.

### Habitat

This species is found in sandy soil in *Eucalyptus* forest. It is usually associated with other *Schizachyrium* species.



Spikelet

Grass Herbarium

Family:	POACEAE
Genus and species:	<i>Schizachyrium occultum</i>
Identification	





## *Schizachyrium pseudeulalia*

### Derivation

*pseudeulalia* - false *Eulalia*, it is often mistaken for *Eulalia*.

### Habit

The annual grass, the culms are 30-90 cm tall. The leaves are 1-9 cm long and 0.8-5.5 mm wide.

### Inflorescence

The panicle is subtended by a spatheole. The sessile spikelet is dorsally compressed and is 5.5-8 times as long as wide.

### Habitat

This species is fairly common on sandy soil.



Spikelet



# Sehima

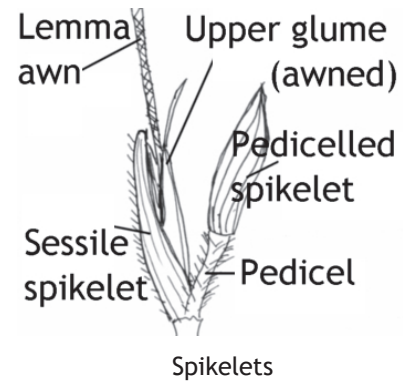
From the Arabic *Saehim* or *Sehim*, the common name for the species (*Sehima ischaemoides*) in Egypt.

Tufted annuals or perennials. The inflorescence is a single, curved raceme. The spikelets are paired, one sessile and one pedicelled, and are partially embedded in rachis. The sessile spikelet is awned.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 5, Australia = 1

## Townsville species

*Sehima nervosum* Whitegrass



## Key to the species of *Sehima* and similar species

1. Inflorescence is a raceme .....2
- Inflorescence spike-like, but composed of 2 erect, closely adpressed raceme.....*Ischaemum*



*Ischaemum*



*Sehima nervosum*



*Heteropogon triticeus*



*Heteropogon contortus*



2. Awns are 20-40 mm long; pedicelled spikelets is the same length as fertile ..... *Sehima nervosum*
- Awns are 50-140 mm long; pedicelled spikelet longer than fertile ..... *Heteropogon*



## ***Sehima nervosum* - Whitegrass**

### **Derivation**

*nervosum* - from the Latin *nervus* (nerve) and *-osa* (abundance) which refers the conspicuous nerves in the glumes or lemmas.

### **Habit**

A perennial, tufted grass, the culms are 30-100 cm tall.

### **Inflorescence**

The inflorescence is a single raceme, 3-12 cm long. The pedicels and internodes of the inflorescence are densely bearded with white hairs. The sessile spikelet is 6-10 mm long; the awns are 20-40 mm long. This species can be recognised by the lower glume of the pedicelled spikelet it is slightly asymmetrical and strongly nerved.

### **Habitat**

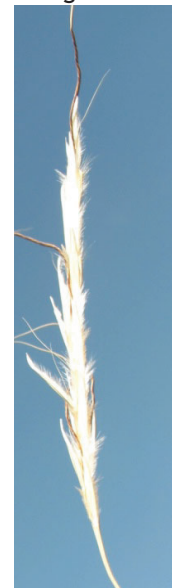
This species is usually found growing in dry areas in poor soils, often associated with *Themeda triandra*.



Spikelet pairs



Pedicelled spikelet showing asymmetric glume



# Setaria

## Pigeon Grasses

From Latin *seta* (bristle), referring to the bristly inflorescences.

Annuals or perennials, rhizomatous or stoloniferous or tufted or decumbent. The inflorescence is a spicate panicle (spike-like with short branches). The spikelets are solitary, usually with numerous bristles beneath them. The lemma of the upper floret is transversely rugose (wrinkled or with a creased surface).

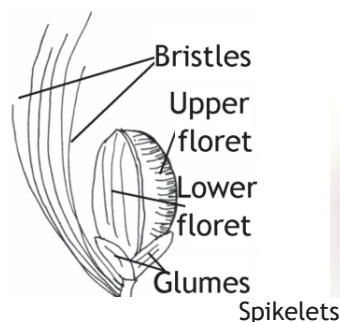
*Setaria* species looks similar to *Cenchrus* (including *Pennisetum*), however spikelets fall from the plant without any bristle attached leaving a rachis with the bristles attached.

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = c110, Australia = 16

### Townsville species

<i>Setaria australiensis</i>	Scrub Pigeon Grass
<i>Setaria oplismenoides</i>	
* <i>Setaria pumila</i> subsp. <i>subtesselata</i>	Pale Pigeon Grass
* <i>Setaria sphacelata</i>	South African Pigeon Grass
<i>Setaria surgens</i>	Pigeon Grass

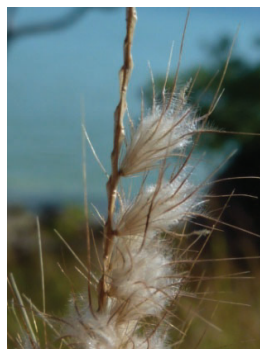


### Key to the species of *Setaria* and related genera

1. Spikelets falling at maturity with bristles or spines attached..... *Cenchrus*
- Spikelets falling at maturity without any bristles or spines attached.....2



*Setaria*



*Cenchrus*



2. Inflorescence a loosely contracted panicle .....3
- Inflorescence a tightly contracted false spike .....4
3. Inflorescence 6-20 cm long; spikelets 3-4 mm long.....*Setaria australiensis*
- Inflorescence 18-37 cm long; spikelets 2.3-2.7 mm long.....*Setaria oplismenoides*
4. Perennial with rhizomes; inflorescence is 3-50 cm long..... *Setaria sphacelata*
- Annual, no rhizomes; inflorescence is 1-10 cm long.....5
5. Bristles are white-cream; lower glume 30-40% of length of spikelet..... *Setaria surgens*
- Bristles are rusty coloured; lower glume 30-70% of length of spikelet  
.....*Setaria pumila* subsp. *subtesselata*



## ***Setaria australiensis* - Scrub Pigeon Grass**

### **Derivation**

*australiensis* - from Australia.

### **Habit**

A perennial, tufted grass, the culms are 60-210 cm tall.

### **Inflorescence**

The panicle is contracted, linear or lanceolate, 6-20 cm long. The spikelet is 3-4 mm long; the lower glume is 33-50% of length of spikelet.

### **Habitat**

This species grows in rainforest, vine forests, heaths and woodlands.



Spikelet



## *Setaria oplismenoides*

### Derivation

*oplismenoides* - in habit similar to the genus *Oplismenus*.

### Habit

A perennial grass, the culms are 60-130 cm tall.

### Inflorescence

The panicle is compound, lanceolate, 18-37 cm long. The spikelets are 2.3-2.7 cm long; the lower glume is 33-50% of length of spikelet.

### Habitat

This species grows in woodlands, shrublands and grasslands.



### References:

<http://plants.jstor.org.elibrary.jcu.edu.au/stable/10.5555/al.ap.specimen.e00381772>

<http://plants.jstor.org.elibrary.jcu.edu.au/stable/10.5555/al.ap.specimen.w0030279>



## ***Setaria pumila* subsp. *subtesselata* - Pale Pigeon Grass**

### **Derivation**

*pumila* - Latin for dwarf or low growing, the habit is typically depauperate.

*subtesselata* - Latin for somewhat almost a mosaic-like refers the fertile lemma.

### **Habit**

An annual, tufted grass, the culms are 5-130 cm tall.

### **Inflorescence**

The panicle is solid, spiciform, linear, 1-10 cm long. The spikelets are 1.5-2.5 cm, the lower glume 30-70% of length of spikelet.

### **Habitat**

This non-native species is mainly a weed of disturbed sites, roadsides, footpaths and cultivation.



Spikelet





## ***Setaria sphacelata* - South African Pigeon Grass**

### **Derivation**

*sphacelata* - Latin for speckled with brown or black, the apices of the fertile lemmas are purple or black.

### **Habit**

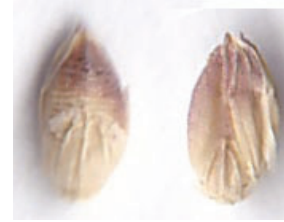
A perennial, tufted grass, the culms are 20-300 cm tall.

### **Inflorescence**

The panicle is solid, spiciform, linear, 3-50 cm long. The spikelets are 1.5-3.5 cm long; the lower glume is 25-50% of length of spikelet.

### **Habitat**

This non-native species is a weed of roadsides, waterways, grasslands, open woodlands, parks, disturbed sites and waste areas.



Spikelet





## ***Setaria surgens* - Pigeon Grass**

### **Derivation**

*surgens* - from the Latin *surgo* (raise), the culms long, ascending.

### **Habit**

An annual grass, the culms are 20-60 cm tall.

### **Inflorescence**

The panicle is solid, spiciform, linear, 2.5-5 cm long. The spikelets are 2.5-2.9 mm long; the lower glume is 30-40% of length of spikelet.

### **Habitat**

This species grows in woodlands, shrublands and grasslands.



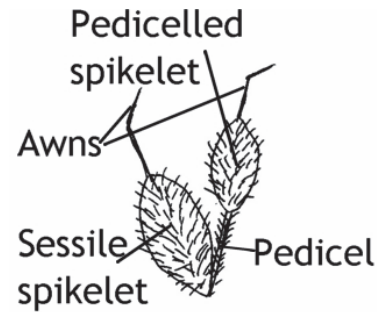
Spikelet



# Sorghum

From *sorgho*, the Italian name for the genus. *Sorghum*, in the broadest sense (*sensu lato*), is a genus containing c. 30 species and is widespread in tropical and subtropical parts of the world. Grain sorghum is an important cereal being a staple food grain in west Africa and widely used for feeding livestock in western countries. It is believed to have been domesticated over 3000 years ago and many varieties have been developed.

Recent studies of the Australian *Sorghum* species, have suggested three distinct lineages, and these species have been divided into three genera, *Sorghum*, *Sarga* and *Vacoparis*.



*Sorghum*, in the narrowest sense (*sensu stricto*), are robust annuals or perennials. The inflorescence is an open or contracted panicle. The spikelets are in pairs (with terminal triplets), one sessile and one pedicelled. The mature sessile spikelets are usually dark reddish-brown almost black. The sessile spikelets usually have short awns (1-1.5 cm long) or are awnless, and the pedicelled spikelet is well-developed.

Subfamily: Panicoideae; Tribe: Andropogoneae

Species: World = c. 20, Australia = 3-7 (some species are considered hybrids).

## Townsville species

- \* *Sorghum x almum* Columbia Grass
- \* *Sorghum bicolor* Forage Sorghum
- \* *Sorghum halepense* Johnson Grass
- Sorghum nitidum*

## Key to the species of *Sarga*, *Sorghum* and *Vacoparis*

1. Pedicelled spikelet reduced to narrow, linear glumes ..... *Vacoparis laxiflorum*  
Pedicelled spikelet containing empty or male lemmas ..... 2
2. Awn on sessile spikelet 25-80 mm long ..... *Sarga plumosum*  
Awn on sessile spikelet 0-20 mm long ..... 3



*Vacoparis laxiflorum*



*Sarga plumosum*



*Sorghum nitidum*



*Sorghum x almum*



3. Primary branches of inflorescence not divided, bearing only terminal racemes; culms bearded ..... *Sorghum nitidum*  
 Primary branches of inflorescence divided, bearing terminal and lateral racemes; culms not bearded ..... 4



*Sorghum nitidum* inflorescence



*Sorghum x alnum* inflorescence

4. Racemes not disarticulating at maturity; leaf blades 5-70 mm wide ..... *Sorghum bicolor*  
 Racemes disarticulating readily at maturity; leaf blades 5-40 mm wide ..... 5



*Sorghum bicolor* inflorescence

5. Plants aggressively rhizomatous, rather robust; sessile spikelet 4-6 x 1.5-2.3 mm; seeds readily shattering at maturity; caryopsis markedly shorter than glumes ..... *Sorghum halepense*  
 Plants rhizomatous, but not aggressively; sessile spikelet 5-6.5 x 2.5 mm; seeds not readily shedding; caryopsis only slightly shorter than glumes ..... *Sorghum x alnum*



*Sorghum x alnum*



*Sorghum halepense*

Both these species have sessile spikelets which can be awnless or with awns

## *Sorghum x alnum* - Columbia Grass

### Derivation

*almum* - Latin for nourishing, a nutritious forage grass.

*This species is a hybrid of Sorghum bicolor and Sorghum halepense.*

### Habit

A perennial grass, the rhizomes are short, the culms are erect, 200-320 cm tall.

### Inflorescence

The panicle is open, 20-60 cm long. The pedicelled spikelets are male or neuter; the sessile spikelets are 5-6.5 mm long and 2-5 mm wide. The lemma of the sessile spikelet is awnless or awned. The awn is 8-10 mm long and the column of awn is glabrous.

### Habitat

This non-native species is cultivated widely as a forage grass, but has the tendency to escape and become weedy.



Spikelets





## *Sorghum bicolor* - Forage Sorghum

### Derivation

*bicolor* - from the Latin *bis* (twice) and *color* (colour), it is two-coloured, usually with respect to spikelets or florets.

### Habit

An annual, robust grass, the culms are erect, 100-600 cm tall.

### Inflorescence

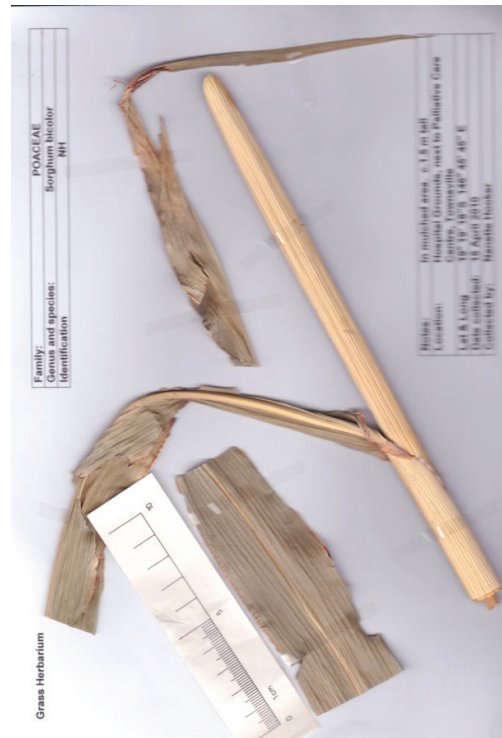
The panicle is open or contracted, 4-50 cm long. The pedicelled spikelets are male; the sessile spikelets are 3-10 mm long and 1.5-5 mm wide. The lemma of the sessile spikelets is usually awnless.

### Habitat

This non-native species is cultivated; it is found in disturbed sites but does not persist.



Spikelets





## *Sorghum halepense* - Johnson Grass

### Derivation

### Habit

A perennial grass, the rhizomes are elongated; the culms are 50-300 cm tall.

### Inflorescence

The panicle is open, 10-55 cm long. The pedicelled spikelets are male or neuter; the sessile spikelets are 4-6 mm long and 1.5-2.3 mm wide. The lemma of the sessile spikelet is awnless or awned. The awns are 10-16 mm long and the column of awn is pubescent.

### Habitat

This non-native species is cultivated widely as a forage grass, but has the tendency to become an aggressive agricultural weed.



Spikelets





## *Sorghum nitidum*

### Derivation

*nitidum* - from the Latin *niteo* (shine), the spikelets or lemmas are shiny.

### Habit

A perennial, short-lived grass, the culms are 100-200 cm tall.

### Inflorescence

The panicle is open, 10-30 cm long. The pedicelled spikelet is male or neuter; the sessile spikelets are 3-5.5 mm long and 2-5 mm wide. The lemma of the sessile spikelet is awnless or awned. The awns are 7-17 mm long and the column of awn and the column of awn is glabrous.

### Habitat

This species grows on grey and brown loams and sands and in disturbed habitats



Spikelets

There are two forms. The spikelets are awned and awnless forms are recognised as separate taxa:

Spikelets awnless .....	<i>Sorghum nitidum</i> forma <i>nitidum</i>
Spikelets awned .....	<i>Sorghum nitidum</i> forma <i>aristatum</i>





# *Spinifex*

## Beach Spinifex Grasses

*Spinifex* is from the Latin *spina* (a thorn) and *facere* (to make), alluding to sharp pointed leaves.

Tufted and rhizomatous, dioecious (plants are either male or female) perennials. Female plants (with female or bisexual spikelets) have globose, spiny inflorescences which fall from the plant whole and roll along the beach in the wind. The spikelets of the female plants are awned. Male plants have erect inflorescences consisting of clustered racemes. The spikelets of the male plants are not awned.

The spinifex grasses of inland Australia belong to the genus *Triodia*. Species from the genus *Spinifex* grow on the sand dunes in coastal areas.

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = 4, Australia = 3

Townsville species      *Spinifex sericeus*      Beach Spinifex, Hairy Spinifex





## ***Spinifex sericeus* - Beach or Hairy Spinifex**

### **Derivation**

*sericeus* - from the Latin *sericus* (silken) and *-ea* (indicating resemblance), referring to the soft hairs on the leaves and shoots.

### **Habit**

A stout, perennial grass, the culms grow to 30 cm tall with strong creeping rhizomes, with new plants produced at the nodes; leaves are bluish green.

### **Inflorescence**

The inflorescences are of different sex and appearance, on separate plants.

The female bisexual panicle is a large, globose, spiny head of numerous sessile racemes, each of which is reduced to a single spikelet into a long, stout bristle. The spikelets are 12-16 mm long. This panicle becomes detached from the plant at maturity.

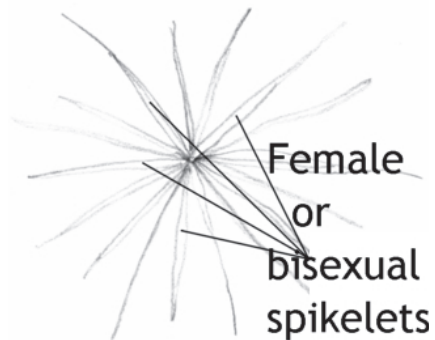
The male panicle is a terminal cluster of racemes, subtended by large, partly enclosing, silky-hairy bracts (resembling spathes) The spikelets are 6-10 mm long.

### **Habitat**

This species is common on the sand-dunes of the coast. It is an effective sand-binder in beach reclamation.



Female bisexual inflorescence



Male inflorescence



# Sporobolus

## Dropseed Grasses & Rat's Tail Grasses

From the Greek *spora* (seed) and *bolos* (throwing), at maturity the seeds are squeezed out of the fruits.

Perennials or annuals, erect to decumbent, usually tufted. The inflorescence is an open or contracted panicle; many species of non-native *Sporobolus* with contracted panicles are becoming serious weeds. The spikelets are solitary. The mature grain becomes sticky when wet.

*Sporobolus* is distinguished from *Eragrostis* by its 1-flowered spikelets and 1-nerved lemmas.

The species *Dinebra neesii* can be confused with *Sporobolus* species.

Subfamily: Chloridoideae; Tribe: Cynodonteae  
Species: World = c. 160, Australia = 24



Spikelet



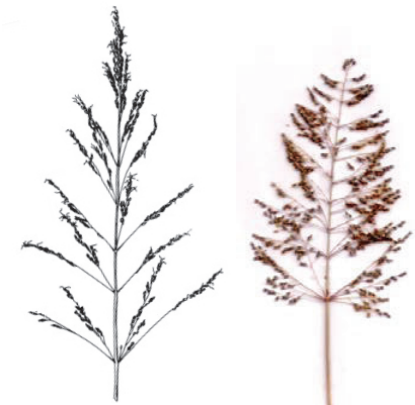
Inflorescences

<i>Sporobolus australasicus</i>	Australian Dropseed
<i>Sporobolus caroli</i>	Fairy Grass
* <i>Sporobolus coromandelianus</i>	Small Dropseed
* <i>Sporobolus fertilis</i>	Giant Parramatta Grass
* <i>Sporobolus jacquemontii</i>	Rat's Tail Grass
<i>Sporobolus lenticularis</i>	
* <i>Sporobolus natalensis</i>	Giant Rat's Tail Grass
<i>Sporobolus sessilis</i>	Tussocky Sporobolus
<i>Sporobolus virginicus</i>	Salt Couch

### Townsville species



Lowest node of inflorescence with whorled branches



*Sporobolus australasicus*  
*Sporobolus caroli*  
*Sporobolus coromandelianus*  
*Sporobolus lenticularis*

Lowest node of inflorescence with 1 or 2 branches

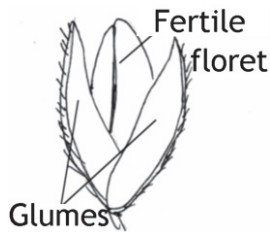


*Sporobolus fertilis*  
*Sporobolus jacquemontii*  
*Sporobolus natalensis*  
*Sporobolus sessilis*  
*Sporobolus virginicus*

### Key to the species of *Sporobolus* and similar species

1. Inflorescence a one-branched panicle; mature grain is held within the lemma and palea .....*Dinebra neesii*

Inflorescence a panicle with secondary branches, open or contracted; mature grain is readily shed from thin lemma and palea .....2



*Dinebra neesii* spikelets



*Sporobolus* spikelets



*Dinebra neesii*



Lowest node of inflorescence with whorled branches



*Sporobolus*

Lowest node of inflorescence with 1 or 2 branches

2. Lowest node of inflorescence with whorled branches .....3  
Lowest node of inflorescence with 1 or 2 branches .....6
  3. Most of inflorescence branches whorled; the inflorescence is 2-6 cm wide .....4  
Inflorescence branches only whorled at lowest nodes; the inflorescence is 8-15 cm wide  
.....*Sporobolus caroli*
  4. Spikelets uniformly distributed in inflorescence ..... *Sporobolus australasicus*  
Spikelets situated on apical zone of inflorescence branches .....5
  5. Inflorescence branches not all whorled; leaves 4-5 mm wide; common weed .....  
.....*Sporobolus coromandelianus*  
Inflorescence branches all (except uppermost) whorled; leaves to 4 mm wide; not very  
common ..... *Sporobolus lenticularis*
  6. Inflorescence less than 12 cm long; rhizomatous and stoloniferous coastal sand dune and saline swamp  
grass.....*Sporobolus virginicus*  
Inflorescence more than 12 cm; tufted grass.....7
- These following grasses can be difficult to identify.**
7. Upper glume  $\pm 1/3$  spikelet length (microscopic examination in the laboratory is usually required to  
confirm identifications); grows 30 to 70 cm tall; common weed in many lawns  
..... *Sporobolus jacquemontii*  
Upper glume half the spikelet length or more; grasses 40-160 cm tall .....8

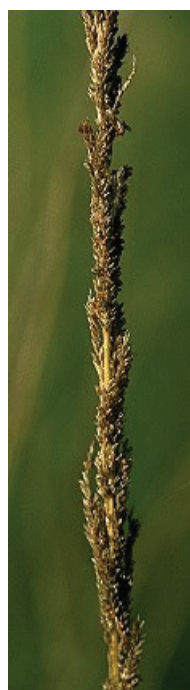


Upper glume  $\pm 1/3$  spikelet length



Upper glume half the spikelet length or more

8. Inflorescences spiciform to semi-spiciform ..... *Sporobolus fertilis*  
Inflorescences spreading ..... 9
9. Grass 60-150 cm tall; leaf blades 2-4 mm  
wide ..... *Sporobolus natalensis*  
Grass 10-100 cm tall; leaf blade 5-30 mm  
wide ..... *Sporobolus sessilis*



Inflorescences spiciform  
to semi-spiciform thorough



Inflorescences spreading



## ***Sporobolus australasicus* - Australian Dropseed**

### **Derivation**

*australasicus* - from Australia.

### **Habit**

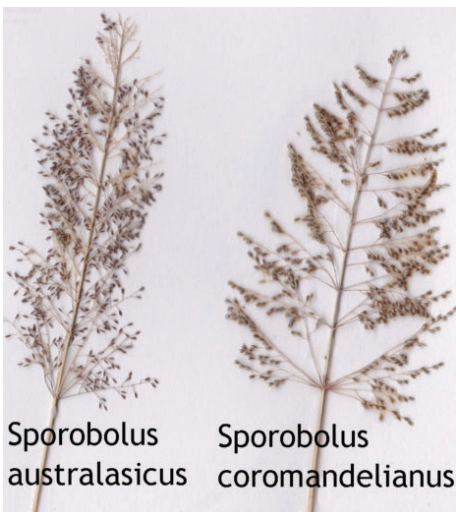
An ephemeral, slender and erect grass, the culms are 20-35 cm tall.

### **Inflorescence**

The inflorescence is an open panicle, 5-13 cm long and 2-6 cm wide. The primary branches are mostly whorled and the spikelets are distributed equally in the panicle. The seed is globose.

### **Habitat**

This species occurs on a wide range of soils, usually a coloniser in degraded areas



Superficially close to *Sporobolus coromandelianus*, the spikelets arranged differently.

The panicle at the left is *Sporobolus australasicus*. The spikelets are distributed equally in the panicle

The panicle at the right is *Sporobolus coromandelianus*. The spikelets are arranged towards the apices of panicle branches.

## *Sporobolus caroli* - Fairy Grass

### Derivation

*caroli* - in honour of Jean Martin Francois Carolus (1808-1863), a Belgian botanist.

### Habit

An ephemeral and erect grass, the culms are 20-75 cm tall.

### Inflorescence

The inflorescence is an open panicle, 8-15 cm long and 8-15 cm wide. The primary branches are only whorled at lowest node.

### Habitat

This species often occurs on roadsides but also grows in open grasslands and moist situations and over a large range of soil types.





## ***Sporobolus coromandelianus* - Small Dropseed**

### **Derivation**

*coromandelianus* - from the Coromandel, that is south-eastern India.

### **Habit**

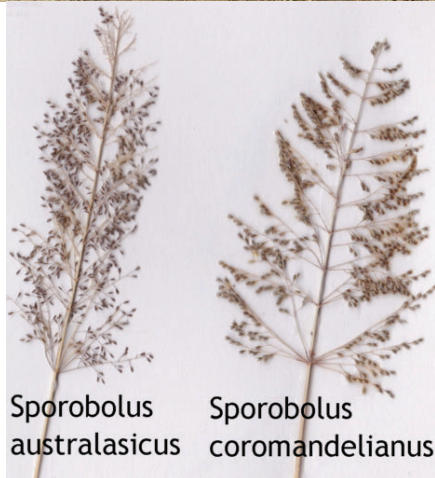
An ephemeral and geniculate (bent abruptly like a knee joint) grass, the culms are 10-30 cm tall.

### **Inflorescence**

The inflorescence is an open panicle, 5 cm long and 2 cm wide. The primary branches are mostly whorled and the spikelets are arranged towards the apices of panicle branches.

### **Habitat**

The non-native species is considered as a weed of gardens and roadsides.



Superficially close to *Sporobolus australasicus*, the spikelets arranged differently.

The panicle at the left is *Sporobolus australasicus*. The spikelets are distributed equally in the panicle

The panicle at the right is *Sporobolus coromandelianus*. The spikelets are arranged towards the apices of panicle branches.



## ***Sporobolus fertilis* - Giant Parramatta Grass**

### **Derivation**

*fertilis* - Latin for fruitful, this species produce abundant grain.

### **Habit**

A perennial and erect grass, the culms are 80-160 cm tall.

### **Inflorescence**

The inflorescence is a spiciform to semi-spiciform panicle, 25-50 cm long and 0.5-2 cm wide. The upper glume is at least half the spikelet length.

### **Habitat**

This non-native species is a serious weed of pastures and roadsides.





## ***Sporobolus jacquemontii* - Rat's Tail Grass**

### **Derivation**

*jacquemontii* - in honour of Victor Jacquemont (1801-1832), a French naturalist and traveller.

### **Habit**

A perennial and erect grass, the culms are 30-75 cm tall.

### **Inflorescence**

The inflorescence is open to contracted and loosely spiciform panicle, 8-25 cm long and 0.5-3 cm wide. The upper glume is less than half the spikelet (microscopic examination in the laboratory is usually required to confirm identifications).

### **Habitat**

This non-native species is a weed in disturbed areas, it is common in lawns.



## *Sporobolus lenticularis*

### Derivation

*lenticularis* - from the Latin *lens* (lentil), *-ulus* (diminutive) and *-aris* (pertaining to), the grain is lenticular.

### Habit

An ephemeral and erect grass, the culms are 10-60 cm tall.

### Inflorescence

The inflorescence is an open panicle, 3-17 cm long and 2-2.5 cm wide. The primary branches are mostly whorled and the spikelets are arranged towards the apices of panicle branches. The grain is lenticular.

### Habitat

The species is found mainly on sand dune coastal woodland, but also in the highlands on red-brown earths.



Inflorescence



## ***Sporobolus natalensis* - Giant Rat's Tail Grass**

### **Derivation**

*natalensis*- from Natal, South Africa.

### **Habit**

A perennial and erect grass, the culms are 60-150 cm tall. The leaves are 2-4 mm wide.

### **Inflorescence**

The inflorescence is open to contracted and loosely spiciform panicle, 20-30 cm long and 2-4 cm wide. The upper glume at least half the spikelet length.

### **Habitat**

This non-native species is a weed in disturbed areas.



## ***Sporobolus sessilis* - Tussocky Sporobolus**

### **Derivation**

*sessilis* - Latin for sessile, the spikelets are without a stalk.

### **Habit**

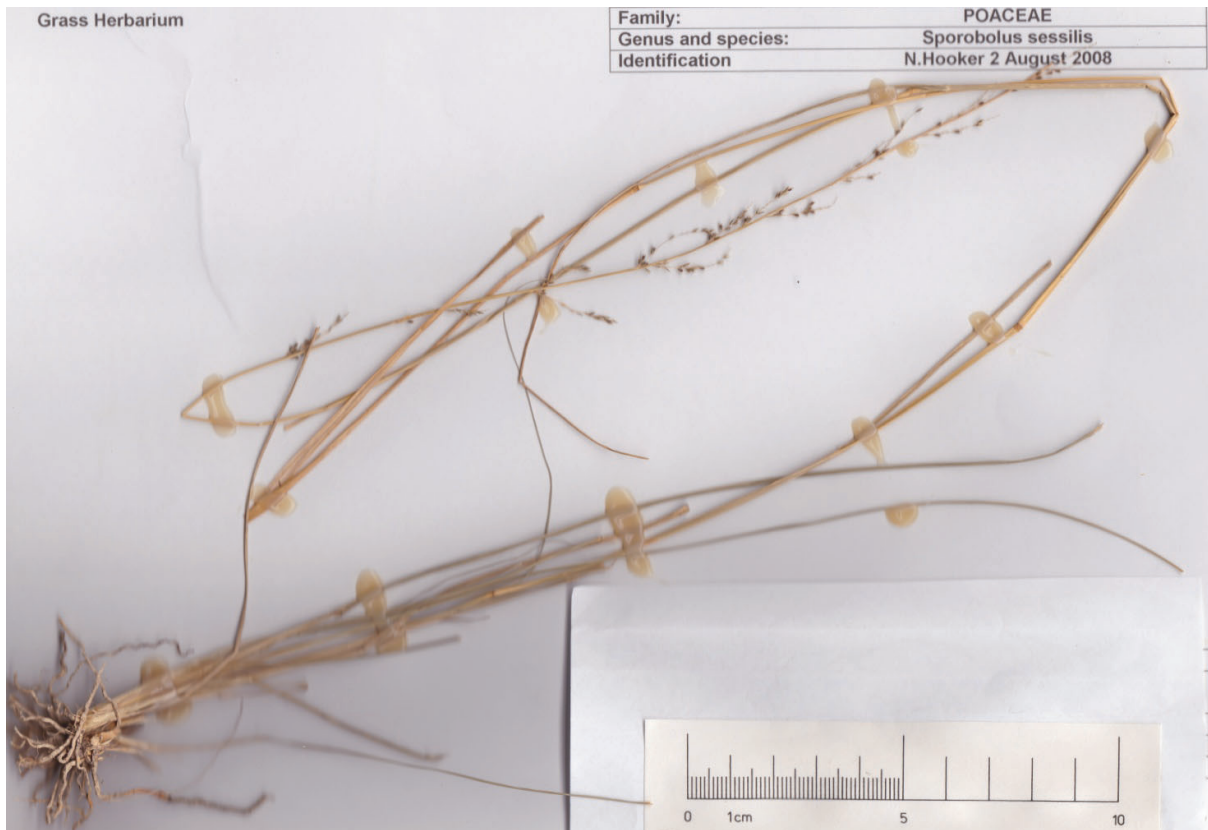
A perennial and erect grass, the culms are 40-100 cm tall. The leaves are 5-30 mm wide.

### **Inflorescence**

The inflorescence is open to contracted and loosely spiciform panicle, 14-30 cm long and 0.5-4 cm wide. The upper glume at least half the spikelet length.

### **Habitat**

This species occurs in woodland and native grassland.





## ***Sporobolus virginicus* - Salt Couch**

### **Derivation**

*virginicus* - from Virginia, USA.

### **Habit**

A perennial, erect or decumbent, rhizomatous and stoloniferous grass, the culms are to 50 cm tall.

### **Inflorescence**

The inflorescence is a contracted spiciform panicle, 3-15 cm long and 0.5-1.5 cm wide.

### **Habitat**

This species is mainly restricted to maritime habitats with some records also from saline localities areas.



# Stenotaphrum

From Greek *stenos* (narrow) and *taphros* (trench), alluding to the cavities in the rachis.

Creeping or prostrate perennials or tufted erect annuals. The inflorescence is a spike or raceme with spikelets embedded in hollows of a broad, flattened axis.

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = 7, Australia = 2

## Townsville species

# *Stenotaphrum secundatum* Buffalo Grass

Similar to the common lawn grass Buffalo Grass (*Axonopus compressus*).

## Key to the species of *Stenotaphrum* and *Axonopus*

Inflorescence is paired or digitate racemes.....*Axonopus compressus*

Inflorescence is a spike.....*Stenotaphrum secundatum*



*Axonopus compressus*



*Stenotaphrum secundatum*



*Axonopus compressus*



*Stenotaphrum secundatum*



## ***Stenotaphrum secundatum* - Buffalo Grass**

### **Derivation**

*secundatum* - is from the Latin *secundus* (bent to one side) and *-atus* (possessing), and refers to the curved fleshy axis of the inflorescence.

### **Habit**

A mat-forming, prostrate, perennial grass, with smooth, hairless leaves and culms, the culms are 10-40 cm tall.

### **Inflorescence**

The inflorescence is a false, one-sided spike; it is 2-10 cm long, with the spikelets embedded in the axis which is swollen and flat on one side.

### **Habitat**

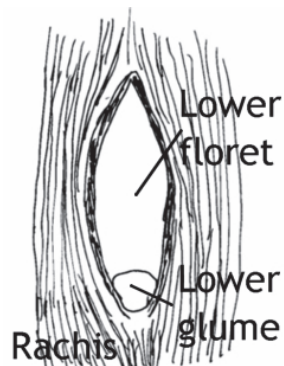
This species is becoming popular as a lawn grass with many varieties. In Townsville it is only found in cultivation.

### **Popular varieties**

Palmetto

Sir Walter

Shademaster



Spikelet



Part of inflorescence



Back of inflorescence

# Themeda

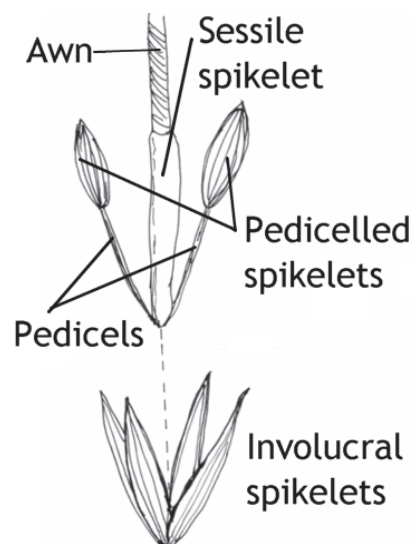
From the Arabic *thaemed* (transliterated by the author as a depression filled with water). The meaning of the choice of name is not given by the author.

Tufted perennials or annuals. The inflorescence is a panicle of condensed racemes each subtended by spathe (leaf-like bract). The spikelets are in groups of seven which are difficult to see in the field. There are four involucre spikelets at the base, two pedicelled spikelets and a sessile spikelet which is the only one to produce a seed and is the only spikelet that is awned.

Members of this genus could be confused with *Cymbopogon* species.

Subfamily: Panicoideae; Tribe: Andropogoneae

Species: World = 18, Australia = 5



## Townsville species

*Themeda arguens*

\* *Themeda quadrivalvis* Grader Grass

*Themeda triandra* Kangaroo Grass



Involucral spikelets  
(4 spikelets)



Sessile and pedicelled  
spikelets (3 spikelets)



Sessile spikelet  
(seed)



Complete spikelets  
(7 spikelets)

## Key to the species of *Themeda* species

1. Fertile spikelet with an awn 5-9 cm long and a pungent callus 3-4 mm long..... *Themeda arguens*  
Fertile spikelet with an awn less than 7 cm long and a callus 1-3 mm long .....2
2. Perennial; involucre spikelets 6-14 mm long; sessile spikelets 6-11 mm long.....*Themeda triandra*  
Annual; involucre spikelets 4-7 mm long; sessile spikelets 4-6 mm long.....*Themeda quadrivalvis*



Spikelets, the glumes of the involucre  
spikelets are without tubercle-based hairs  
*Themeda triandra*



Spikelets, the glumes of involucre spikelets  
with tubercle-based hairs  
*Themeda quadrivalvis*



## ***Themeda arguens***

### **Derivation**

*arguens* - from the Latin *arguo* (content).

### **Habit**

An annual tufted grass; the culms are 20- 120 cm tall.

### **Inflorescence**

The spatheole is 2.5-4 cm long. The involucre spikelets are 6-10 mm long; sessile spikelet is 8-11 mm long; the awn is 50-90 mm long

### **Habitat**

This species grows in disturbed places.



Spikelets, (sessile spikelet on left and the involucre and pedicelled spikelets on the right)





## ***Themeda quadrivalvis* - Grader Grass**

### **Derivation**

*quadrivalvis* - from the Latin *quator* (four) and *valva* (leaf of a folding door); the four sessile male spikelets form an involucre below the hermaphrodite spikelet.

### **Habit**

An annual, erect grass, the culms are 30-200 cm tall.

### **Inflorescence**

The spatheole is 1.7-6 cm long. The involucral spikelets are 4-7 mm long; sessile spikelet is 4-6 mm long; the awn is 10-45 mm long.

### **Habitat**

This non-native species is found along roadsides and disturbed areas.



Spikelets

Grader Grass (*Themeda quadrivalvis*) could be confused with Giant Spear Grass (*Heteropogon triticeus*) and *Hyparrhenia rufa*, especially before flowering. These three species are tall grasses, and their increase in height before flowering is caused by a section of pale yellow culm being pushed upwards until it protrudes well above the green leaf sheath that previously enclosed it. The pale sections of the internodes alternate with the green sheaths giving these grass species a conspicuously banded appearance.





## ***Themeda triandra* - Kangaroo Grass**

### **Derivation**

*triandra* - from the Greek *treis* (three) and *aner* (man), the sessile spikelet surrounded by three (?) male spikelets.

### **Habit**

A perennial, tufted grass, the culms are 30-130 cm tall. The local grass is not tall, the ones from southern Australia are much taller.

### **Inflorescence**

The spatheole is 1.5-3.5 cm long. The involucral spikelets are 6-14 mm long; sessile spikelet is 6-11 mm long; the awn is 25-70 mm long.

### **Habitat**

This species is widespread, but it recently has become scarce as a result of overgrazing.



Spikelets



# Thuarea

*Thuarea* is named after Aubert du Petit-Thouars (1756-1831), the French botanist and ship's officer.

Creeping, mat-forming perennials which grow on sandy seashores. The inflorescence is a spatheate (with spathe) raceme consisting of 1-2 bisexual spikelets in the lower part and several male spikelets in the upper part.

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = 2, Australia = 1

## Townsville species

*Thuarea involuta* Tropical Beachgrass, Bird Beak Grass





## ***Thuarea involuta* - Tropical Beachgrass, Bird Beak Grass**

### **Derivation**

*involuta* from the Latin *involvere* (inroll), referring to the inrolled leaf blades.

### **Habit**

A prostrate, perennial grass, the culms are 12 cm tall. The leaves are velvety-soft.

### **Inflorescence**

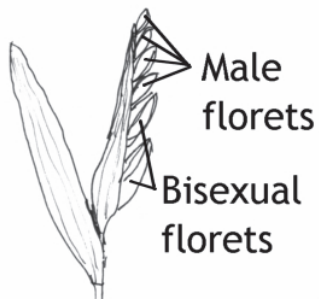
The inflorescence is a one-sided raceme with 1 to 2 bisexual flowers at the base and 4 to 6 male flowers at the apex. The short flowering shoots bend down as the seed ripens, and the capsules (formed by the spathe in a water-tight fold) either become buried in the sand or float away in the sea.

### **Habitat**

This species grows on sand dunes, particularly foredunes. It is an efficient sand binder and forms deep roots. It has been planted at Saunders Beach for dune stabilisation.



Inflorescence



Ripening seed





# *Triodia*

## Porcupine Grasses or Spinifex

*Triodia* from the Greek *treis* (three) and *odous* (tooth), referring to the 3-toothed or 3-lobed lemmas.

Tufted perennials, mostly hummock-forming, culms wiry. Leaf blades narrow, hard, woody needle-like. The inflorescence is a panicle or single raceme or spike. The spikelets are usually solitary with 4-15 florets. Some species are awned and some are awnless.

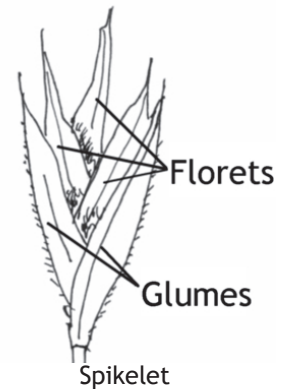
The spinifex grasses of inland Australia belong to the genus *Triodia*. Species from the genus *Spinifex* grow on the sand dunes in coastal areas.

Subfamily: Chloridoideae; Tribe: Triodieae

Species: World = 65, Australia = 65

### Townsville species

*Triodia stenostachya* Porcupine Grass, Spinifex





## ***Triodia stenostachya* - Porcupine Grass, Spinifex**

### **Derivation**

*stenostachya* - from the Greek *stenos* (narrow) and *stachys* (ear of corn), referring to the inflorescence which is a narrow spike or spike-like panicle.

### **Habit**

A tufted, stoloniferous perennial forming dense hummocks, the culms are 30-100 cm tall. The culms and leaves are highly resinous, not aromatic.

### **Inflorescence**

The inflorescence is a contracted panicle, 40 cm long and 3.5-4 cm wide. The spikelets are awnless or shortly awned.

### **Habitat**

Grows on rocky hillslopes and ridges in shallow soils. This species is only found on the top of Castle Hill and on Magnetic Island.



# Tripogon

From Latin *treis* (three) and *pogon* (a beard), referring to hairs at the base of the three lemma nerves.

Annual or perennial tufted grass. Inflorescence a single, slender spike, a single raceme or spike. The spikelets are laterally compressed, broadside to the rachis. The genus is quite closely to *Leptochloa* and *Diplachne*.

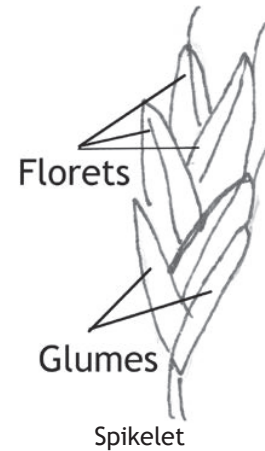
Subfamily: Chloridoideae; Tribe: Cynodonteae

Species: World = about 30, Australia = 1

*Tripogon loliiformis* is the only Australian species from this genus.

## Townsville species

*Tripogon loliiformis* Five Minute Grass, Eight-day Grass



Inflorescence



Spikelets



## ***Tripogon loliiformis* - Five Minute Grass**

### **Derivation**

*loliiformis* - resembling *Lolium* in some respect.

### **Habit**

An annual or perennial, tufted grass, culms erect, 3.5-15 cm tall, with dense fibrous butts. This species is termed a 'resurrection plant'. The leaves are mostly basal, 5-7.5 cm long. This grass is hardly noticed because it is very small.

### **Inflorescence**

The inflorescence is an erect raceme, usually 2-9.5 cm long. The spikelets are laterally compressed, 4-12 mm long, 2 mm wide, breaking up at maturity.

### **Habitat**

In a variety of habitats: rocky slopes, plateaux and outcrops of granite and sandstone in skeletal reddish soils with spinifex; on plains in red sand or sandy to clayey loams in open *Acacia* woodlands; depressions and creeklines; floodplains in red to brown clayey soils in open Eucalypt woodland; rocky slopes and outcrops of granite in pockets of sandy loam in eucalypt forest and woodland with a grassy understorey

Morphologically this species is very variable. Throughout the majority of its range it is characterised by a short dense inflorescence with overlapping spikelets. In the eastern country specimens grade to having a longer, less dense inflorescence. The specimen I collected in Townsville had a short spikelet with about five florets.



# Urochloa

## Arm Grasses or Signal Grasses

From Greek *oura* (tail) and *chloe* (grass), alluding to the muricate (with short sharp point) lemma of the upper floret. *Brachiaria* (excluding *Brachiaria eruciformis*) species are now included in *Urochloa*, these species do not have a muricate fertile lemma.

Annuals or perennials, rhizomatous or stoloniferous, tufted or decumbent. The inflorescence is a once-branched panicle. The spikelets are solitary, in pairs or clustered. The fertile lemma rugose (wrinkled).

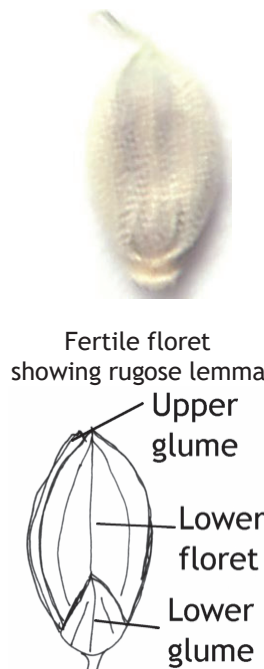
Members of this genus could be confused with *Echinochloa*, *Eriochloa*, *Paspalidium* and *Paspalum* species.

Subfamily: Panicoideae; Tribe: Paniceae

Species: World = c 111, Australia = 27

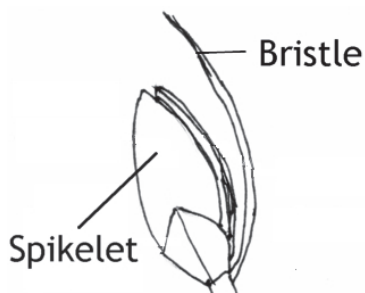
### Townsville species

* <i>Urochloa distachya</i>	
<i>Urochloa holosericea</i>	Silkytop Armgrass
* <i>Urochloa mosambicensis</i>	Sabi Grass
* <i>Urochloa mutica</i>	Para Grass
<i>Urochloa oligotricha</i>	
* <i>Urochloa panicoides</i>	Liverseed Grass
<i>Urochloa piligera</i>	Hairy Arm Grass
<i>Urochloa polyphylla</i>	
<i>Urochloa pubigera</i>	Arm Grass
* <i>Urochloa subquadripara</i>	Green Summer Grass

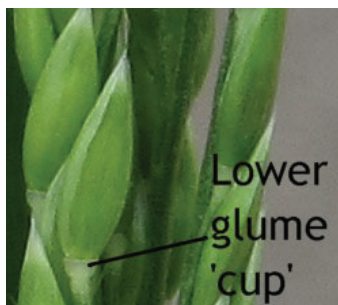


### Key to the species of *Urochloa* and related genera

1. Inflorescence terminating in a bristle (inspect carefully since it looks similar to an awn) ... *Paspalidium*  
 Inflorescence terminating in a spikelet ..... 2
2. Spikelet with a bead-like swelling at base (lower glume) ..... *Eriochloa*  
 Spikelet without a bead-like swelling at base ..... 3



Inflorescence terminating in a bristle



Bead-like swelling at the base of the spikelet



3. Ligule absent; glumes very unequal; palea tip reflexed ..... *Echinochloa*  
 Ligule present ..... 4
4. Lower glume present ..... *Urochloa*  
 Lower glume absent or very much reduced ..... *Paspalum*



## Key to the species of *Urochloa* species

1. Upper lemma obtusely rounded at apex and with distinct mucro (a short sharp point at the end); lower glume abaxial to spikelet bearing axis .....2
- Upper lemma obtuse to acute, usually muticous (without a point or pointed process); lower glume adaxial to spikelet bearing axis .....4



Upper lemma with a distinct mucro



Upper lemma muticous



Abaxial of the side of lower glume, facing away the axis

Lower glumes



Adaxial of the side of lower glume facing the axis

Lower glumes

2. Lower glume c. 1/3 spikelet length ..... *Urochloa panicoides*
- Lower glume at least 1/2 spikelet length .....3
3. Spikelets tidy; lower glume 3-nerved, rarely sub-5-nerved.....*Urochloa mosambicensis*
- Spikelets untidy; lower glume 5-7-nerved.....*Urochloa oligotricha*



Spikelets tidy



Spikelets untidy



4. Inflorescence ± open or with spikelets in several untidy rows; lower racemes sometimes branching ..  
.....5
- Inflorescence strictly regular and racemose with spikelets in two regular rows; lower racemes never branching.....6
5. Plant with robust ascending culms 1-4 m tall, with stolons.....*Urochloa mutica*
- Plant with slender culms 1 m tall, without stolons..... *Urochloa pubigera*
6. Spikelets up to 3 mm long..... *Urochloa distachya*
- Spikelets more than 3 mm long .....8
8. Spikelets hairy.....9
- Spikelets glabrous..... 10
9. Spikelets evenly hairy or if with longer apical hairs these are not arranged in a fringe.....  
.....*Urochloa piligera*
- Spikelets with a subapical fringe of silky hairs ..... *Urochloa holosericea*
10. Spikelets reddish; leaf margins serrate ..... *Urochloa polyphylla*
- Spikelets green to yellow..... *Urochloa subquadriflora*

## *Urochloa distachya*

### Derivation

*distachya* - from the Greek *dis* (twice) and *stachys* (an ear of corn), the inflorescences with two branches or with regularly bifurcating branches.

### Habit

An annual or perennial, mat-forming grass, the culms are prostrate, 5-20 cm tall.

### Inflorescence

The panicle is 1-3.5 cm long; it has 2-3 racemes. The spikelet is glabrous. The lower glume is 33-50% of the length of spikelet.

### Habitat

This species is well adapted to sandy loam soil.

*Urochloa distachya* and *Urochloa subquadripara* are very much alike, this species has a shorter spikelet, 2.4-3 mm long.



Spikelet





## ***Urochloa holosericea* - Silkytop Armgrass**

### **Derivation**

*holosericea* - from the Greek words *holos* (entire) and *sericea* (silky), the plant or spikelets totally invested in dense hairs

### **Habit**

An annual grass, the culms are 15-70 cm tall.

### **Inflorescence**

The panicle is 0.8-3.5 cm long; it has 4-6 racemes. The spikelet is hairy; it has a subapical fringe of silky hairs. The lower glume is 60-70% of the length of spikelet.

### **Habitat**

This species is distributed by woodlands and coastal grasslands.



Spikelet





## ***Urochloa mosambicensis* - Sabi Grass**

### **Derivation**

*mosambicensis* - from Mozambique.

### **Habit**

A perennial grass, the culms are 20-150 cm tall.

### **Inflorescence**

The panicle is 2-10 cm long; it has 3-8 racemes. The lower glume is 50-75% of the length of spikelet. The upper lemma has a distinct mucro (a short sharp point at the end).

### **Habitat**

This non-native species is common on roadsides, parks, and disturbed sites.



Spikelet



Upper floret





## ***Urochloa mutica* - Para Grass**

### **Derivation**

*mutica* - Latin word for blunt, lacking awns or lemmas and/or glumes truncate.

### **Habit**

A robust, perennial grass, stolons present, the culms are sprawling, 1-4 m long, rooting from lower nodes.

### **Inflorescence**

The panicle is 2-13 cm long; it has 5-20 racemes. The spikelet is glabrous. The lower glume is 25-33% of the length of spikelet.

### **Habitat**

This non-native species grows in wet and submerged habitats.



Spikelet





## ***Urochloa oligotricha***

### **Derivation**

*oligotricha* - from the Greek *oligos* (few) and *thrix* (hair), the plant in whole or part sparsely hairy.

### **Habit**

A perennial grass, the culms are 30-150 cm tall.

### **Inflorescence**

The panicle is 2-12 cm long; it has 6-20 racemes. The lower glume is 66-75% of the length of spikelet. The upper lemma has a distinct mucro (a short sharp point at the end).

### **Habitat**

This non-native species is uncommon. It is found around James Cook University grounds and nearby.



Spikelet





## ***Urochloa panicoides* - Liverseed Grass**

### **Derivation**

*panicoides* - resembling *Panicum*, usually with respect to the inflorescence or spikelet.

### **Habit**

An annual grass, the culms are 10-80 cm tall.

### **Inflorescence**

The panicle is 1-7 cm long; it has 2-7 racemes. The lower glume is 30-40% of the length of spikelet. The upper lemma has a distinct mucro (a short sharp point at the end).

### **Habitat**

This non-native species is found on roadsides, parks, and disturbed sites.



Spikelet



## *Urochloa piligera* - Hairy Arm Grass

### Derivation

*piligera* - from the Latin *pilus* (a hair) and *gero* (carry), it is a hairy spikelet.

### Habit

An annual grass, the culms are 15-60 cm tall.

### Inflorescence

The panicle is 2-6 cm long; it has 3-4 racemes. The spikelet is hairy. The lower glume is 50-70% of the length of spikelet.

### Habitat

This species occurs in forests, rainforest, woodlands, shrublands and grasslands.



Spikelet





## *Urochloa polyphylla*

### Derivation

*polyphylla* - from the Greek words *polys* (many) and *phyllon* (leaf), the culms many-leaved in comparison with related species.

### Habit

An annual grass, the culms 15-60 cm.

### Inflorescence

The panicle is 1.5-4 cm long; it has 3-7 racemes. The spikelet is glabrous. The lower glume is 50-60% of the length of spikelet.

### Habitat

This species occurs in rainforest, woodlands and grasslands.



Spikelet



## *Urochloa pubigera* - Arm Grass

### Derivation

*pubigera* - from the Latin word *pubes* (hair that appears at puberty) and *gera* (to bear), the spikelet is slightly hairy.

### Habit

An annual grass, the culms 20-60 cm tall.

### Inflorescence

The panicle is 3-9 cm long; it has 4-10 racemes. The spikelet looks glabrous, but has small hairs. The lower glume is 50-60% of the length of spikelet.

### Habitat

This species occurs in rainforest, woodlands and grasslands.



Spikelet





## *Urochloa subquadriflora* - Green Summer Grass

### Derivation

*subquadriflora* - from the Latin *sub* (almost), *quadri* (four) and *pario* (bear), referring to the inflorescence with mostly four racemes.

### Habit

An annual or perennial mat-forming grass, the culms are prostrate, 10-150 cm long.

### Inflorescence

The panicle is 2-6 cm long; it has 3-5 racemes. The spikelet is glabrous. The lower glume is 33-50% of the length of spikelet.

### Habitat

This non-native species occurs widely as a weed. It grows in rainforest, woodlands and grasslands.

*Urochloa subquadriflora* and *Urochloa distachya* are very much alike, this species has a longer spikelet, 3-3.7 mm long.



Spikelet



# Vacoparis

## Sorghum

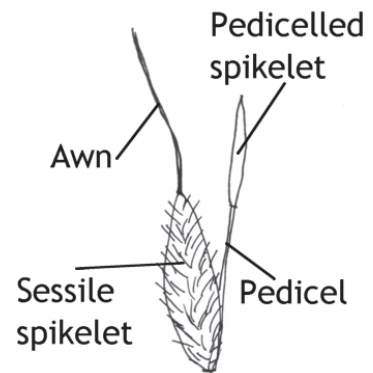
From Latin *vaco* (empty) and *paris* (companion), referring to the greatly reduced pedicelled spikelets. Recent studies of the Australian *Sorghum* species, have suggested three distinct lineages, and these species have been divided into three genera, *Sorghum*, *Sarga* and *Vacoparis*.

Tufted annuals. The inflorescence is an open or contracted panicle. The spikelets are in pairs (with terminal triplets), one sessile and one pedicelled. The mature sessile spikelets are dark reddish brown almost black. The awn of the sessile spikelet 2.5-5.2 cm long, the pedicelled spikelet is reduced to narrow, linear glumes.

Subfamily: Panicoideae; Tribe: Andropogoneae  
Species: World = 2, Australia = 2

### Townsville species

*Vacoparis laxiflorum*



### Key to the species of *Sarga*, *Sorghum* and *Vacoparis*

1. Pedicelled spikelet reduced to narrow, linear glumes ..... *Vacoparis laxiflorum*  
Pedicelled spikelet containing empty or male lemmas ..... 2
2. Awn on sessile spikelet 25-80 mm long ..... *Sarga plumosum*  
Awn on sessile spikelet 0-20 mm long ..... *Sorghum*



*Vacoparis laxiflorum*



*Sarga plumosum*



*Sorghum nitidum*  
*f. aristatum*



*Sorghum x alnum*



## *Vacoparis laxiflorum*

### Derivation

*laxiflorum* - from the Latin *laxus* (loose) and *flos* (flower), referring to the an open panicle.

### Habit

An annual grass, the culms are 100-200 cm tall. The nodes of the culms are glabrous, pubescent or bearded.

### Inflorescence

The inflorescence is an open panicle, 5-20 cm long, which hangs to one side. The pedicelled spikelets are only linear glumes; the sessile spikelets are with white or pale brown hairs 5-6.5 mm, the lemma awn is 2.5-1.5 cm long.

### Habitat

This species is usually found on heavy clays and alluvial soils along river flats and flooded areas.



# Whiteochloa

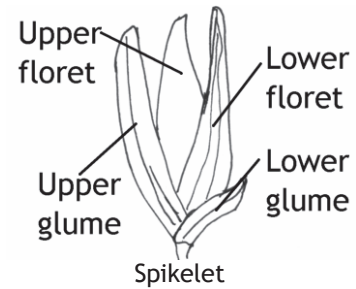
*Whiteochloa* is named after the Cyril Tenison White, Queensland Government botanist 1917-1950.

Annual, or short-lived perennials, tufted to decumbent. The inflorescence is an open or contracted panicle. The spikelets are solitary.

Subfamily: Panicoideae; Tribe: Paniceae

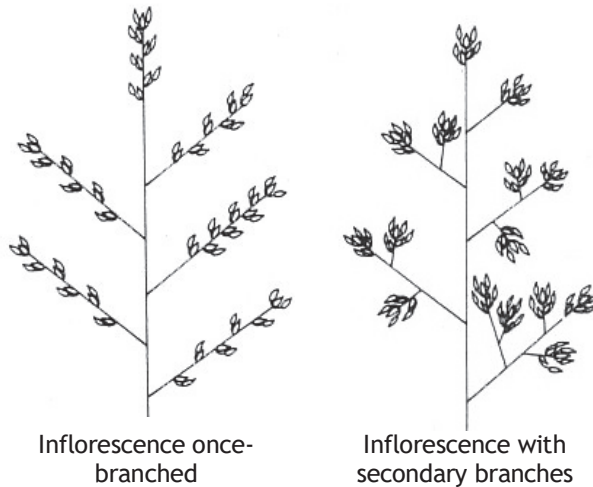
Species: World = 6, Australia = 6

This species could be confused with *Arthrargrostis*, *Panicum*, and *Urochloa* species.

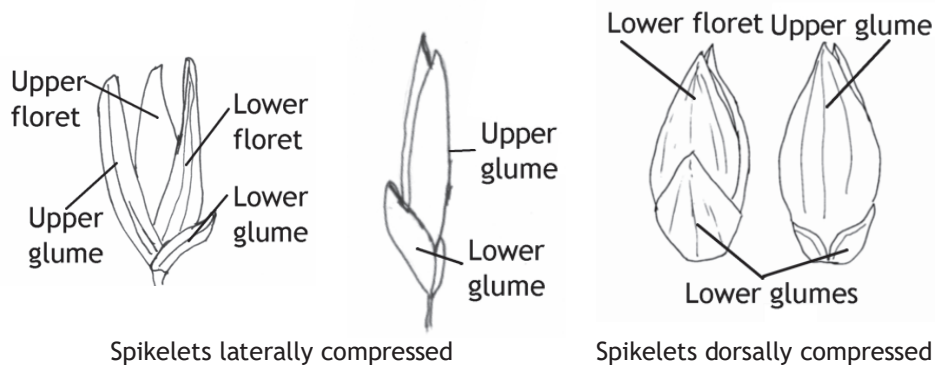


## Key to the species of *Whiteochloa* and related genera

1. Inflorescence once-branched ..... *Urochloa*
- Inflorescence with secondary branches ..... 2



2. Spikelets laterally compressed ..... 3
- Spikelets dorsally compressed ..... *Panicum*



3. Plant 45-110 cm tall; grows on sandy, alluvial soils; inflorescence open or contracted, branches persistent ..... *Whiteochloa airoides*
- Plant 17-60 cm; grows on rocky hillsides; inflorescence open; branches deciduous ..... *Arthrargrostis deschampsoides*



## ***Whiteochloa airoides***

### **Derivation**

*airoides* - the inflorescences resemble those of genus *Aira*.

### **Habit**

A tufted, perennial, tussock grass, the culms are 45-110 cm tall, with basal leaf sheaths pubescent.

### **Inflorescence**

The inflorescence is an open or contracted panicle 7-25 cm long, 1-10 cm wide, contracted about primary branches. The spikelet is laterally compressed.

### **Habitat**

This species grow in sandy alluvial soil



Spikelets



# Zoysia

## Zoysia Grasses

Named for Baron Karl von Zois, 1756-1800, Austrian botanist.

Mat-forming perennials, rhizomatous. The inflorescence is a single raceme with spikelets arranged on all sides. The spikelets have one fertile floret and one glume, the lower glume is absent or obscure.

Zoysia grasses are native to southeast Asia, Australia and New Zealand and are cultivated for lawns and ornamental plants.

There are three principle species which have been used to develop varieties and hybrids:

# *Zoysia japonica* - Japanese Lawngrass, Korean Lawngrass

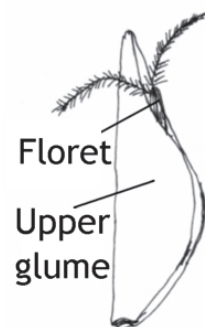
# *Zoysia matrella* - Manila Grass

# *Zoysia pacifica*<sup>1</sup> - Korean Lawngrass, No Mow Grass

The Australian endemic species *Zoysia macrantha* (Prickly Couch Grass), grows in coastal areas between north of Yepoon, and Port Lincoln, South Australia.

Subfamily: Chloridoideae; Tribe: Cynodonteae

Species: World = 11, Australia = 1 (plus 3 cultivated species)



Spikelet

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<sup>1</sup> Recent research has identified the improper application of the name *Z. tenuifolia*. *Z. tenuifolia* is endemic to Mauritius, is not represented in *Zoysia* breeding collections, and has not been used in the development of zoysia grasses. The specimens collected in Pacific Rim countries belong to the species *Z. pacifica*.



## Key to *Zoysia* species used for tuftgrass

1. Blades to 0.5 mm diameter; racemes with 3-12 spikelets;  
peduncles exerted less than 1 cm beyond flag leaf sheath ..... *Zoysia pacifica*  
Blades greater than 0.5 mm width or diameter, stressed or fully hydrated; racemes with 10-50  
spikelets; peduncles exerted at least 1 cm beyond flag leaf sheath ..... 2
2. Pedicels 1.6-3.5 mm; spikelets ovate, 1.0-1.4 mm wide;  
culm internodes 2-10 mm long ..... *Zoysia japonica*  
Pedicels 0.6-1.6 mm long; spikelets lanceolate 0.6-1.0 mm wide;  
culm internodes, at least a few, over 14 mm long ..... *Zoysia matrella*

### *Zoysia japonica* - Japanese Lawngrass, Korean Lawngrass

Varieties - Empire (SS-500), Palisades, El Toro, UltimateFlora (BA-189), Ozeboy.



Grass Herbarium

Family:	POACEAE
Genus and species:	<i>Zoysia japonica</i>
Identification	NH



***Zoysia matrella* - Manila Grass**

Varieties - Cavalier, Cavier, Shade Tuff (A-1), Layzee (G-4).



***Zoysia pacifica* - Korean Lawngrass, No Mow Grass**



**Reference**

Gilliland, H. B., Holttum, R. E., Bor, N. L. and Burkill, H. M. (1971) A Revised Flora of Malaya Volume III Grasses of Malaya, Government Printing Office, Singapore.



## TOWNSVILLE GRASSES SPECIES

### Status

Naturalised (non-native) grasses (\*)

Naturalised species are those that are considered to have successfully established populations outside their native range, by reproducing there without cultivation or other human intervention.

Cultivated grasses (#)

Cultivated species are only found in gardens.

Vulnerable grasses (V)

Vulnerable species are threatened plants.

### Scientific name

Status	Botanical Name	Common Name
	<i>Alloteropsis ciminata</i>	Annual Cockatoo Grass
	<i>Alloteropsis semialata</i>	Cockatoo Grass
	<i>Ancistrachne uncinata</i>	Hooky Grass
*	<i>Andropogon gayanus</i>	Gamba Grass
	<i>Aristida acuta</i>	
	<i>Aristida calycina</i>	Dark Wiregrass, Branched Wiregrass
	<i>Aristida gracilipes</i>	
	<i>Aristida holathera</i>	Erect Kerosine Grass
	<i>Aristida latifolia</i>	Feathertop Wiregrass
	<i>Aristida pernicioso</i>	
	<i>Aristida queenslandica</i> var. <i>dissimilis</i>	Queensland Wiregrass
	<i>Aristida queenslandica</i> var. <i>queenslandica</i>	Queensland Wiregrass
	<i>Aristida spuria</i>	
	<i>Aristida superpendens</i>	
	<i>Aristida utilis</i>	
	<i>Aristida warburgii</i>	
	<i>Arthrargrostis deschampsoides</i>	
	<i>Arundinella nepalensis</i>	Reed Grass
	<i>Arundinella setosa</i>	Reed Grass
*	<i>Arundo donax</i>	Giant Reed
*	<i>Axonopus compressus</i>	Buffalo Grass, Broadleaf Carpet Grass
	<i>Bothriochloa bladhii</i> subsp. <i>bladhii</i>	Forest Bluegrass
	<i>Bothriochloa decipiens</i>	Pitted Grass
	<i>Bothriochloa ewartiana</i>	Desert Bluegrass
*	<i>Bothriochloa pertusa</i>	Indian Bluegrass
	<i>Brachyachne convergens</i>	Common Native Couch
	<i>Capillipedium parviflorum</i>	Scented Top
	<i>Capillipedium spicigerum</i>	Scented Top
	<i>Cenchrus brevisetosus</i>	
*	<i>Cenchrus ciliaris</i>	Buffel Grass
*	<i>Cenchrus echinatus</i>	Mossman River Grass, Burr Grass
	<i>Cenchrus elymoides</i>	
*	<i>Cenchrus pedicellatus</i> subsp. <i>unispiculus</i>	Annual Mission Grass
*	<i>Cenchrus pennisetiformis</i>	White Buffel Grass
*	<i>Cenchrus purpurascens</i>	Swamp Foxtail
*	<i>Cenchrus setaceus</i>	Fountain Grass
*	<i>Cenchrus setigerus</i>	Birdwood Grass

	<i>Chionachne cyathopoda</i>	River Grass
*	<i>Chloris gayana</i>	Rhodes Grass
*	<i>Chloris inflata</i>	Purpletop Grass
	<i>Chloris lobata</i>	
	<i>Chloris pectinata</i>	Comb Windmill Grass
	<i>Chloris pumilio</i>	
*	<i>Chloris virgata</i>	Feathertop Rhodes Grass
*	<i>Chrysopogon aciculatus</i>	Mackies Pest
	<i>Chrysopogon fallax</i>	Golden Beard Grass
	<i>Chrysopogon filipes</i>	Australian Vetiver
*	<i>Chrysopogon zizanioides</i>	Vetiver Grass
	<i>Cleistochloa subjuncea</i>	
	<i>Cymbopogon ambiguus</i>	Scented Oilgrass, Lemon Grass
	<i>Cymbopogon bombycinus</i>	Silky Oilgrass
	<i>Cymbopogon obtectus</i>	Silkyheads
	<i>Cymbopogon queenslandicus</i>	
	<i>Cymbopogon refractus</i>	Barbed Wire Grass
*	<i>Cynodon dactylon</i>	Couch Grass
*	<i>Cynodon nlemfuensis</i>	Bermuda Grass
*	<i>Cynodon radiatus</i>	Bermuda Grass
*	<i>Dactyloctenium aegyptium</i>	Coastal Button Grass
	<i>Dactyloctenium buchananensis</i>	
	<i>Dactyloctenium radulans</i>	Native Button Grass
*	<i>Dichanthium annulatum</i>	Sheda Grass
*	<i>Dichanthium aristatum</i>	Angleton Grass
	<i>Dichanthium fecundum</i>	Curly Bluegrass
	<i>Dichanthium sericeum subsp. polystachyum</i>	Queensland Bluegrass
	<i>Dichanthium sericeum subsp. sericeum</i>	Queensland Bluegrass
	<i>Digitaria ammophila</i>	Silky Umbrella Grass, Spider Grass
	<i>Digitaria brownii</i>	Cotton Panic Grass
*	<i>Digitaria ciliaris</i>	Summer Grass, Crab Grass
*	<i>Digitaria didactyla</i>	Queensland Bluegrass
	<i>Digitaria diffusa</i>	
*	<i>Digitaria eriantha</i>	Pangola Grass
	<i>Digitaria gibbosa</i>	
	<i>Digitaria leucostachya</i>	
	<i>Digitaria longiflora</i>	
	<i>Digitaria minima</i>	
	<i>Digitaria nematostachya</i>	
	<i>Digitaria orbata</i>	
	<i>Digitaria parviflora</i>	Smallflower Finger Grass
*	<i>Digitaria violascens</i>	Purple Crabgrass
	<i>Dinebra decipiens</i>	Slender Canegrass
	<i>Dinebra neesii</i>	Swamp Grass
	<i>Diplachne fusca var. fusca</i>	Brown Beetle Grass
*	<i>Diplachne fusca var. uninervia</i>	Mexican Sprangletop
*	<i>Echinochloa colona</i>	Awnless Barnyard Grass
*	<i>Echinochloa crus-galli</i>	Barnyard Grass
*	<i>Echinochloa esculenta</i>	Japanese Millet
*	<i>Echinochloa polystachya</i>	Aleman Grass



	<i>Ectrosia lasioclada</i>	
	<i>Ectrosia leporina</i>	Hare's Foot Grass
*	<i>Eleusine indica</i>	Crowsfoot Grass
	<i>Elionurus citreus</i>	Lemon-scented Grass
	<i>Elytrophorus spicatus</i>	Spikegrass
	<i>Enneapogon lindleyanus</i>	Nineawn Grass
	<i>Enneapogon nigricans</i>	Black-heads
	<i>Enneapogon polyphyllus</i>	Leafy Nineawn
	<i>Enneapogon robustissimus</i>	Nineawn Grass
	<i>Enteropogon ramosus</i>	Twirly Windmill Grass
	<i>Eragrostis basedowii</i>	Neat Lovegrass
	<i>Eragrostis brownii</i>	Brown's Lovegrass
*	<i>Eragrostis cilianensis</i>	Stinking Lovegrass
	<i>Eragrostis cumingii</i>	Cuming's Lovegrass
*	<i>Eragrostis curvula</i>	African Lovegrass
	<i>Eragrostis dielsii</i>	Mallee Lovegrass
	<i>Eragrostis elongata</i>	Clustered Lovegrass
	<i>Eragrostis exigua</i>	
	<i>Eragrostis fallax</i>	
	<i>Eragrostis interrupta</i>	
	<i>Eragrostis lacunaria</i>	Purple Lovegrass
	<i>Eragrostis leptostachya</i>	Paddock Lovegrass
*	<i>Eragrostis mexicana</i>	Mexican Lovegrass
*	<i>Eragrostis minor</i>	Small Stinkgrass
	<i>Eragrostis parviflora</i>	Weeping Lovegrass
*	<i>Eragrostis pilosa</i>	Soft Lovegrass
	<i>Eragrostis pubescens</i>	
	<i>Eragrostis schultzei</i>	
	<i>Eragrostis sororia</i>	
	<i>Eragrostis spartinioides</i>	
	<i>Eragrostis stenostachya</i>	
*	<i>Eragrostis tenella</i>	Delicate Lovegrass
	<i>Eragrostis tenellula</i>	Delicate Lovegrass
*	<i>Eragrostis tenuifolia</i>	Elastic Grass
	<i>Eragrostis unioloides</i>	
	<i>Eremochloa bimaculata</i>	Poverty Grass
	<i>Eriachne ciliata</i>	Slender Wanderrie Grass
	<i>Eriachne mucronata</i>	Mountain Wanderrie Grass
	<i>Eriachne obtusa</i>	Northern Wanderrie Grass
	<i>Eriachne pallescens</i>	Wanderrie Grass
	<i>Eriachne rara</i>	
	<i>Eriachne triodioides</i>	Wanderrie Grass
	<i>Eriochloa crebra</i>	Tall Cupgrass
	<i>Eriochloa procera</i>	Cup Grass
	<i>Eriochloa pseudoacrotricha</i>	Early Spring Cupgrass
	<i>Eulalia aurea</i>	Silky Browntop
	<i>Hemarthria uncinata</i>	Matgrass
	<i>Heteropogon contortus</i>	Black Speargrass
	<i>Heteropogon triticeus</i>	Giant Speargrass
	<i>Hymenachne acutigluma</i>	

*	<i>Hymenachne amplexicaulis</i>	Hymenachne
*	<i>Hyparrhenia rufa</i> subsp. <i>rufa</i>	Thatch Grass
	<i>Imperata cylindrica</i>	Blady Grass
	<i>Ischaemum australe</i> var. <i>arundinaceum</i>	Large Bluegrass
	<i>Ischaemum australe</i> var. <i>australe</i>	Large Bluegrass
	<i>Ischaemum australe</i> var. <i>villosum</i>	Large Bluegrass
	<i>Ischaemum rugosum</i> var. <i>rugosum</i>	
	<i>Ischaemum rugosum</i> var. <i>segetum</i>	
	<i>Leersia hexandra</i>	Swamp Rice Grass
	<i>Lepturus repens</i>	
*	<i>Megathyrsus maximus</i> var. <i>coloratus</i>	Purple-topped Guinea Grass
*	<i>Megathyrsus maximus</i> var. <i>maximus</i>	Common Guinea Grass
*	<i>Megathyrsus maximus</i> var. <i>maximus</i> 'Hamil'	Hamil Grass
*	<i>Megathyrsus maximus</i> var. <i>pubiglumis</i>	Guinea Grass
*	<i>Melinis minutiflora</i>	Molasses Grass
*	<i>Melinis repens</i>	Red Natal Grass
	<i>Mnesithea formosa</i>	
	<i>Mnesithea granularis</i>	Pit Scale Grass
	<i>Mnesithea rottboellioides</i>	Northern Canegrass
	<i>Ophiuros exaltatus</i>	Canegrass
	<i>Oplismenus aemulus</i>	Australian Basket Grass
	<i>Oplismenus compositus</i>	Running Mountain Grass
	<i>Oryza australiensis</i>	Australian Wild Rice
	<i>Oryza meridionalis</i>	Australian Wild Rice
	<i>Oxychloris scariosa</i>	Winged Windmill Grass
	<i>Panicum decompositum</i> var. <i>decompositum</i>	Australian Millet
	<i>Panicum decompositum</i> var. <i>tenuius</i>	Australian Millet
	<i>Panicum effusum</i>	Hairy Panic
	<i>Panicum laevinode</i>	Pepper Grass
	<i>Panicum mitchellii</i>	
	<i>Panicum paludosum</i>	Swamp Panic
	<i>Panicum seminudum</i> var. <i>cairnsianum</i>	
	<i>Panicum simile</i>	Two-coloured Panic
	<i>Panicum trichoides</i>	
	<i>Paspalidium distans</i>	Spreading Panic Grass
	<i>Paspalidium flavidum</i>	
	<i>Paspalidium gracile</i>	Slender Panic
	<i>Paspalidium rarum</i>	Rare Panic
V	<i>Paspalidium udum</i>	
*	<i>Paspalum conjugatum</i>	Sour Grass, Johnson River Grass
*	<i>Paspalum dilatatum</i>	Paspalum
	<i>Paspalum distichum</i>	Water Couch
*	<i>Paspalum notatum</i>	Bahia Grass
	<i>Paspalum scrobiculatum</i>	Ditch Millet
	<i>Paspalum vaginatum</i>	Saltwater Couch
	<i>Perotis rara</i>	Comet Grass
	<i>Phragmites australis</i>	Cane Grass, Bamboo Reed
	<i>Phragmites karka</i>	Tropical Reed
	<i>Pseudopogonatherum contortum</i>	
	<i>Pseudoraphis spinescens</i>	Spiny Mudgrass



	<i>Sacciolepis indica</i>	Indian Cupscale Grass
	<i>Sarga plumosum</i>	Plume Sorghum
	<i>Schizachyrium fragile</i>	Fire Grass, Red Spathe Grass
	<i>Schizachyrium occultum</i>	
	<i>Schizachyrium pseudeulalia</i>	
	<i>Sehima nervosum</i>	Whitegrass
	<i>Setaria australiensis</i>	Scrub Pigeon Grass
	<i>Setaria oplismenoides</i>	
*	<i>Setaria pumila</i> subsp. <i>subtesselata</i>	Pale Pigeon Grass
*	<i>Setaria sphacelata</i>	South African Pigeon Grass
	<i>Setaria surgens</i>	Pigeon Grass
*	<i>Sorghum bicolor</i>	Forage Sorghum
*	<i>Sorghum halepense</i>	Johnson Grass
	<i>Sorghum nitidum</i>	
*	<i>Sorghum x alnum</i>	Columbia Grass
	<i>Spinifex sericeus</i>	Beach Spinifex, Hairy Spinifex
	<i>Sporobolus australasicus</i>	Australian Dropseed
	<i>Sporobolus caroli</i>	Fairy Grass
*	<i>Sporobolus coromandelianus</i>	Small Dropseed
*	<i>Sporobolus fertilis</i>	Giant Parramatta Grass
*	<i>Sporobolus jacquemontii</i>	Rat's Tail Grass
	<i>Sporobolus lenticularis</i>	
*	<i>Sporobolus natalensis</i>	Giant Rat's Tail Grass
	<i>Sporobolus sessilis</i>	Tussocky Sporobolus
	<i>Sporobolus virginicus</i>	Salt Couch
#	<i>Stenotaphrum secundatum</i>	Buffalo Grass
	<i>Themeda arguens</i>	
*	<i>Themeda quadrivalvis</i>	Grader Grass
	<i>Themeda triandra</i>	Kangaroo Grass
	<i>Thuarea involuta</i>	Tropical Beachgrass, Bird Beak Grass
	<i>Triodia stenostachya</i>	Porcupine Grass, Spinifex
	<i>Tripogon loliiformis</i>	Five Minute Grass, Eight-day Grass
*	<i>Urochloa distachya</i>	
	<i>Urochloa holosericea</i> subsp. <i>holosericea</i>	Silkytop Armgrass
*	<i>Urochloa mosambicensis</i>	Sabi Grass
*	<i>Urochloa mutica</i>	Para Grass
	<i>Urochloa oligotricha</i>	
*	<i>Urochloa panicoides</i>	Liverseed Grass
	<i>Urochloa piligera</i>	Hairy Arm Grass
	<i>Urochloa polyphylla</i>	
	<i>Urochloa pubigera</i>	Arm Grass
*	<i>Urochloa subquadrifera</i>	Green Summer Grass
	<i>Vacoparis laxiflorum</i>	
	<i>Whiteochloa airoides</i>	Creeping Panic
#	<i>Zoysia japonica</i>	Japanese Lawngrass, Korean Lawngrass
#	<i>Zoysia matrella</i>	Manila Grass
#	<i>Zoysia pacifica</i>	No Mow Grass, Korean Lawngrass

## TOWNSVILLE GRASSES COMMON NAMES

Status	Common Name	Botanical Name
*	African Lovegrass	<i>Eragrostis curvula</i>
*	Aleman Grass	<i>Echinochloa polystachya</i>
*	Angleton Grass	<i>Dichanthium aristatum</i>
	Annual Cockatoo Grass	<i>Alloteropsis cimicina</i>
*	Annual Mission Grass	<i>Cenchrus pedicellatus subsp. unispiculus</i>
	Arm Grass	<i>Urochloa pubigera</i>
	Australian Dropseed	<i>Sporobolus australasicus</i>
	Australian Millet	<i>Panicum decompositum var. decompositum</i>
	Australian Millet	<i>Panicum decompositum var. tenuius</i>
	Australian Vetiver	<i>Chrysopogon filipes</i>
	Australian Wild Rice	<i>Oryza australiensis</i>
	Australian Wild Rice	<i>Oryza meridionalis</i>
*	Awnless Barnyard Grass	<i>Echinochloa colona</i>
*	Bahia Grass	<i>Paspalum notatum</i>
	Bamboo Reed	<i>Phragmites australis</i>
	Barbed Wire Grass	<i>Cymbopogon refractus</i>
*	Barnyard Grass	<i>Echinochloa crus-galli</i>
	Beach Spinifex	<i>Spinifex sericeus</i>
*	Bermuda Grass	<i>Cynodon nlemfuensis</i>
*	Bermuda Grass	<i>Cynodon radiatus</i>
	Bird Beak Grass	<i>Thuarea involuta</i>
*	Birdwood Grass	<i>Cenchrus setigerus</i>
	Black Speargrass	<i>Heteropogon contortus</i>
	Blady Grass	<i>Imperata cylindrica</i>
	Branched Wiregrass	<i>Aristida calycina</i>
*	Broadleaf Carpet Grass	<i>Axonopus compressus</i>
	Brown Beetle Grass	<i>Diplachne fusca var. fusca</i>
	Brown's Lovegrass	<i>Eragrostis brownii</i>
*	Buffalo Grass	<i>Axonopus compressus</i>
#	Buffalo Grass	<i>Stenotaphrum secundatum</i>
*	Buffel Grass	<i>Cenchrus ciliaris</i>
*	Burr Grass	<i>Cenchrus echinatus</i>
	Cane Grass	<i>Phragmites australis</i>
	Canegrass	<i>Ophiuros exaltatus</i>
	Clustered Lovegrass	<i>Eragrostis elongata</i>
*	Coastal Button Grass	<i>Dactyloctenium aegyptium</i>
	Cockatoo Grass	<i>Alloteropsis semialata</i>
*	Columbia Grass	<i>Sorghum x alnum</i>
	Comb Windmill Grass	<i>Chloris pectinata</i>
	Comet Grass	<i>Perotis rara</i>
	Common Native Couch	<i>Brachyachne convergens</i>
*	Common Guinea Grass	<i>Megathyrsus maximus var. maximus</i>
	Cotton Panic Grass	<i>Digitaria brownii</i>
*	Couch Grass	<i>Cynodon dactylon</i>
*	Crab Grass	<i>Digitaria ciliaris</i>
	Creeping Panic	<i>Whiteochloa airoides</i>



*	Crowsfoot Grass	<i>Eleusine indica</i>
	Cuming's Lovegrass	<i>Eragrostis cumingii</i>
	Cup Grass	<i>Eriochloa procera</i>
	Curly Bluegrass	<i>Dichanthium fecundum</i>
	Dark Wiregrass	<i>Aristida calycina</i>
*	Delicate Lovegrass	<i>Eragrostis tenella</i>
	Delicate Lovegrass	<i>Eragrostis tenellula</i>
	Desert Bluegrass	<i>Bothriochloa ewartiana</i>
	Ditch Millet	<i>Paspalum scrobiculatum</i>
	Early Spring Cupgrass	<i>Eriochloa pseudoacrotricha</i>
	Eight-day Grass	<i>Tripogon loliiformis</i>
*	Elastic Grass	<i>Eragrostis tenuifolia</i>
	Erect Kerosine Grass	<i>Aristida holathera</i>
	Fairy Grass	<i>Sporobolus caroli</i>
*	Feathertop Rhodes Grass	<i>Chloris virgata</i>
	Feathertop Wiregrass	<i>Aristida latifolia</i>
	Fire Grass	<i>Schizachyrium fragile</i>
	Five Minute Grass	<i>Tripogon loliiformis</i>
*	Forage Sorghum	<i>Sorghum bicolor</i>
	Forest Bluegrass	<i>Bothriochloa bladhii</i> subsp. <i>bladhii</i>
*	Fountain Grass	<i>Cenchrus setaceus</i>
*	Gamba Grass	<i>Andropogon gayanus</i>
*	Giant Parramatta Grass	<i>Sporobolus fertilis</i>
*	Giant Rat's Tail Grass	<i>Sporobolus natalensis</i>
*	Giant Reed	<i>Arundo donax</i>
	Giant Speargrass	<i>Heteropogon triticeus</i>
	Golden Beard Grass	<i>Chrysopogon fallax</i>
*	Grader Grass	<i>Themeda quadrivalvis</i>
*	Green Panic	<i>Megathyrsus maximus</i> var. <i>pubiglumis</i>
*	Green Summer Grass	<i>Urochloa subquadrifera</i>
*	Guinea Grass	<i>Megathyrsus maximus</i> var. <i>maximus</i>
	Hairy Arm Grass	<i>Urochloa piligera</i>
	Hairy Panic	<i>Panicum effusum</i>
	Hairy Spinifex	<i>Spinifex sericeus</i>
*	Hamil Grass	<i>Megathyrsus maximus</i> var. <i>maximus</i> 'Hamil'
	Hare's Foot Grass	<i>Ectrosia leporina</i>
	Hooky Grass	<i>Ancistrachne uncinulata</i>
*	Hymenachne	<i>Hymenachne amplexicaulis</i>
*	Indian Bluegrass	<i>Bothriochloa pertusa</i>
	Indian Cupscale Grass	<i>Sacciolepis indica</i>
#	Japanese Lawngrass	<i>Zoysia japonica</i>
*	Japanese Millet	<i>Echinochloa esculenta</i>
*	Johnson Grass	<i>Sorghum halepense</i>
*	Johnson River Grass	<i>Paspalum conjugatum</i>
	Kangaroo Grass	<i>Themeda triandra</i>
#	Korean Lawngrass	<i>Zoysia japonica</i>
#	Korean Lawngrass	<i>Zoysia pacifica</i>
	Large Bluegrass	<i>Ischaemum australe</i> var. <i>arundinaceum</i>
	Large Bluegrass	<i>Ischaemum australe</i> var. <i>australe</i>
	Large Bluegrass	<i>Ischaemum australe</i> var. <i>villosum</i>

	Leafy Nineawn	<i>Enneapogon polyphyllus</i>
	Lemon Grass	<i>Cymbopogon ambiguus</i>
	Lemon-scented Grass	<i>Elionurus citreus</i>
*	Liverseed Grass	<i>Urochloa panicoides</i>
*	Mackies Pest	<i>Chrysopogon aciculatus</i>
	Mallee Lovegrass	<i>Eragrostis dielsii</i>
#	Manila Grass	<i>Zoysia matrella</i>
	Matgrass	<i>Hemarthria uncinata</i>
*	Mexican Lovegrass	<i>Eragrostis mexicana</i>
	Millet Panic	<i>Panicum mindanaense</i>
*	Molasses Grass	<i>Melinis minutiflora</i>
*	Mossman River Grass	<i>Cenchrus echinatus</i>
	Mountain Wanderrie Grass	<i>Eriachne mucronata</i>
	Native Button Grass	<i>Dactyloctenium radulans</i>
	Neat Lovegrass	<i>Eragrostis basedowii</i>
	Niggerheads	<i>Enneapogon nigricans</i>
#	No Mow Grass	<i>Zoysia pacifica</i>
	Northern Canegrass	<i>Mnesithea rottboellioides</i>
	Northern Wanderrie Grass	<i>Eriachne obtusa</i>
	Paddock Lovegrass	<i>Eragrostis leptostachya</i>
*	Pale Pigeon Grass	<i>Setaria pumila</i> subsp. <i>subtesselata</i>
*	Pangola Grass	<i>Digitaria eriantha</i>
*	Para Grass	<i>Urochloa mutica</i>
	Pepper Grass	<i>Panicum laevinode</i>
	Pigeon Grass	<i>Setaria surgens</i>
	Pit Scale Grass	<i>Mnesithea granularis</i>
	Pitted Grass	<i>Bothriochloa decipiens</i>
	Plume Sorghum	<i>Sarga plumosum</i>
	Poverty Grass	<i>Eremochloa bimaculata</i>
*	Purple Crabgrass	<i>Digitaria violascens</i>
	Purple Lovegrass	<i>Eragrostis lacunaria</i>
*	Purple-topped Guinea Grass	<i>Megathyrsus maximus</i> var. <i>coloratus</i>
*	Purpletop Grass	<i>Chloris inflata</i>
	Queensland Bluegrass	<i>Dichanthium sericeum</i> subsp. <i>polystachyum</i>
	Queensland Bluegrass	<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>
*	Queensland Bluegrass	<i>Digitaria didactyla</i>
	Queensland Wiregrass	<i>Aristida queenslandica</i> var. <i>dissimilis</i>
	Queensland Wiregrass	<i>Aristida queenslandica</i> var. <i>queenslandica</i>
	Porcupine Grass	<i>Triodia stenostachya</i>
	Rare Panic	<i>Paspalidium rarum</i>
*	Rat's Tail Grass	<i>Sporobolus jacquemontii</i>
*	Red Natal Grass	<i>Melinis repens</i>
	Red Spathe Grass	<i>Schizachyrium fragile</i>
	Reed Grass	<i>Arundinella nepalensis</i>
	Reed Grass	<i>Arundinella setosa</i>
*	Rhodes Grass	<i>Chloris gayana</i>
	River Grass	<i>Chionachne cyathopoda</i>
*	Sabi Grass	<i>Urochloa mosambicensis</i>
	Salt Couch	<i>Sporobolus virginicus</i>
	Saltwater Couch	<i>Paspalum vaginatum</i>



	Scented Oilgrass	<i>Cymbopogon ambiguus</i>
	Scented Top	<i>Capillipedium parviflorum</i>
	Scented Top	<i>Capillipedium spicigerum</i>
	Scrub Pigeon Grass	<i>Setaria australiensis</i>
*	Sheda Grass	<i>Dichanthium annulatum</i>
	Silky Browntop	<i>Eulalia aurea</i>
	Silky Oilgrass	<i>Cymbopogon bombycinus</i>
	Silky Umbrella Grass	<i>Digitaria ammophila</i>
	Silkyheads	<i>Cymbopogon obtectus</i>
	Silkytop Armgrass	<i>Urochloa holosericea subsp. holosericea</i>
	Slender Canegrass	<i>Dinebra decipiens</i>
	Slender Panic	<i>Paspalidium gracile</i>
	Slender Wanderrie Grass	<i>Eriachne ciliata</i>
*	Small Dropseed	<i>Sporobolus coromandelianus</i>
*	Small Stinkgrass	<i>Eragrostis minor</i>
	Smallflower Finger Grass	<i>Digitaria parviflora</i>
*	Soft Lovegrass	<i>Eragrostis pilosa</i>
*	Sour Grass	<i>Paspalum conjugatum</i>
*	South African Pigeon Grass	<i>Setaria sphacelata</i>
	Spider Grass	<i>Digitaria ammophila</i>
	Spikegrass	<i>Elytrophorus spicatus</i>
	Spinifex	<i>Triodia stenostachya</i>
	Spiny Mudgrass	<i>Pseudoraphis spinescens</i>
*	Stinking Lovegrass	<i>Eragrostis cilianensis</i>
*	Summer Grass	<i>Digitaria ciliaris</i>
*	Swamp Foxtail	<i>Cenchrus purpurascens</i>
	Swamp Grass	<i>Dinebra neesii</i>
	Swamp Panic	<i>Panicum paludosum</i>
	Swamp Rice Grass	<i>Leersia hexandra</i>
	Tall Cupgrass	<i>Eriochloa crebra</i>
*	Thatch Grass	<i>Hyparrhenia rufa subsp. rufa</i>
	Tropical Beachgrass	<i>Thuarea involuta</i>
	Tropical Reed	<i>Phragmites karka</i>
	Tussocky Sporobolus	<i>Sporobolus sessilis</i>
	Twirly Windmill Grass	<i>Enteropogon ramosus</i>
	Two-coloured Panic	<i>Panicum simile</i>
*	Vetiver Grass	<i>Chrysopogon zizanioides</i>
	Wanderrie Grass	<i>Eriachne pallescens</i>
	Wanderrie Grass	<i>Eriachne triodioides</i>
	Water Couch	<i>Paspalum distichum</i>
	Weeping Lovegrass	<i>Eragrostis parviflora</i>
*	White Buffel Grass	<i>Cenchrus pennisetiformis</i>
	Whitegrass	<i>Sehima nervosum</i>
	Winged Windmill Grass	<i>Oxychloris scariosa</i>
#	Zoysia Grass	<i>Zoysia</i>

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