

Appendix 1 Botanical composition of the pasture communities and local pasture units of northern Australia

The species are listed for Local Pasture Units (LPU) in each pasture community. The communities, as depicted by colours on the map, are indicated by an asterisk. All abbreviations (for example NT/D, WA/WK) are spelled out in the footnote to Table 1 of the main text.

There was considerable variation in the level of detail provided in the lists of botanical composition. We have presented the information as provided to us, so note that short lists do not always indicate floristically poor units.

The predominant species are listed in bold type and may represent co-dominants or alternative dominants where the unit is intrinsically variable in its composition. Species within square brackets are non-pasture species; these are not usually utilised.

Where species are listed in three columns, this represents the pasture composition for good, fair and poor condition (from left to right). This information was available for Queensland and West Kimberley.

A list of name changes, or synonymy, is given at the end of the appendix.

TALLGRASS PASTURE LANDS - Monsoon tallgrass pastures

The monsoon tallgrass pasture lands characterise the monsoon zone of northern Australia. This is approximately defined by the regions with >750 mm median annual rainfall and a highly reliable distribution of wet and dry seasons. This includes almost all of Cape York Peninsula, the 'Top End' of the Northern Territory and the northern half of the Kimberley of Western Australia.

Coastal and seasonally flooded lowland pastures

RICEGRASS (*XEROCHLOA*) GRASSLAND*

LPU 1. Ricegrass (*Xerochloa*) grassland (NT/D)

On subcoastal plains; heavy textured, peaty or alluvial soils; deeply flooded for 6-8 months then inaccessible to grazing; valuable dry season feed.

Hymenachne acutigluma

Oryza rufipogon

***Xerochloa* sp.**

Oryza meridionalis

Panicum paludosum

Pseudoraphis spinescens

Ischaemum arundinacea

Eleocharis spp.

Eulalia fulva

Imperata cylindrica var. *major*

Bothriochloa bladhii

Eleocharis spp.

LPU 2. Lowland tallgrass pastures (NT/VRD)

Similar to LPU 1 but less available for grazing due to lack of stock water.

Oryza rufipogon

***Eleocharis* spp.**

Leersia hexandra

Hymenachne acutigluma

Panicum paludosum

Eulalia fulva

Cyperus retzii

WANDERRIE GRASS (*ERIACHNE* SPP.)*

LPU 3. Wanderrrie grass (*Eriachne*) tallgrass pastures (NT/D)

On gently sloping alluvial plains; soils yellow podzolics and yellow earths; liable to flooding 3–4 months in wet season; mostly treeless or open parkland of eucalypts and/or low teatree.

Eriachne burkittii

Themeda triandra

Alloteropsis semialata

Sorghum plumosum

Heteropogon triticeus

Coelorhachis rottboellioides

Ectrosia leporina

Eriachne avenacea

Sorghum intrans

Ischaemum arundinaceum

Oryza sativa var. *fatua*

LPU 4. Cockatoo grass = Marraki mid-height grassland (WA/NK)

(a) Wanderrrie grass on gentle slopes and flats at foot of shale scarps under eucalypt woodland. A low quality, little used pasture; (b) cockatoo grass on coarse-textured podzolised, periodically-flooded soil in broad shallow depressions, slightly more valuable pasture than wanderrrie grass as an adjunct to spinifex pastures.

(a) ***Eriachne obtusa***

Schizachyrium spp.

Tripogon sp.

Rottboellia formosa

(b) ***Alloteropsis semialata***

Panicum sp.

Plectrachne pungens

LPU 5. Fringing tallgrass pastures (WA/EK)

Also frontage tall grass; along stream banks in the northern part of the region; restricted in area and often heavily used due to proximity to water.

Chionachne cyathopoda

Arundinella nepalensis

***Iseilema* spp.**

Vetiveria elongata

Coelorhachis rottboellioides

Leptochloa digitata

Pseudopogonatherum contortum

Sorghum stipoideum

Chrysopogon latifolius

Setaria spp.

LPU 6. Fringing pastures (WA/NK)

On sandy banks of creeks, rivers, streamlines and water holes. They are valuable pastures because they generally lie within large areas of poor quality pastures but are liable to overuse.

Arundinella nepalensis

Ischaemum spp.

Vetiveria spp.

Coelorhachis rottboellioides

Leptochloa digitata

Ectrosia spp.

Pseudopogonatherum sp.

Setaria spp.

Sedges

Perennial tallgrass pastures

RIBBONGRASS/GOLDEN BEARDGRASS (*CHRYSOPOGON FALLAX*)*

This pasture community occurs widely, confined mostly to the Northern Territory and Kimberley regions, from the wetter monsoon to the drier semi-arid tropical zone, and over a wide range of soils, though predominantly on red and yellow earths. The vegetation type is eucalypt woodland. Perry (1960) comments on the variable nature of this community in relation to the dominant species, which was then mostly *Themeda triandra* (syn. *australis*) but has now changed towards a predominance of *Chrysopogon fallax* and, to a lesser extent, *Heteropogon contortus*.

LPU 7. Golden beardgrass (*Chrysopogon*) (NT/D)

This is an extensive pasture unit in the region on areas not subject to flooding, on a wide range of soils, but predominantly red earths.

Chrysopogon fallax

Themeda triandra

Sorghum plumosum

Sehima nervosum

Chrysopogon latifolius

Heteropogon triticeus

Alloteropsis semialata

Eriachne trisetia

Plectrachne pungens

Aristida holathera

A. ingrata

Eragrostis schultzei

LPU 8. Upland tallgrass = Tippera tallgrass (NT/G)

This unit is found mostly as coastal woodland pastures but also as a mosaic in the very dissected, more rugged country below the Gulf lowlands and in the Roper River area where *Bothriochloa* and *Plectrachne* are more common. On the coast, it is associated with eucalypt-teatree open woodland, inland with eucalypt woodland.

Chrysopogon fallax

Themeda triandra

Heteropogon contortus

Sehima nervosum

Chrysopogon latifolius

Bothriochloa bladhi

Plectrachne pungens

LPU 9. Ribbongrass (WA/NK)

Mostly on shallow red earths, volcanic soils, rocky rises and medium slopes; pastures are rather coarse with little carry-over value into the dry season.

Chrysopogon fallax

Themeda triandra

Heteropogon contortus

Sorghum plumosum

Sehima nervosum

Eriachne spp.

Plectrachne pungens

LPU 10. Whitegrass (*Sehima nervosum*) (WA/EK)

There is not a large area in which whitegrass is the dominant species; it is found mostly associated with other Tippera tallgrass species at the yellow podzolic soil end of the range.

Sehima nervosum

Themeda triandra

Sorghum plumosum

Chrysopogon fallax

Heteropogon contortus

LPU 11. Whitegrass (WA/NK)

While whitegrass is not particularly attractive to cattle, associated grasses provide reasonably useful grazing; generally occurring on fine-textured yellow podzolic and igneous red earth soils under *Eucalyptus tectifica* woodland.

Sehima nervosum

Sorghum plumosum

Themeda triandra

Heteropogon contortus

Chrysopogon fallax

Dichanthium fecundum

Plectrachne pungens

Sorghum spp. (annual)

LPU 12. Whitegrass–plume sorghum–ribbongrass (WA/EK)

While similar to LPU 10, this is more the Tippera tallgrass type where the other pasture elements are frequently alternative dominants. It is more extensive on plains or undulating country of eucalypt woodland. Soils are light to medium textured loams, red earths and alluvials.

Sehima nervosum
Sorghum plumosum
Themeda triandra
Chrysopogon fallax
Heteropogon contortus
S. stipoideum
Plectrachne pungens
Aristida hygrometrica

LPU 13. Whitegrass–annual sorghum (WA/WK)

On hilly country associated with basic igneous rocks in the north-eastern part of the region; soils are shallow, red, loamy to clayey, derived from basalt and other basic rocks; the hill slopes are generally steep with a boulder mantle.

<i>Sehima nervosum</i>	<i>Heteropogon contortus</i>	<i>Sorghum stipoideum</i>
<i>Sorghum stipoideum</i>	<i>Eriachne obtusa</i>	<i>Aristida latifolia</i>
<i>S. plumosum</i>	<i>Sorghum stipoideum</i>	<i>A. inaequiglumis</i>
<i>Chrysopogon fallax</i>	<i>Sorghum nervosum</i>	<i>Sehima nervosum</i>
<i>C. latifolius</i>	<i>Chrysopogon fallax</i>	<i>Eriachne obtusa</i>
<i>Themeda triandra</i>	<i>Heteropogon contortus</i>	<i>Heteropogon contortus</i>
<i>Heteropogon contortus</i>	<i>Sorghum plumosum</i>	
<i>Cymbopogon procerus</i>		
<i>Triodia intermedia</i>		
<i>T. pungens</i>		
<i>Plectrachne pungens</i>		
<i>Eriachne obtusa</i>		
<i>Enneapogon polyphyllus</i>		

PLUME/NATIVE/PERENNIAL SORGHUM (*SORGHUM PLUMOSUM*)*

This community, although fairly distinct in Cape York, tends to merge into the complex of the ribbongrass community of the Northern Territory and Kimberley regions where plume sorghum is a common associated species of the sub-communities. Most commonly the vegetation is eucalypt woodland.

LPU 14. Native sorghum (Qld)

Mostly on mottled yellow earths in Cape York Peninsula

Sorghum plumosum
Heteropogon triticeus
Eriachne spp.
Pseudopogonatherum contortum
Bothriochloa bladonii
Themeda triandra

LPU 15. Plume sorghum pastures (WA/NK)

On hilly, usually stony lower slopes and levees in strongly dissected parts of the Mornington volcanics, with predominantly shallow red soils; dense pasture of robust perennials, with numerous forbs and ephemerals, remaining palatable through much of the dry season.

Sorghum plumosum

Sehima nervosum

Iseilema spp.

Themeda triandra

Heteropogon contortus

Sorghum spp. (annual)

Alloteropsis semialata

Eriachne spp.

Dichanthium spp.

Bothriochloa spp.

Annual tallgrass pastures

ANNUAL SORGHUM (*SORGHUM INTRANS*, *S. STIPOIDEUM* and SPP.)*

This community is most developed in the northern part of the Northern Territory and Kimberley. It occurs on sandy to stony skeletal soils with eucalypt woodland. The pastures are generally bulky but very poor in quality.

LPU 16. Annual sorghum (NT/D)

These are the most extensive pastures of the region, very tall, occurring over a wide range of upland topography; soils are light textured, sandy; pastures grow rapidly in the early wet season, quickly becoming coarse and rank with very low dry season quality; early dry season burning is common.

Sorghum intrans

S. stipoideum

S. australiense

S. plumosum

Heteropogon triticeus

Chrysopogon latifolius

Themeda triandra

Coelorhachis rottboellioides

Heteropogon contortus

Aristida pruinosa

Cymbopogon spp.

Panicum spp.

Eriachne trisetata

Plectrachne pungens

LPU 17. Annual sorghum (NT/VRD)

Mostly in the northern part of the region on coarse-textured sandy, skeletal and stony soils; commonly associated with stringybark-bloodwood woodland and deciduous sparse low woodland.

Sorghum australiense (stony volcanic country)

S. stipoides (northern part)

S. intrans (northern part)

Plectrachne pungens

Alloteropsis semialata

Heteropogon triticeus

Sorghum plumosum

Chrysopogon latifolius

Coelorhachis rottboellioides

Triodia stenostachya

Themeda triandra

LPU 18. Annual sorghum (NT/G)

Sorghum intrans

Heteropogon triticeus

Themeda triandra

Plectrachne pungens

Sorghum plumosum

Schizachyrium fragile

[*Arthrostylus aphylla*]

LPU 19. Annual sorghum (NT/BT)

A very small area associated with spinifex

Sorghum intrans

Plectrachne pungens

Triodia pungens

Annual grasses

LPU 20. Annual sorghum (WA/EK)

Composition and habitat as for LPU 17.

LPU 21. Annual sorghum (WA/NK)

Very poor pastures characterised by very short growing season, inaccessible to stock and isolated from areas of better quality grazing areas. In some places, the top-feed shrub *Ventilago viminalis* provides better grazing of the otherwise very poor resource.

Sorghum australiense

S. stipoides

Plectrachne pungens

Triodia mitchellii

Eriachne spp.

Schizachyrium spp.

Alloteropsis semialata

SCHIZACHYRIUM – OTHER TALLGRASSES*

Occurring on a wide range of soils including leached sands, yellow and grey earths, and duplex soils with seasonal waterlogging; open teatree or stringy bark woodland; the pastures are of generally poor quality.

LPU 22. Tropical plains and low hills (Qld)

Schizachyrium fragile

Eriachne stipacea

Chrysopogon fallax

Heteropogon triticeus

Panicum mindanaense

Sorghum plumosum

Thaumastochloa brassii

LPU 23. Northern flooded alluvial plains (Qld)

Mostly on alkaline hard-setting duplex soils on flood plains, in the western Cape York Peninsula.

Dichanthium tenuiculium

Dichanthium fecundum

***Aristida* spp.**

D. fecundum

Chrysopogon fallax

Schizachyrium fragile

Schizachyrium fragile

Aristida latifolia

Eriachne spp.

Eulalia fulva

Eriachne squarrosa

Schizachyrium fragile

LPU 24. Curly spinifex– *Schizachyrium* (NT)

On leached sandy soils with mixed eucalypt– teatree woodland/open grassland plains of the lower Gulf of Carpentaria.

Plectrachne pungens

Schizachyrium fragile

***Eriachne* spp.**

Chrysopogon fallax

Aristida spp.

TALLGRASS PASTURE LANDS - Tropical/sub-tropical tallgrass pastures

These pasture lands are distinguished from the monsoon tallgrass by having less dominant very tall grasses, with a less defined and more unreliable monsoonal rainfall pattern <750 mm median annual.

Perennial tallgrass pastures

LPU 25. RAINFOREST-DERIVED PASTURE LANDS* (Qld)

These are areas of pasture land, in the northern, central and southern coastal and sub-coastal areas, that have been derived from clearing of rainforest. While this practice is not now espoused, those that have been cleared have a high potential for productivity because of their high rainfall. Introduced pasture species are generally the most productive option, since native species are sparse and of low productivity. The lists include introduced species that have naturalised.

Southern (Moreton):

<i>Pennisetum clandestinum</i>	<i>Paspalum dilatatum</i>	<i>Imperata cylindrica</i>
<i>Trifolium repens</i>	<i>Axonopus affinis</i>	<i>Axonopus affinis</i>
<i>Paspalum dilatatum</i>	<i>Trifolium repens</i>	<i>Eragrostis</i> spp.
<i>Axonopus affinis</i>	<i>Digitaria didactyla</i>	<i>Cynodon dactylon</i>
<i>Digitaria didactyla</i>	<i>Imperata cylindrica</i>	

Central (Wide Bay–Burnett):

<i>Paspalum dilatatum</i>	<i>Sorghum leiocladum</i>	<i>Aristida</i> spp.
<i>Pennisetum clandestinum</i>	<i>Eragrostis</i> spp.	<i>Chloris virgata</i>
<i>Chloris gayana</i>	<i>Sporobolus</i> spp.	[<i>Lantana camara</i>]
<i>Panicum maximum</i> var. <i>trichoglume</i>		[<i>L. montevidensis</i>]

Northern (lowland, highland):

(a) Lowland:

<i>Panicum maximum</i>	<i>Paspalum conjugatum</i>	<i>Chrysopogon aciculatus</i>
<i>Brachiaria decumbens</i>	[<i>Nimosa pudica</i>]	[<i>Cassia obtusifolia</i>]
<i>B. humidicola</i>	<i>Sporobolus</i> spp.	[<i>Ageratum</i> sp.]
<i>Setaria sphacelata</i>	<i>Imperata cylindrica</i>	[<i>Hyptis capitata</i>]
<i>Centrosema pubescens</i>		[<i>Lantana camara</i>]
<i>Pueraria phaseoloides</i>		
<i>Macroptilium atropurpureum</i>		
<i>Brachiaria mutica</i>		
<i>Digitaria decumbens</i>		

(b) Highland:

<i>Pennisetum clandestinum</i>	<i>Axonopus affinis</i>	<i>Imperata cylindrica</i>
<i>Setaria sphacelata</i>	<i>Paspalum paniculatum</i>	[<i>Pteridium yarrabense</i>]
<i>Panicum maximum</i>	<i>P. dilatatum</i>	[<i>Lantana camara</i>]
<i>Chloris gayana</i>		
<i>Trifolium repens</i>		
<i>Neonotonia wightii</i>		
<i>Desmodium intortum</i>		

LPU 26. HEATHLAND PASTURES* (Qld)

In their natural state the heathlands along the east coast do not carry pastures which can support livestock permanently. Productive introduced pastures can be established with the necessary soil nutrient amendments, given the high reliability and amount of rainfall. Much of the southern heathland has become urban.

Native species:

[*Schoenus sparteus*]
[*Byblis linifolia*]
[*Eriocaulon* spp.]
[*Nepenthes* sp.]
[*Utricularia crisantha*]

Sown species:

Digitaria decumbens
Paspalum plicatulum
Setaria sphacelata
Chloris gayana
Trifolium repens
Lotononis bainesii

LPU 27. BLADY GRASS (*IMPERATA CYLINDRICA*)* (Qld)

This is also a substantially derived pasture system. It is found on the well-watered coastal lowlands derived from altered tall open forest (mostly wet sclerophyll), which have moderate to poor natural pastures. The soils are variable from sandy to leached yellow/grey earths to duplex soils. With the gradual decline in soil fertility the original pastures have deteriorated to blady grass, though improved pastures can be developed with suitable fertiliser.

Northern sandy coastal lowlands:

Bothriochloa bladhii
Heteropogon triticeus
Themeda triandra
Imperata cylindrica

Alloteropsis semialata
Bothriochloa decipiens
Capillipedium parviflorum
Chrysopogon fallax
Cymbopogon spp.
Dichanthium aristatum
Hyparrhenia rufa
Imperata cylindrica
Panicum maximum
Spinifex hirsutus

Imperata cylindrica
Axonopus affinis
Chloris barbata
Aristida ramosa
Enteropogon aciculatus
Eragrostis spp.
Sporobolus spp.
Rynchelytrum repens
Themeda quadrivalvis
Cenchrus echinatus

Southern sandy coastal lowlands:

Themeda triandra
Cynodon dactylon
Alloteropsis semialata
Imperata cylindrica

Imperata cylindrica
Cynodon dactylon
Axonopus affinis

***Cyperus* spp.**
Axonopus affinis
Imperata cylindrica

BLACK/BUNCH SPEARGRASS (*Heteropogon contortus*)*

This is the second largest pasture community in Queensland, stretching for $\frac{3}{4}$ the length of the State. It is found on a wide range of soils, generally free draining. The main soil types are duplexes (more particularly in the south), alluvials, red earths (more particularly in the north). The vegetation is characteristically eucalypt woodland.

LPU 28. Northern black speargrass (Qld)

This community occurs north of Bowen.

Heteropogon contortus

Bothriochloa bladhii

Themeda triandra

Heteropogon triticeus

Bothriochloa pertusa

Chrysopogon fallax

Cymbopogon spp.

Bothriochloa decipiens

Bothriochloa pertusa

Cynodon dactylon

Eragrostis spp.

Sporobolus spp.

Chloris barbata

Aristida ramosa

A. armata

Enteropogon acicularis

Panicum effusum

Bothriochloa pertusa

LPU 29. Central black speargrass (Qld)

This community occurs in the Prosperpine–Calliope area of Queensland.

Heteropogon contortus

Bothriochloa bladhii

B. decipiens

LPU 30. Southern black speargrass (Qld)

This community occurs south of Miriam Vale.

Heteropogon contortus

Bothriochloa bladhii

Bothriochloa decipiens

Eragrostis spp.

Cymbopogon refractus

Bothriochloa decipiens

Aristida spp.

Sporobolus elongatus

Chrysopogon fallax

Heteropogon contortus

Note: On hilly to mountainous areas *Themeda triandra*, *Eragrostis* spp. *Arundinella nepalensis*, *Stipa verticillata*, *Eremochloa bimaculata* and *Panicum simile* tend to predominate.

RIBBONGRASS/GOLDEN BEARDGRASS (*CHRYSOPOGON*)*

This is a continuation of ribbongrass/golden beardgrass perennial tallgrass into the lower and less reliable rainfall region of <750 mm. Much the same soil affinities exist except that the community may extend onto shallower clay soils where it mixes with some of the drier communities such as mitchell grass, bluegrass, spinifex and shortgrass. The vegetation is characteristically eucalypt woodland.

LPU 31. *Chrysopogon* – other species (Qld)

The very small area of this community occurs in the north-west Gulf of Carpentaria coastal lowland on a podzolic, seasonally waterlogged eucalypt–teatree open woodland. The pasture is of poor quality and little used.

Chrysopogon fallax

Sehima nervosum

Heteropogon triticeus

Eriachne spp.

Eulalia aurea (syn. *fulva*)

Dichanthium fecundum

Heteropogon contortus

LPU 32. Tippera tallgrass (*Chrysopogon*) (NT/VRD)

This, with other related units, is the largest of the productive pasture communities in the region. It occurs mostly under eucalypt woodland and low woodland on red and yellow earths in some substantial areas and also in close mosaic, particularly in the southwest of the Victoria River District.

Chrysopogon fallax

Sorghum plumosum

Sehima nervosum

Themeda triandra

Heteropogon triticeus

H. contortus

Eulalia aurea (syn. *fulva*)

Alloteropsis semialata

Coelorhachis rottboellioides

Aristida holathera

A. hygrometrica

Eriachne spp.

Brachyachne convergens

Schizachyrium obliqueberbe

Panicum majusculum

LPU 33. *Chrysopogon*–other species (NT/G)

This is a rather variable unit occurring mainly in the Gulf of Carpentaria lowlands and adjoining the small section in north-west Queensland. However, it is also found scattered in small areas throughout the rugged hinterland below the Gulf and extending into the Roper valley. In the Gulf lowlands, the sub-community is mostly under eucalypt–teatree woodland whereas, in the other areas, it is eucalypt woodland where the *Eulalia-Dichanthium* elements tend to occur.

Chrysopogon fallax

Sehima nervosum

Heteropogon triticeus

Eulalia aurea

Dichanthium fecundum

Heteropogon contortus

LPU 34. *Chrysopogon*–other species (NT/BT)

Similar in composition to LPU 33.

LPU 35. Ribbongrass (WA/EK)

Similar to LPU 32.

LPU 36. Ribbongrass (WA/WK)

This community occurs throughout the western half of the Fitzroy River basin as a high rainfall sub-type in the region of >500 mm rainfall. The soils are commonly red and yellow earths, some alluvials and juvenile cracking clays. The pasture land is of moderate to high value and readily accessible throughout the year.

Chrysopogon fallax

Sehima nervosum

Sorghum plumosum

Eriachne obtusa

Dichanthium spp.

Panicum decompositum

Brachiaria holosericea

Eulalia fulva

Chrysopogon fallax

Eriachne obtusa

Chrysopogon fallax

Heteropogon contortus

Sehima nervosum

Sorghum plumosum

Aristida inaequiglumis

A. hygrometrica

Eriachne ciliaris

Aristida inaequiglumis

A. latifolia

A. holathera

A. hygrometrica

A. contorta

Eriachne glauca

E. obtusa

LPU 37. Ribbongrass–curly/soft spinifex (low rainfall)(WA/WK)

This sub-type is found mainly in the south-western and southern central parts of the region in areas with <500 mm rainfall. The topography is generally flat to gently sloping with some low laterised remnants and large areas of sand or soil covered plains, valley sides and drainage floors. Soils are variable, including yellowish and reddish sands, loams, and some laterite over clay. Pastures are generally poorer than in LPU 36.

Chrysopogon fallax

Triodia pungens

Plectrachne pungens

Sorghum plumosum

Sehima nervosum

Eriachne obtusa

Aristida inaequiglumis

Triodia pungens

Plectrachne pungens

Chrysopogon fallax

Eriachne obtusa

Aristida inaequiglumis

Eriachne obtusa

Plectrachne pungens

Triodia pungens

Aristida inaequiglumis

A. hygrometrica

LPU 38. Whitegrass–annual sorghum (WA/WK) — See LPU 13.

LPU 39. Whitegrass–bundle-bundle (WA/WK)

This pasture type characterises the basalt-derived, deep red earth soils of interflaves, lower slopes and drainage floors, and is characteristically associated with, and often down-slope from, the whitegrass–annual sorghum pasture lands. It occurs mainly in the north-eastern section of the region. The soils are generally red, loamy to clayey in the surface horizon, merging to dark reddish clay subsoils, often with basalt fragments. The botanical composition of the pastures is variable between the dominant species and it is of moderate value.

Sehima nervosum

Dichanthium fecundum

Chrysopogon fallax

Eriachne obtusa

Sorghum plumosum

Themeda triandra

Heteropogon contortus

Cymbopogon procerus

Aristida inaequiglumis

Sehima nervosum

Dichanthium fecundum

Chrysopogon fallax

A. inaequiglumis

Heteropogon contortus

Cymbopogon procerus

Aristida hygrometrica

Sehima nervosum

Aristida inaequiglumis

A. hygrometrica

LPU 40. Frontage grasses (WA/WK)

This pasture type characterises the levees and levee back slopes of the major rivers, particularly the lower Fitzroy and its south-eastern tributaries, and watercourses of the region. Soils are alluvial and variable in texture and colour but generally have loamy to sandy loam surface horizons, merging to hard loamy or heavy clay subsoils. Pastures are floristically rich and variable depending on topography and soil type, and are usually associated with open to very open eucalypt woodland.

Chrysopogon fallax

Dichanthium fecundum

Sorghum plumosum

Cenchrus setiger

C. ciliaris

Sehima nervosum

Trodia pungens

Plectrachne pungens

Cymbopogon procerus

Themeda triandra

Brachiaria holosericea

Eriachne obtusa

Chrysopogon fallax

Dichanthium fecundum

Eriachne obtusa

Heteropogon contortus

Sporobolus mitchellii

Xerochloa barbata

Cenchrus setiger

C. ciliaris

Sehima nervosum

Aristida hygrometrica

Xerochloa laniflora

Brachyachne convergens

Dactyloctenium radulans

Sporobolus australasicus

Chrysopogon fallax

MIDGRASS PASTURE LANDS

The midgrass pasture lands relate generally to the semi-arid zone of northern Australia. They lie between the 500–700 mm median rainfall isohyets in the tropical northern part of the region and between the 300–600 mm isohyets in the south-east subtropics. The pasture lands fall into three fairly distinct types: those associated with eucalypt woodlands on light, relatively poor soils; those with acacia woodlands and shrublands on higher fertility clay soils; and those associated with skeletal or sandy soils as hummock grasslands, sparse woodlands or shrublands.

Pastures of eucalypt open forest and woodland

ARISTIDA–BOTHRIOCHLOA PASTURES*

This is a rather variable pasture community with a range of dominant species, not always including the signature species. The predominant soil type is duplex but there is a fairly wide range of light soils of moderate to poor fertility. In Queensland, the community stretches from the southern border to the Gulf; in the Northern Territory, it is sandwiched between the mitchell grasslands and the ribbongrass lands and is less productive than in Queensland because of the more severe seasons; in Western Australia, it occurs only occasionally.

LPU 41. *Aristida–Chrysopogon*, Einasleigh western slopes (Qld)

This unit occurs in the lower western part of Cape York Peninsula, extending into south-west Gulf uplands. The soils are red, yellow and grey earths or sandy, loamy earths with little seasonal waterlogging. Vegetation is mostly eucalypt woodland.

<i>Themeda triandra</i>	<i>Chrysopogon fallax</i>	<i>Aristida hygrometrica</i>
<i>Bothriochloa ewartiana</i>	<i>Aristida</i> spp.	<i>Aristida</i> spp.
<i>Chrysopogon fallax</i>	<i>Sorghum plumosum</i>	<i>Perotis rara</i>
<i>Aristida ingrata</i>	<i>Schizachyrium fragile</i>	
<i>Aristida pruinosa</i>	<i>Eriachne armitii</i>	
<i>Sorghum plumosum</i>	<i>Eragrostis</i> spp.	
<i>Heteropogon contortus</i>		

LPU 42. *Aristida–Chrysopogon*, paperbark teatree (Qld)

This unit is similar to LPU 41, but occupies the lower-lying lands of the southern Gulf and south-west Peninsula inter-river areas. The soils are similar but with mottled subsoils indicating some seasonal waterlogging. The pastures are not as floristically rich or palatable as in the previous unit. It is mostly teatree low woodland with some eucalypts.

<i>Chrysopogon fallax</i>	<i>Aristida hygrometrica</i>	<i>Aristida holathera</i>
<i>Sorghum plumosum</i>	<i>Aristida pruinosa</i>	<i>Aristida hygrometrica</i>
<i>Aristida pruinosa</i>	<i>Chrysopogon fallax</i>	<i>Schizachyrium fragile</i>
	<i>Sorghum plumosum</i>	<i>Ectrosia</i> spp.
		<i>Eriachne</i> spp.

LPU 43. *Aristida pruinosa*, three-awn (NT/VRD)

This unit is similar to LPU 41, occupying the better-watered parts of the lateritic landscapes in the southern half of the region and drier sites in the north. The soils are mainly yellow earths. The pastures are commonly associated with sparse, low eucalypt woodlands.

Aristida pruinosa
Chrysopogon fallax
Themeda triandra
Sehima nervosum
Cymbopogon bombycinus
 Shortgrasses and forbs

LPU 44. *Aristida pruinosa*, three-awn (NT/G)

This unit occurs on the Gulf sub-coastal lowlands and is essentially a continuation of LPU 42 from Queensland.

LPU 45. *Aristida pruinosa*, three-awn (NT/BT)

The unit occurs in the drier part along the north-eastern flank of the Barkly Tablelands. It is more like LPU 43 in the drier northern part of the Victoria River District, but more variable. There are significant areas of *Acacia shirleyii* open forest with little ground cover, interspersed with *Eucalyptus dichromophloia* woodland with spinifex and/or tallgrass.

LPU 46. *Aristida pruinosa*, three-awn (WA/EK)

This is a continuation of the southern Victoria River District unit described in LPU 43.

LPU 47. *Aristida–Triodia pungens* (Qld)

The unit occurs in the central north of Queensland flanking the western edge of the northern black speargrass and the eastern flank of LPU 41, and in central Qld interspersed in LPU 102 (eastern soft spinifex or central Queensland desert). The upper storey is predominantly lancewood occurring on steep scarps and crests, lateritic mesas, breakaways and incised gullies.

LPU 48. *Aristida–Cleistochloa* (Qld)

The unit occurs in central Queensland, generally on shallow sandy soils associated with sandstones and laterised surfaces. The upper storey vegetation is usually acacia open forest and the pastures are of low quality and productivity.

<i>Aristida</i> spp.	<i>Aristida</i> spp.	<i>Dactyloctenium radulans</i>
<i>Cleistochloa subjuncea</i>	<i>Chloris ventricosa</i>	<i>Aristida</i> spp.
<i>Heteropogon contortus</i>	<i>Enneapogon</i> spp.	<i>Rynchelytrum repens</i>
<i>Cymbopogon</i> spp.	<i>Enteropogon acicularis</i>	<i>Setaria surgens</i>
<i>Dimorphochloa rigida</i>	<i>Eragrostis</i> spp.	
<i>Eriachne</i> spp.	<i>Panicum effusum</i>	
<i>Triodia pungens</i>		

LPU 49. *Aristida–Thyridolepis* (Qld)

In the southern part of the *Aristida–Bothriochloa* community this unit borders on, and is a transitional state with, the adjacent mulga community. It occurs on neutral red earth soils carrying an overstorey vegetation of eucalypt (poplar box–silverleaf ironbark) and mulga open forest or woodland.

<i>Bothriochloa decipiens</i>	<i>Thyridolepis mitchelliana</i>	<i>Aristida jerichoensis</i>
<i>Thyridolepis mitchelliana</i>	<i>Bothriochloa decipiens</i>	<i>Tripogon loliiformis</i>
<i>Digitaria brownii</i>	<i>Eragrostis lacunaria</i>	<i>Eragrostis lacunaria</i>
<i>D. ammophila</i>	<i>Aristida jerichoensis</i>	[<i>Eremophila mitchellii</i>]
<i>Themeda triandra</i>	<i>Enteropogon acicularis</i>	[<i>Dodonaea attenuata</i>]
<i>Monachather paradoxa</i>	<i>Tripogon loliiformis</i>	

LPU 50. *Bothriochloa–Chloris–Aristida* (Qld)

Largely occurring in central Queensland, with a smaller part in the south. It is generally found on hard-setting duplex soils and some red earths and frequently juxtaposed with brigalow or bluegrass. It is usually associated with poplar box woodland. The pasture is of moderate quality and productivity, occurring on semi-arid woodland plains and low hills in central Queensland.

<i>Bothriochloa ewartiana</i>	<i>Bothriochloa decipiens</i>	<i>Aristida</i> spp.
<i>Dichanthium affine</i>	<i>Chrysopogon fallax</i>	<i>Chloris</i> spp.
<i>Heteropogon contortus</i>	<i>Cymbopogon</i> spp.	<i>Enneapogon</i> spp.
<i>Themeda triandra</i>	<i>Enteropogon acicularis</i>	<i>Eragrostis</i> spp.
<i>Bothriochloa bladonii</i>		<i>Panicum</i> spp.
<i>Dichanthium sericeum</i>		<i>Sporobolus</i> spp.
<i>Aristida</i> spp.		<i>Tragus australianus</i>

LPU 51. *Bothriochloa–Chloris–Aristida* (Qld)

This unit is essentially similar to LPU 50, but occurring in southern Queensland.

LPU 52. *Aristida–Eragrostis* (southern sandy) (Qld)

This unit occurs in the south-east part of the *Aristida–Bothriochloa* community between the Darling Downs and the southern brigalow on hard-setting to sandy surfaced duplex soils. The pastures are of poor quality generally, associated with an open forest of mixed eucalypt–acacia open forest, on sandy surfaced duplex soils derived from granite and sandstone.

<i>Cymbopogon refractus</i>	<i>Bothriochloa decipiens</i>	<i>Aristida</i> spp.
<i>Bothriochloa decipiens</i>	<i>Chloris</i> spp.	<i>Eragrostis</i> spp.
<i>Eragrostis</i> spp.	<i>Chrysopogon fallax</i>	
<i>Aristida</i> spp.	<i>Aristida</i> spp.	

LPU 53. *Aristida–Eragrostis* (Cypress pine) (Qld)

The pastures are of poor quality with an overstorey of Cypress pine (*Callitris columellaris*) often associated with bull oak (*Casuarina leuhmannii*). They occur in the central and southern part of the region.

Bothriochloa decipiens

Cymbopogon refractus

Chrysopogon fallax

Aristida spp.

Eragrostis lacunaria

Panicum effusum

Chrysopogon fallax

Bothriochloa decipiens

Chloris spp.

Aristida spp.

Eragrostis spp.

Aristida spp.

Eragrostis spp.

LPU 54. *Bothriochloa–Stipa–Danthonia* (Qld)

This unit occurs in the southern border uplands and shows some influence of the temperate pasture land to the south. The soils are shallow, dense and loamy on 'traprock', sandy duplex on granite and sandstone, carrying open eucalypt woodland.

Bothriochloa decipiens

Dichanthium affine

Chloris spp.

Eragrostis spp.

Aristida spp.

Stipa scabra

Danthonia spp.

Sporobolus spp.

LPU 55. Kerosene grass (*A. hygrometrica*) (WA/NK)

This unit occurs on deep sandy levee soils of the main upper river systems. It is of limited grazing value due to its rapid maturity and short period of growth.

Aristida hygrometrica

Perotis rara

Aristida holathera

Panicum spp.

Ichnanthus spp.

Brachiaria spp.

Eriachne spp.

Setaria spp.

SEASONAL RIVERINE PLAINS PASTURES*

LPU 56. Channel pastures (Qld)

This unit is found in the irregularly but seasonally flooded channels and flood plains of the great westward-flowing river systems of south-western Queensland. When the floods occur in the warm season, the pastures are predominantly of summer grasses; when the floods occur in the cool season the pastures are predominantly of forbs. The soils are deep grey and brown cracking alluvial clays. A very open stand of river red gum (*Eucalyptus camaldulensis*) and coolibah (*E. microtheca*) occurs along the channels. The pastures are abundant and of very high quality while they last.

Warm season pastures:

Echinochloa turnerana
Astrelba lappacea
Brachyachne convergens
Chloris pectinata
Chrysopogon fallax
Dactyloctenium radulans
Dichanthium sericeum
Cenchrus ciliaris
Eragrostis spp.
Eulalia fulva
Iseilema membranaceum
I. vaginiflorum
Leptochloa digitata
Panicum decompositum

Cool season pastures:

<i>[Chenopodium cunninghamii]</i>	<i>[Chenopodium cunninghamii]</i>	<i>[Muehlenbeckia cunninghamii]</i>
<i>[Muehlenbeckia auricomum]</i>	<i>[Muehlenbeckia auricomum]</i>	<i>Sclerolaena</i> spp.
<i>Trigonella suavissima</i>	<i>Trigonella suavissima</i>	<i>Eragrostis setifolia</i>
<i>Atriplex nummularia</i>	<i>Echinochloa turnerana</i>	<i>Eragrostis australasica</i>
<i>Craspedia pleiocephala</i>	<i>Iseilema</i> spp.	<i>Dactyloctenium radulans</i>
<i>Echinochloa turnerana</i>	<i>Eragrostis setifolia</i>	
<i>Cenchrus ciliaris</i>	<i>Cenchrus ciliaris</i>	

LPU 57. *Eragrostis*–*Eulalia*–*Cenchrus* (NT/BT)

This unit comprises the river channels and occasionally inundated flood plains of the water courses traversing the region. Also included in this unit is the broken mitchell grass. The soils are grey clays carrying an open woodland of coolibah. The pastures, while being valuable following flooding, do not provide permanent grazing.

Eragrostis eriopoda
Eulalia aurea
Aristida inaequeglumis
Cenchrus ciliaris
Astrelba lappacea
Themeda triandra
Bothriochloa ewartiana
Chrysopogon fallax
Aristida pruinosa

LPU 58. *Eragrostis–Eulalia–Cenchrus* (NT/CA)

This unit includes the riverine channels and flood plains of the ephemeral streams, usually with an open woodland of coolibah (*Eucalyptus microtheca*), and the floodplains of the ephemeral larger river systems, with river red gum (*E. camaldulensis*). The soils range from deep sands to alluvials and shallow grey clays. The pastures are relatively short-lived on the shallower soils but persist for much longer on the deep sands of the larger river systems. They have been severely overgrazed and degraded in the past, but have been considerably regenerated in recent years with buffel grass (*Cenchrus ciliaris*) which is now spreading naturally.

On deep sands:

Eragrostis eriopoda
Themeda avenacea
Triodia basedowii
T. pungens
Plectrachne schinzii
Aristida brownii
Zygochloa paradoxa

On medium textured soils:

Eragrostis eriopoda
Cenchrus ciliaris
Eulalia fulva
Themeda avenacea
T. triandra
Bothriochloa ewartiana
Chrysopogon fallax
Aristida pruinosa
Shortgrasses and forbs

Pastures of *Acacia* spp. open forest and woodland

These vegetation systems grow on highly fertility clay or loamy soils. The native pastures are sparse and unproductive, but clearing or partial clearing enhances native pasture production considerably. Much of these lands have been developed to introduced sown pastures, many on a short to medium term rotation with crop production.

BRIGALOW (*ACACIA HARPOPHYLLA*) PASTURES*

The community extends in an interrupted belt from central Queensland to the southern border, predominantly on cracking clay soils, though duplex and structured earth soils occur throughout. It is divided here into three regions, being northern, central and southern Queensland. The dominant canopy species is brigalow, but it competes with a number of other species and vegetation types.

LPU 59. Northern brigalow (Qld)

The northern part of the brigalow occurs throughout much of subcoastal central Queensland, with widespread brigalow associations such as brigalow–dawson gum, brigalow–yellow wood, brigalow–softwood and brigalow–gidgee.

<i>Bothriochloa bladhii</i>	<i>Bothriochloa decipiens</i>	<i>Aristida</i> spp.
<i>B. ewartiana</i>	<i>Chrysopogon fallax</i>	<i>Chloris</i> spp.
<i>Dichanthium affine</i>	<i>Cymbopogon</i> spp.	<i>Cynodon dactylon</i>
<i>D. sericeum</i>	<i>Eriochloa</i> spp.	<i>Enneapogon</i> spp.
<i>Eulalia fulva</i>	<i>Paspalidium</i> spp.	<i>Enteropogon acicularis</i>
<i>Paspalidium</i> spp.	<i>Chloris</i> spp.	<i>Eragrostis</i> spp.
		<i>Panicum</i> spp.
		<i>Sporobolus</i> spp.
		<i>Dactyloctenium radulans</i>

LPU 60. Central brigalow (Qld)

The most common vegetation type found in the southern part of this region is brigalow–belah–wilga occurring on unconsolidated clay and argillaceous sediments.

<i>Bothriochloa bladhii</i>	<i>Bothriochloa decipiens</i>	<i>Aristida</i> spp.
<i>Dichanthium sericeum</i>	<i>Panicum queenslandicum</i>	<i>Chloris</i> spp.
<i>D. affine</i>	<i>Paspalidium</i> spp.	<i>Cynodon dactylon</i>
<i>Paspalidium</i> spp.	<i>Cymbopogon</i> spp.	<i>Enneapogon</i> spp.
<i>Ancistrachne uncinulata</i>	<i>Eriochloa pseudoacrotricha</i>	<i>Enteropogon acicularis</i>
<i>Stipa verticillata</i>	<i>Chloris</i> spp.	<i>Eragrostis</i> spp.
<i>Chloris</i> spp.		<i>Panicum</i> spp.
<i>Diplachne parviflora</i>		<i>Sporobolus</i> spp.
<i>Leptochloa digitata</i>		<i>Dactyloctenium radulans</i>
<i>Stipa setacea</i>		

LPU 61. Southern brigalow and belah (*Casuarina cristata*) (Qld)

The most common vegetation type is brigalow–belah–wilga, but unlike the central region it occurs on level deep gilgaied cracking clays. Composition is mostly as for LPU 60, but *Danthonia linkii* becomes more common, and indicates some temperate zone influence.

GIDGEE (*ACACIA CAMBAGEI*) PASTURES*

This community extends over a comparable, but narrower, belt to brigalow, from the central west to the southern border of Queensland. It is drier than the brigalow region, occurring on cracking clays to loamy surfaced duplexes. The open woodland/shrubland formation allows a better natural pasture understorey than the uncleared brigalow, but much of it has been cleared for improved pastures, with some oversowing of buffel grass.

LPU 62. Central Queensland gidgee (Qld)

<i>Bothriochloa ewartiana</i>	<i>Bothriochloa decipiens</i>	<i>Chloris</i> spp.
<i>Dichanthium affine</i>	<i>Cymbopogon</i> spp.	<i>Enneapogon</i> spp
<i>Cenchrus ciliaris</i>	<i>Paspalidium</i> spp.	<i>Enteropogon acicularis</i>
<i>Astrebla lappacea</i>	<i>Eriochloa</i> spp.	<i>Eragrostis</i> spp.
<i>Brachyachne convergens</i>	<i>Cenchrus ciliaris</i>	<i>Panicum</i> spp.
<i>Enneapogon</i> spp.	<i>Enneapogon</i> spp.	<i>Dactyloctenium radulans</i>
<i>Enteropogon acicularis</i>	<i>Enteropogon acicularis</i>	<i>Sporobolus</i> spp.
<i>Sporobolus</i> spp		

LPU 63. Western Queensland gidgee (Qld)

This unit occurs mostly on red friable earths, loamy and calcareous earths. It has a similar composition to LPU 62 but without the occurrence of *Astrebla*.

LPU 64. South-west Queensland gidgee (Qld)

<i>Astrebla lappacea</i>	<i>Chloris pectinata</i>	[<i>Sclerolaena</i> spp.]
<i>Chloris pectinata</i>	<i>Eragrostis setifolia</i>	[<i>Salsola kali</i>]
<i>Eragrostis parviflora</i>	<i>Dactyloctenium radulans</i>	<i>Tragus australianus</i>
<i>E.setifolia</i>	<i>Enneapogon</i> spp.	
<i>Eriochloa</i> spp.	<i>Echinochloa colonum</i>	
<i>Paspalidium</i> spp.	<i>Eragrostis cilianensis</i>	

Grasslands on clay soils

The predominant grasslands in the more favourable rainfall areas are bluegrass (*Dichanthium* spp.) pastures.

QUEENSLAND BLUEGRASS (*DICHANTHIUM SERICEUM*)*

This community occurs on heavy cracking clay soils in a discontinuous belt from central to southern Queensland . In its natural condition, it is a virtually treeless grassland, much of which is now used for permanent crop production or in crop-pasture rotations. It is treated here in two subdivisions of central and southern, the northern part having less winter rain.

LPU 65. Central Queensland bluegrass (Qld)

<i>Dichanthium sericeum</i>	<i>Dichanthium affine</i>	<i>Aristida leptopoda</i>
<i>Astrebla</i> spp.	<i>Eriochloa</i> spp.	<i>Aristida latifolia</i>
<i>Bothriochloa erianthoides</i>	<i>Paspalidium</i> spp.	<i>Panicum</i> spp.
<i>Bothriochloa ewartiana</i>	<i>Iseilema</i> spp.	<i>Sporobolus</i> spp.
<i>Dichanthium queenslandicum</i>	<i>Enterogogon</i> spp.	<i>Chloris</i> spp.
<i>Thellungia</i> spp.		<i>Eragrostis</i> spp.

LPU 66. Southern Queensland bluegrass (Qld)

<i>Dichanthium sericeum</i>	<i>Dichanthium affine</i>	<i>Chloris</i> spp.
<i>Bothriochloa erianthoides</i>	<i>Bothriochloa decipiens</i>	<i>Aristida leptopoda</i>
<i>Themeda avenacea</i>	<i>Paspalidium</i> spp.	<i>Sporobolus</i> spp.
<i>Astrebala</i> spp.	<i>Chloris</i> spp.	<i>Eragrostis</i> spp.
<i>Paspalidium globoideum</i>	<i>Enteropogon</i> spp.	<i>Panicum</i> spp.
<i>Stipa aristiglumis</i>		
<i>Agropyrum scabrum</i>		
<i>Danthonia</i> spp.		

BLUEGRASS–BROWNTOP (*DICHANTHIUM FECUNDUM*–*EULALIA FULVA*)*

This community is widespread in the tropical north of Australia. It occurs mainly on alluvial grey cracking clay soils in the wetter (>500 mm median annual rainfall) part of the semi-arid areas. The pastures are of medium quality but much better than most other pastures available.

LPU 67. Tropical bluegrass-browntop (Qld)

Occurring on the alluvial grey cracking clays of the extensive Gulf river flood plains.

<i>Dichanthium fecundum</i>	<i>Aristida latifolia</i>	<i>Cyperus bifax</i>
<i>Eulalia fulva</i>	<i>Eulalia fulva</i>	<i>Brachyachne convergens</i>
<i>Astrebala elymoides</i>	<i>Iseilema</i> spp.	<i>Pennisetum basedowii</i>
<i>Astrebala squarrosa</i>	<i>Astrebala elymoides</i>	<i>Sporobolus virginicus</i>
<i>Sorghum australiense</i>	<i>Astrebala squarrosa</i>	<i>Iseilema</i> spp.
<i>Chrysopogon fallax</i>	<i>Dichanthium fecundum</i>	
<i>Iseilema</i> spp.		

LPU 68. Bluegrass–golden beardgrass (NT/VRD)

Occurring largely on grey cracking clays of the riverine plains of the Victoria and Ord Rivers.

Dichanthium sericeum ssp. *polystachyum*

D. fecundum

Sorghum plumosum

Sorghum spp.

Eulalia fulva

Ophiuros exaltatus

Astrebala squarrosa

Panicum spp.

Aristida latifolia

Chrysopogon spp.

Themeda triandra

Sehima nervosum

Arundinella nepalensis

Short grasses and forbs

LPU 69. Bluegrass–golden beardgrass (NT/G)

Occurring on narrow riverine plains of the Gulf river systems. Soils range from gravelly yellow earths and grey cracking clays to sands with bluegrass or ribbongrass dominance.

Dichanthium spp.

Chrysopogon fallax

Iseilema vaginiflorum

Brachyachne convergens

Astrebla squarrosa

LPU 70. Bluegrass (WA/EK)

Composition approximately as for LPU 68.

LPU 71. Bluegrass (WA/NK)

Occurring on grey cracking clays on restricted riverine plains in the south of the region.

Dichanthium fecundum

D. sericeum

D. sericeum ssp. *polystachyum*

D. annulatum

Bothriochloa ewartiana

B. bladhi

Brachyachne convergens

Panicum decompositum

Eragrostis japonica

Paspalidium spp.

Brachiaria spp.

Eriachne glauca

Elytrophorus spicatus

Iseilema spp.

Grasslands on clay soils – tussock grassland pastures

MITCHELL GRASS (*ASTREBLA* SPP.)*

This is the largest productive pasture community in Queensland, and the Northern Territory and almost the largest in Western Australia; it occurs largely in the semi-arid region as treeless open grassland. It is almost exclusive to the heavy cracking clay soils and represents a very resilient pasture system, withstanding prolonged heavy grazing and recovering well in good years. The pastures are of moderate quality and highly regarded by graziers.

LPU 72. Rolling downs mitchell grass, northern (Qld)

Astrebla lappacea

A. elymoides

A. squarrosa

A. pectinata

Bothriochloa spp.

Shortgrasses and forbs

Astrebla spp.

Aristida latifolia

Iseilema spp.

Brachyachne convergens

[*Boerhavia diffusa*]

[*Salsola kali*]

[*Amaranthus mitchellii*]

Dactyloctenium radulans

Panicum spp.

[*Ipomoea* spp.]

[*Portulaca oleracea*]

[*Salsola kali*]

LPU 73. Rolling downs mitchell grass, southern (Qld)

<i>Astrebla</i> spp.	<i>Astrebla</i> spp.	<i>Aristida latifolia</i>
<i>Dichanthium sericeum</i>	<i>Aristida latifolia</i>	<i>A. leptopoda</i>
<i>Eulalia fulva</i>	<i>Panicum</i> spp.	<i>Panicum</i> spp.
<i>Iseilema</i> spp.	<i>Sporobolus</i> spp.	[<i>Sclerolaena</i> spp.]
<i>Dactyloctenium radulans</i>	<i>Dactyloctenium radulans</i>	[<i>Salsola kali</i>]
Shortgrasses and forbs		

LPU 74. Southern flooded alluvial plains (Qld)

On the cracking clay soils of the floodplain of the southern and south-western Darling river systems.

<i>Astrebla lappacea</i>	<i>Astrebla lappacea</i>	<i>Aristida</i> spp.
<i>Dichanthium sericeum</i>	<i>Iseilema</i> spp.	<i>Panicum</i> spp.
<i>Paspalidium</i> spp.	<i>Chloris</i> spp.	<i>Dactyloctenium radulans</i>
<i>Eulalia fulva</i>	<i>Thellungia advena</i>	[<i>Sclerolaena</i> spp.]
<i>Cyperus</i> spp.	<i>Eriochloa</i> spp.	[<i>Salsola kali</i>]
	<i>Aristida latifolia</i>	
	[<i>Salsola kali</i>]	

LPU 75. Plains mitchell grass (NT/VRD)

On extensive black soil plains in the eastern and south-eastern part of the region.

Astrebla pectinata
A. squarrosa
A. elymoides
Dichanthium fecundum
Aristida latifolia
Chrysopogon fallax
Themeda avenacea
Sorghum spp.
Iseilema spp.
Echinochloa colonum
Eragrostis japonica
Brachyachne convergens
 Shortgrasses and forbs

LPU 76. Plains mitchell grass (NT/BT)

Astrebla pectinata
A. squarrosa
A. elymoides
Aristida latifolia
Panicum whitei
P. decompositum
Eragrostis xerophila
Iseilema spp.
Brachyachne convergens
Dactyloctenium radulans

LPU 77. Plains mitchell grass (NT/CA)

An extensive area occurs in the eastern part of the region at the foot of the Barkly Tableland. Otherwise scattered areas widely dispersed in the central part.

Astrebla pectinata

***Iseilema* spp.**

Dactyloctenium radulans

Tripogon loliiformis

Eragrostis setifolia

E. xerophila

[*Helipterum charsleyea*]

[*H. floribundum*]

[*Sclerolaena bicornis*]

[*S. lanicuspis*]

LPU 78. Mitchell grass plains (WA/EK)

This unit occurs in the south east part of the region as a continuation of LPU 84.

Astrebla pectinata

A. squarrosa

A. elymoides

Dichanthium fecundum

Aristida latifolia

Chrysopogon fallax

Themeda triandra

T. avenacea

Iseilema spp.

Shortgrasses and forbs

LPU 79. Black soil plains (WA/WK)

Found extensively in the eastern Fitzroy basin and extending north-west in the Meda and May River basins.

Astrebla pectinata

A. elymoides

Chrysopogon fallax

Dichanthium fecundum

***Dichanthium* spp.**

Panicum decompositum

Sorghum plumosum

Eulalia fulva

Aristida latifolia

A. squarrosa

Iseilema spp.

Astrebla squarrosa

Astrebla pectinata

Iseilema vaginiflorum

I. macrantherum

Brachyachne convergens

Dactyloctenium radulans

Sporobolus spp.

Echinochloa colonum

Sorghum australiense

S. timorense

Aristida latifolia

***Iseilema* spp.**

Astrebla pectinata

A. squarrosa

Chrysopogon fallax

Brachyachne convergens

Sorghum australiense

Eriachne sulcarte

E. glauca

Setaria dielsii

LPU 80. Chichester Range basaltics (WA/PIL)

Occurring on islands of cracking clay soils of basaltic origin on the Chichester and Hammersley Ranges of the Pilbara. There are a few patches of snakewood (*Acacia xiphophylla*) as overstorey.

Astrebala pectinata

A. elymoides

Eragrostis xerophila

Annual grasses and forbs

LPU 81. Mitchell grass stony downs (Qld)

This is a typical gibber plain type of habitat. The pastures are relatively poor and sparse for much of the time.

Astrebala spp.

Iseilema spp.

Dactyloctenium radulans

Brachyachne convergens

Panicum spp.

Astrebala pectinata

Dactyloctenium radulans

Sclerolaena spp.

[*Ptilotus* spp.]

[*Salsola kali*]

[*Neobassia proceriflora*]

Chloris pectinata

Tragus australianus

[*Euphorbia* spp.]

[*Salsola kali*]

LPU 82. Mitchell grass ashy downs (Qld)

This is named from the extremely self-mulching grey clay which forms a dry bog or ash heap surfaces. Occurring in the south-west Diamantina region, it is a much less productive unit than the plains mitchell.

Astrebala elymoides

A. pectinata

Iseilema spp.

Eragrostis spp.

Astrebala pectinata

Dactyloctenium radulans

Panicum spp.

[*Salsola kali*]

[*Boerhavia diffusa*]

Dactyloctenium radulans

[*Salsola kali*]

LPU 83. Dry-bog mitchell grass (NT/BT)

This is the same sub-community as ashy downs and the composition is essentially as for LPU 82. It occurs in the centre of the north-western part of the Barkly Tableland.

LPU 84. Mitchell grass—other grasses (NT/VRD)

Astrebala pectinata

A. squarrosa

A. elymoides

Dichanthium fecundum

D. annulatum

Panicum whitei

P. decompositum

Chrysopogon fallax

Aristida latifolia

Iseilema spp.

Shortgrasses and forbs

LPU 85. Inferior mitchell grass (NT/G)

This unit occurs along the southern inland margin of the Gulf region. The terrain is variable, steeply to gently undulating country with cracking clays on the moderate to gentle lower slopes, complexing with acid yellow earths. The pastures are also variable in their dominant species, with a greater proportion of the less palatable, coarse tallgrasses. They occur as open grasslands to open coolibah woodlands.

Astrebla squarrosa
Dichanthium fecundum
Chrysopogon fallax
Bothriochloa ewartiana
B. bladhii
Panicum spp.
Ophiuros exaltatus
Aristida latifolia
Eulalia fulva
Arundinella nepalensis

LPU 86. Inferior mitchell grass (NT/BT)

This unit is widespread in the northern and north-western Barkly Tableland, fringing the extensive plains mitchell grass. It is mostly restricted to heavy clay soils developed on alluvia, basic sediments or volcanics receiving > 550 mm rainfall. The topography is flat to undulating, carrying treeless grassland or open woodland of coolibah, *Bauhinia cunninghamii*, *Acacia bidwillii* or *Terminalia* spp.

Astrebla squarrosa
Dichanthium fecundum
D. superciliatum
Bothriochloa ewartiana
B. intermedia (syn. *bladhii*)
Ophiuros exaltatus
Panicum spp.
Chrysopogon fallax
Aristida latifolia
Eulalia fulva
Arundinella nepalensis
Sehima nervosum
Sorghum spp. (annual)

LPU 87. Mitchell grass–gidgee (NT/BT)

In the eastern border parts of the mitchell grass area it is found in association with an open woodland of Georgina gidgee. This provides some shade in an otherwise treeless landscape, and some top feed at times of the year when the gidgee foliage is not toxic.

Astrebla pectinata
Dactyloctenium radulans
Tripogon loliiiformis
Eragrostis setifolia

LPU 88. Mitchell grass–gidgee (NT/CA)

This unit is found in the north-eastern part of the region and is essentially a continuation to the south of LPU 87. The pasture composition is similar. It merges with the *Eragrostis xerophila* (neverfail) sub-community in open gidgee woodlands. In good seasons, *Iseilema* spp. may occur commonly along with the forbs *Helipterum charsleyae* and *H. floribundum*.

LPU 89. Clayey stony slopes (NT/CA)

This is a relatively small unit comprising scattered occurrences at the foot of low hills and mesas. It consists of stony, pebbly surfaces overlying medium, stony red clays with scattered fuchsia bushes (*Eremophila* spp.). It is of fairly low productivity and without topfeed.

Astrebla pectinata

[*Sclerolaena* spp.]

Ephemeral annual shortgrasses and forbs

Spinifex hummock grasslands

SPINIFEX (*TRIODIA*, *PLECTRACHNE* SPP.)*

The Curly spinifex (*Plectrachne pungens*) community occurs largely in the northern part of the Northern Territory and through the wetter parts of the Kimberley. The soils are generally shallow, skeletal or sandy, and usually associated with a low open eucalypt woodland. The pastures are coarse and of very low quality. Some burning may be carried every few years to encourage young regrowth of the spinifex, but particularly to encourage the growth of associated grasses and forbs which have reasonable palatability.

LPU 90. Curly spinifex, Darwin region (NT/D)

Largely found in the Arnhem Land region and thus alienated from pastoral use because of National Park or Aboriginal Trust land. Mostly rugged escarpment country with a mosaic of shallow rocky to stony soils and deeper sandy soils. Spinifex predominates on the former, and annual sorghum on the latter.

Plectrachne pungens

***Sorghum* spp. (annual)**

LPU 91. Curly spinifex, Gulf region (NT/G)

Near to the coast, curly spinifex is associated with an open woodland of eucalypt and teatree. Further inland to the south, it is associated with bloodwood and stringybark open woodland on sandy soils.

Plectrachne pungens

Schizachyrium fragile

Eriachne spp.

Aristida spp.

Chrysopogon fallax

Heteropogon contortus

Sorghum stipoides

LPU 92. Curly spinifex (NT/BT)

Curly spinifex occurs in the rugged country in the north-east of the region and in the central south below the mitchell grass on sandy or gravelly soils. The vegetation is generally low open woodland of bloodwood or stringybark.

Plectrachne pungens

Eriachne spp.

Chrysopogon fallax

Aristida spp.

Schizachyrium fragile

Eulalia aurea

Eragrostis spp.

Heteropogon contortus

LPU 93. Curly spinifex (WA/EK)

A large part of the western half of the region is rugged with skeletal sandy soils carrying curly spinifex. The vegetation is low open or sparse bloodwood and stringybark woodland.

Plectrachne pungens
Sorghum spp. (annual)
Aristida hygrometrica
A. holathera
Thaumastochloa sp.
Schizachyrium sp.
Setaria spp.
Ichnanthus spp.
Eriachne spp.

LPU 94. Curly spinifex (WA/NK)

This is the predominant pasture type of the north Kimberley region. The soils are mainly sands or coarse-textured podzolics on steep to gently sloping sandstones and shales. The vegetation is eucalypt open forests to woodlands of messmate or woollybutt. The vegetation is substantially that of LPU 93.

LPU 95. Curly spinifex (WA/WK)

This pasture type occurs widely throughout the northern and eastern parts of the region but is of isolated occurrence elsewhere. Because of the greater mosaic of pasture types throughout the region, curly spinifex also complexes with other communities. The topography ranges from rocky and steep to rounded and undulating. The soils are usually yellowish or red, gravelly sands and loams derived from sandstones, shales or quartzite. Burning is frequently carried out on a 4–5 year rotation to provide green pick and encourage other interstitial grasses.

<i>Plectrachne pungens</i>	<i>Plectrachne pungens</i>	<i>Aristida inaequiglumis</i>
<i>Sorghum australiensis</i>	<i>Eriachne obtusa</i>	<i>Plectrachne pungens</i>
<i>Chrysopogon fallax</i>	<i>Cymbopogon bombycinus</i>	<i>Aristida latifolia</i>
<i>Triodia intermedia</i>	<i>Eriachne sulcata</i>	<i>A. holathera</i>
<i>T. pungens</i>	<i>Triodia</i> spp.	<i>A. hygrometrica</i>
<i>Themeda triandra</i>	<i>Sorghum stipoides</i>	<i>Eriachne obtusa</i>
<i>Dichanthium</i> spp.	<i>Aristida inaequiglumis</i>	
<i>Eulalia fulva</i>	<i>A. latifolia</i>	
<i>Brachiaria holosericea</i>	<i>A. hydrometrica</i>	
<i>Eriachne obtusa</i>		

LPU 96. Curly spinifex–ribbongrass (WA/WK)

The Pindan pasture region is characterised by red and yellow sandy soils carrying a low scrubby woodland with an open tree canopy of bloodwood, bauhinia and ironwood and a tall shrub layer of wattle. It is the major pasture type of the sand plain and dune fields in the western part of the region. It is often managed by periodic burning.

<i>Plectrachne pungens</i>	<i>Plectrachne pungens</i>	<i>Aristida holathera</i>
<i>Chrysopogon fallax</i>	<i>Eragrostis eriopoda</i>	<i>A. inaequiglumis</i>
<i>Sorghum plumosum</i>	<i>Eriachne obtusa</i>	<i>Sorghum stipoides</i>
<i>Sorghum stipoides</i>	<i>Sorghum stipoides</i>	<i>Aristida hygrometrica</i>
<i>Triodia pungens</i>	<i>Panicum cymbiforme</i>	<i>Plectrachne pungens</i>
<i>Sehima nervosum</i>	<i>Chrysopogon fallax</i>	<i>Eriachne obtusa</i>
<i>Eragrostis eriopoda</i>		<i>Eragrostis eriopoda</i>
<i>Eriachne obtusa</i>		

LPU 97. Curly spinifex--annual sorghum (WA/NK)

This is a widespread pasture system in the eastern and western sectors of the region on rugged sandstone with sandy skeletal soils. It is all within the monsoon zone, but largely inaccessible for grazing. The vegetation is eucalypt open forest and woodland.

Plectrachne pungens

Sorghum australiense

S. stipoideum

Eriachne spp.

Schizachyrium spp.

Curly/soft spinifex (*Plectrachne* spp., *Triodia pungens*)

This co-dominance of curly and soft spinifex grasses is more characteristic of the Northern Territory than of the other states. The communities are variable with respect to their relative proportions of the species.

LPU 98. Curly/soft spinifex (NT/VRD)

This pasture type occurs in the southern part of the region on deep red and yellow sandy soils and red and yellow gravelly earths. It is virtually unused for grazing.

Plectrachne schinzii

Triodia pungens

P. pungens

Aristida pruinosa

A. holathera

Chrysopogon fallax

Eulalia aurea

Sehima nervosum

Eragrostis eriopoda

Eriachne spp.

Enneapogon spp.

LPU 99. Curly-soft spinifex (NT/BT)

This unit occurs mostly on sandy red earths and some deep sands to the north, south and west of the mitchell grass area. It is mostly unused for pasture.

Plectrachne pungens

Triodia pungens

Chrysopogon fallax

Eulalia aurea

Sehima nervosum

Aristida holathera

Aristida spp.

Eragrostis eriopoda

Eragrostis spp.

Eriachne spp.

Enneapogon spp.

LPU 100. Curly/soft spinifex (NT/CA)

This unit occurs mainly across the northern part of the region. In the east, it is associated with shallow calcareous gravelly loams with acacia tall sparse shrubland, while in the western part with

red earthy sand plains. Scattered patches of inland teatree also occur.

Plectrachne schinzii

Triodia pungens

P. pungens

Eragrostis eriopoda

Eragrostis spp.

Aristida holathera

Eriachne spp.

Panicum spp.

Soft spinifex (*Triodia pungens*)

This is the largest spinifex community in Queensland, moderate in area in the Northern Territory and smallest in Western Australia.

LPU 101. Soft spinifex, north-west (Qld)

The unit occurs in the Mt Isa highlands on a fairly wide range of shallow, gravelly sands, loams and earths. Frontages to drainage lines have high phosphate loams and carry naturalised *Cenchrus pennisetiformis* (Cloncurry buffel grass). Neighbouring LPUs with intrusions of these drainage lines carry similar grass communities (See Mitchell grass, LPU 72)

Triodia pungens

Enneapogon polyphyllus

Tragus australianus

Enneapogon polyphyllus

Triodia pungens

Aristida spp.

Aristida spp.

Aristida spp.

Schizachyrium fragile

(*Cenchrus pennisetiformis*)

Triodia pungens

LPU 102. Soft spinifex, eastern-central (Qld)

This is the easternmost significant occurrence of soft spinifex in Queensland. The predominant soils are sandy red and yellow earths associated with a low, open eucalypt woodland. A much higher level of utilisation of the spinifex pastures occurs because of relatively productive pastures surrounding the area. Reduction of tree density and periodic burning are two management inputs which have placed pressure on the sustainability of the system.

Triodia pungens

Cymbopogon refractus

Aristida spp.

T. mitchellii

Triodia mitchellii

Enneapogon spp.

Cleistochloa subjuncea

T. pungens

Heteropogon contortus

Aristida spp.

LPU 103. Soft spinifex plains (NT/VRD)

This unit is widespread in the southern part of the region. The soils are predominantly loamy or sandy neutral red earths carrying low open woodland of snappy gum. The pastures are little used.

Triodia pungens

T. spicata

Aristida pruinosa

A. holathera

Chrysopogon fallax

Annual shortgrass and forbs

LPU 104. Soft spinifex plains (NT/G)

This unit was not mapped because of very limited distribution. It is an extension of LPU 101.

LPU 105. Soft spinifex plains (NT/BT)

This unit occurs extensively in the lower part of the region below the mitchell grass area on gently undulating plains. The soils are mainly red earths which are sandy or with calcareous gravels at the surface. The vegetation is a low open eucalypt bloodwood woodland.

Triodia pungens

Eulalia aurea

Enneapogon polyphyllus

Eragrostis eriopoda

Aristida spp.

Enneapogon spp.

LPU 106. Soft spinifex plains (NT/CA)

This unit is of relatively minor occurrence in the north of region. Its composition is approximately that given for LPU 103 with the exception of ribbongrass.

LPU 107. Soft spinifex plains (WA/EK)

This unit occurs in the south-east corner of the region where it forms a continuation of LPU 103 from the Victorian River District of the Northern Territory.

LPU 108. Soft spinifex (WA/WK)

The soft spinifex pasture lands are found throughout the southern portion of the Fitzroy River catchment in the west Kimberley. The soils are mainly deep reddish sands and loams with finer textures near the active flood plains. It occurs as an open grassland or very open grassy woodland of eucalypt bloodwood, beefwood or *Bauhinia* sp. Because of the diversity of pasture types of different production capabilities in the area, the utilisation of this pasture unit may be more intensive than normally expected.

Triodia pungens

Chrysopogon fallax

Plectrachne pungens

Enneapogon polyphyllus

Eragrostis eriopoda

Eriachne obtusa

Eragrostis eriopoda

Triodia pungens

Xerochloa barbata

Panicum cymbiforme

Aristida spp.

Eriachne obtusa

Aristida holathera

A. inaequiglumis

Eriachne obtusa

E. glauca

A. hygrometrica

Triodia pungens

Hard spinifex (*Triodia intermedia*, *Triodia* spp.)

Hard spinifex applies to a number of species of which *T. intermedia* is the most common. It occurs mostly in sand plains and dunefields in the more arid environments.

LPU 109. Hard spinifex, western dunefields (Qld)

This unit occurs in the south-western corner of Queensland on dunefields of siliceous sands between interdune corridors of grey clays. Feral animals such as horses, camels and donkeys impose an unmanaged grazing element on these lands.

Triodia basedowii

Zygochloa paradoxa

Eriachne aristidea

[*Calotis* spp.]

[*Crotalaria* spp.]

[*Helipterum* spp.]

Triodia basedowii

Aristida spp.

Zygochloa paradoxa

[*Helipterum* spp.]

[*Calotis* spp.]

Triodia basedowii

LPU 110. Hard spinifex, western acacia-eucalypt (Qld)

This unit occurs in the central west of Queensland. The predominant soils are shallow loams associated with an open woodland of acacia and eucalypt. The area is largely surrounded and broken by mitchell grass pasture lands, and therefore is utilised more heavily than its natural capability would indicate.

Triodia molesta

T. longiceps

T. burkensis

T. pungens

Enneapogon polyphyllus

Eragrostis eriopoda

Tripogon loliiformis

Aristida contorta

A. holathera

Digitaria brownii

LPU 111. Hard spinifex sandplains (NT/VRD)

Common on shallow stony soils and outcrop areas, particularly on basic rocks in the drier rainfall central western part of the region. The vegetation is a sparse woodland of scattered trees and shrubs of eucalypt bloodwood and snappy gum. The pasture land varies in its dominant species of hard spinifex which may be *T. basedowii*, *T. intermedia*, *T. wiseana* var. *wiseana*, *T. brizoides*, *T. roscida*, *T. fitzgeraldii*, or *T. inutilis*.

Triodia basedowii

Triodia spp.

Plectrachne pungens

Chrysopogon fallax

LPU 112. Hard spinifex sandplains (NT/BT)

This is a relatively restricted unit occurring on red clayey sands to sandy red earths associated with a tall sparse mallee shrubland.

Triodia basedowii

LPU 113. Hard spinifex sandplains (NT/CA)

This is the most extensive pasture unit in the region, but it is of very little value, even in times of drought. Periodic burning enables some more useful grasses to develop and provides some feed. The associated vegetation is usually an open shrubland of acacias and eucalypts.

Triodia basedowii

Plectrachne schinzii

LPU 114. Hard spinifex dunefields (NT/BT)

There is only a small amount of this unit in the Barkly region. Although it is considered a hard spinifex community, there is a higher proportion of *Plectrachne schinzii* than in the more southern dunefield areas.

Triodia basedowii

Plectrachne schinzii

LPU 115. Hard spinifex dunefields (NT/CA)

There is a very large area of these dunefields but most is excluded from the pastoral zone as it is Aboriginal Trust Land.

Triodia basedowii

LPU 116. Hard spinifex, Pilbara (WA/PIL)

This unit occurs as a shrubby hummock grassland with scattered shrubs of *Acacia inaequilatera*, *A. bivenosa*, *A. translucens* and *Corchorus walcottii*.

Triodia wiseana

T. angusta

T. lanigera

LPU 117. Hard spinifex, east Kimberley (WA/EK)

This unit is a continuation of LPU 111 of the Victorian River District of the Northern Territory.

LPU 118. Lobed spinifex (WA/WK)

This unit is widespread in the southern, southeastern and eastern sections of the region with <500 mm of rainfall. The topography ranges from flat plains to rugged sandstone country with predominantly skeletal soils of red-brown sandy loams and loamy clays. The tree and shrub layer is poorly developed and sparse, comprising snappy gum, conkerberry, beefwood or acacias.

Triodia intermedia

Eriachne obtusa

Triodia intermedia

T. pungens

Triodia intermedia

T. wiseana

Eragrostis eriopoda

Chrysopogon fallax

Chrysopogon fallax

Eulalia fulva

Sehima nervosum

Brachiaria holosericea

Sehima nervosum

Eriachne obtusa

Eragrostis eriopoda

LPU 119. Limestone spinifex (NT/VRD)

A small area of limestone spinifex occurs on shallow, gravelly, sandy loam soils on rocky limestone rises in the Victoria River District. It is usually associated with a low open woodland of nutwood (*Terminalia arostrata*).

Triodia wiseana

LPU 120. Limestone spinifex (WA/WK)

This unit is confined to the central section of the west Kimberley region where calcareous soils occur on gently sloping interfluves to rocky hills and plateaux with poor soil development. A sparse or open woodland of bloodwood is characteristic. The pastoral value is very low, with coarse, very tall, and very pungent tussocks. Where the soils are slightly better developed, more palatable species occur.

Triodia wiseana

Triodia wiseana

Triodia wiseana

Chrysopogon fallax

Eragrostis eriopoda

Eriachne obtusa

Dichanthium fecundum

Eriachne obtusa

Enneapogon polyphyllus

Sehima nervosa

Enneapogon polyphyllus

Eragrostis eriopoda

Brachyachne convergens

Eriachne obtusa

Enneapogon polyphyllus

LPU 121. Hard spinifex (NT/CA)

Occurring on small hills of quartzite or sandstone dispersed through the region.

Triodia spp.

Hard/soft spinifex (*Triodia basedowii*, *T. spp.*, *T. pungens*)

This community comprises species of both hard and soft spinifex throughout the arid parts of Central Australia and the eastern Pilbara.

LPU 122. Hard/soft spinifex (NT/CA)

This is a fairly large unit located in the central southern part of the region. It occurs on sandplains and rises of earthy sands and red siliceous sands associated with tall sparse shrubland of blue mallee (*Eucalyptus gamophylla*) and *Acacia* spp.

Triodia basedowii

T. pungens

Eragrostis eriopoda

Aristida contorta

Sclerolaena spp.

LPU 123. Hard/soft spinifex, Pilbara (WA/PIL)

This larger unit occurs as a shrubby hummock grassland with scattered shrubs of *Acacia inaequilatera*, *A. bivenosa*, *A. translucens* and *Corchorus walcottii*.

Triodia wiseana

T. pungens

T. angusta

SHORTGRASS PASTURE LANDS

Perennial shortgrass pastures

Pastures with top-feed – *Acacia* spp. woodland/shrubland

There is an important division to be made within the shortgrass pasture—those with and those without top-feed. Pastures with top-feed are those carrying edible woody species which provides additional feed resilience to the system as a dry season and drought fodder reserve.

MULGA (*ACACIA ANEURA*) – PERENNIAL SHORTGRASS*

LPU 124. Soft and hard mulga pastures (Qld)

This large unit occurring in the central south-west of Queensland is associated with mulga open forests, low woodlands or tall open shrublands on extensive red earth plains. The soils are fragile and, once exposed, are subject to erosion. Mulga is an important top-feed, used extensively in late dry season and in drought feeding. If not used wisely, this can lead to overgrazing the pasture lands, and an increase in woody weeds.

***Digitaria* spp.**

Monachather paradoxa

Thyridolepis mitchelliana

Themeda triandra

Eriachne helmsii

Aristida spp.

Eragrostis eriopoda

***Digitaria* spp.**

Eriachne helmsii

Aristida spp.

Eragrostis eriopoda

Thyridolepis mitchelliana

Amphipogon caricinus

***Aristida* spp.**

Amphipogon caricinus

Tripogon loliiformis

Eragrostis eriopoda

[*Sida* spp.]

LPU 125. Mulga on residuals (Qld)

The mulga and bastard mulga pastures on dissected residuals are interspersed with mitchell grass and spinifex pasture lands. The mulga is more of a shrubland in form on shallower red earth to shallow loamy soils of poorer fertility.

<i>Digitaria ammophila</i>	<i>Eriachne mucronata</i>	<i>Eriachne mucronata</i>
<i>Eriachne mucronata</i>	<i>Aristida</i> spp.	<i>Aristida</i> spp.
<i>E. pulchella</i>	[<i>Ptilotus</i> spp.]	[<i>Eremophila latrobei</i>]
<i>Neurachne munroi</i>	[<i>Sclerolaena</i> spp.]	[<i>Dodonaea</i> spp.]
<i>Aristida</i> spp.	[<i>Chenopodium rhadinostachyum</i>]	[<i>Cassia sturtii</i>]

LPU 126. Mulga shrubland (NT/CA)

This unit occurs as moderately dense to dense stands of mulga on red earth plains. The understorey is a mixed perennial and annual grass pasture, with the perennials dominant. Although less productive, it provides better drought reserve feed along with the top feed. *Sclerolaena cornishiana* is an undesirable invader in poor condition rangeland.

Eragrostis eriopoda
Aristida inaequiglumis
Monochather paradoxa
Enneapogon spp.
 [*Sclerolaena* spp. (seasonally)]
A. contorta

LPU 127. Mixed *Acacia* – other genera woodland (NT/CA)

This is a mixture of various top-feed woody genera consisting of *Acacia*, *Atalaya*, *Ventilago* at different levels of dominance in an open woodland. The unit occurs widely on alluvial plains at the base of ranges and hills.

Digitaria coenicola
Enteropogon acicularis
Aristida contorta
Enneapogon spp.
Eragrostis eriopoda
Aristida holathera

GEORGINA GIDGEE (*ACACIA GEORGINAE*) SHORTGRASS*

LPU 128. Georgina gidgee pastures (Qld)

This unit occurs in the western border region of Queensland and is contiguous with that of Central Australia. Georgina gidgee is seasonally poisonous to stock as a top-feed, particularly late in the dry season. The soils are sandy to loamy plains usually associated with dolomitic or calcareous parent materials.

<i>Astrebala pectinata</i>	<i>Aristida latifolia</i>	<i>Dactyloctenium radulans</i>
<i>Iseilema vaginiflorum</i>	<i>Astrebala pectinata</i>	<i>Aristida</i> spp.
<i>Dichanthium affine</i>	<i>Eragrostis setifolia</i>	
<i>Eragrostis setifolia</i>		
<i>Enneapogon</i> spp.		
<i>A. elymoides</i>		
<i>Aristida latifolia</i>		

LPU 129. Georgina gidgee (NT/CA)

Pastures of this unit occur on sandy plains and gently undulating shallow gravelly loam soils on limestone and dolomitic country in the eastern and southern-central part of the region. Georgina gidgee top feed is known to be seasonally poisonous to livestock in the late dry season. The vegetation is woodland to shrubland with the pasture a mixture of perennial and annual grasses and forbs.

Eragrostis setifolia

Tripogon loliformis

Fimbristylis dichotoma

Dactyloctenium radulans

Enteropogon spp.

Aristida contorta

Enneapogon spp.

[*Salsola kali*]

[*Helipterum pterodhaetum*]

[*Maireana aphylla*]

Pastures without top-feed

Such pastures are a less reliable dry season and drought feed resource. However, with perennial pastures this is a less serious drawback than with annual pastures.

LPU 130. Tussock grass–soft spinifex (WA/PIL)

This unit combines two fairly distinct broad communities making up the sub-coastal pasture lands of the Pilbara. In the north of the region, sub-unit (a) is a tussock grassland of perennial shortgrass (Roebourne plains grass), without trees and only a few shrubs. In the southern part of the region, sub-unit (b) is a shrubby hummock grassland of soft spinifex and some ribbongrass, the shrub layer comprising *Acacia inaequilatera*, *A. pyrifolia* and *A. ancistrocarpa*, and occasional small trees of *Eucalyptus dichromophloia* and *Hakea suberea*. The naturalisation of *Cenchrus ciliaris* has added considerably to the value and stability of these pastures.

(a) Tussock grassland:

Eragrostis xerophila

Eriachne benthamii

Cenchrus ciliaris

(b) Shrubby grassland:

Triodia pungens

Chrysopogon fallax

SALTWATER COUCH PASTURES (*SPOROBOLUS VIRGINICUS*)*

Mostly these are developed on coastal saline flats of loams or grey plastic clays.

LPU 131. Littoral (Qld)

Occurring discontinuously along the east coast and extensively in the southern Gulf of Carpentaria.

Sporobolus virginicus

Paspalum distichum

Hemarthria uncinatata

Leersia hexandra

Stenotaphrum secundatum

LPU 132. Coastal country, Darwin (NT/D)

This unit occurs mostly along the north-west coastal area on loams and saline clays of the saline tidal flats. It merges into fringing salt pans with samphire or mangrove on the one hand, and the seasonally flooded lowland pastures (LPU 1) on the other.

Sporobolus virginicus

Xerochloa imberbis

[*Halosarcia* spp.]

LPU 133. Coastal country (NT/VRD)

Also called saline shortgrass, it occurs mostly on the treeless coastal plains of the Victorian River District with occasional trees of *Excoecaria parviflora*, *Pandanus* sp. or *Grevillea striata* or mangrove.

Sporobolus virginicus

Brachyachne imberbis

Dactyloctenium radulans

[*Salsola kali*]

[*Neptunia* sp.]

Fimbristylis spp.

LPU 134. Coastal country (NT/G)

The littoral zone of the Gulf of Carpentaria in Queensland is continuous with that of the Northern Territory. Mostly it occurs on the saline plastic grey clays of the littoral strip.

Sporobolus virginicus

LPU 135. Littoral (WA/WK)

This unit occurs on bare saline mud flats of yellowish sands or loamy alluvials over a tough grey clay, and is frequently flooded by the tides. It merges with the samphire flats and mangrove communities. Usually it is adjacent to the Pindan pastures in the western part of the region. The useful pasture lands are on the sand covered margins which are elevated above the tidal effects and which merge into the Pindan.

Xerochloa barbata

Eriachne obtusa

Eriachne obtusa

Sporobolus virginicus

Xerochloa barbata

Xerochloa laniflora

Diplachne fusca

Sporobolus virginicus

E. glauca

Eragrostis falcata

Xerochloa laniflora

Chrysopogon fallax

Eriachne glauca

Dichanthium fecundum

Diplachne fusca

Eriachne obtusa

LPU 136. Littoral (WA/EK)

This unit, also called saline shortgrass, is of very limited occurrence in the east Kimberley region and, since it is a continuation of that in the Victorian River District of the Northern Territory, the information given for LPU 133 should be appropriate.

LPU 137. Littoral (WA/NK)

There is only a very small area of this unit in the northern Kimberley region, most of which is inaccessible.

Sporobolus virginicus

Annual shortgrass–forb pastures

Pastures with top-feed – *Acacia* spp. woodland/shrubland

The presence of top-feed in annual shortgrass pastures is especially important in extending the dry season feed value of the resource. However, if managed unwisely, it can quickly lead to degradation through the loss of the more desirable species.

MULGA (ACACIA ANEURA) – ANNUAL SHORTGRASS*

LPU 138. Mulga whitewood (Qld)

This unit occurs in the south-west of Queensland as a mulga–whitewood (*Atalaya hemiglauca*) low, open woodland. The soils are predominantly red earthy sands, siliceous sands and sandy red earths on flat or gently undulating plains.

<i>Eragrostis eriopoda</i>	<i>Eragrostis</i> spp.	<i>Aristida contorta</i>
<i>Enneapogon avenaceus</i>	<i>Dactyloctenium radulans</i>	[<i>Ptilotus polystachyus</i>]
<i>Dactyloctenium radulans</i>	<i>Aristida contorta</i>	[<i>Salsola kali</i>]
<i>Aristida contorta</i>	[<i>Ptilotus polystachyus</i>]	[<i>Cassia desolata</i>]
<i>Eragrostis</i> spp.	[<i>Salsola kali</i>]	[<i>Dodonaea attenuata</i>]
<i>Aristida</i> spp.	<i>Aristida</i> spp.	[<i>Eremophila duttonii</i>]
<i>Eriachne</i> spp.		
[<i>Ptilotus polystachyus</i>]		

LPU 139. Mulga shrubland (NT/CA)

This unit occurs on stable red earth soils on flat or undulating country. The annual grass–forb pastures are very palatable and stock do well on them; however there is little carryover dry season feed other than topfeed. The grasses predominate following summer rain whereas forbs may dominate with winter rain. *Sclerolaena cornishiana* indicates poor condition.

Enneapogon spp.
Aristida contorta
 [*Helipterum floribundum*]
Dactyloctenium radulans
 [*Sclerolaena* spp.]

LPU 140. Mulga shrubland (WA/PIL)

This unit is a tall mulga shrubland with a woody understory of *Cassia* and *Eremophila* spp. and a few low palatable shrubs (*Ptilotus* spp.).

Aristida contorta
 Other grasses and forbs in season

LPU 141. Mixed *Acacia* spp. on low hills (NT/CA)

This widely dispersed unit is associated with hills comprising granitic and metamorphic rock. The shrub layer carries edible, mostly *Acacia* species. The pasture is a typical annual grass–forb type.

Enneapogon spp.
Aristida spp.
Dactyloctenium radulans
Eriachne spp.
Sporobolus spp.

LPU 142. *Eremophila*–*Cassia* low shrubland (WA/PIL)

This unit is found on calcareous loamy soils in the central Ashburton area. This is a low shrubland with unpalatable *Eremophila cuneifolia*, *E. freelingii*, *Cassia leurssenii*, *C. desolata* and *Eremophila* spp. and some palatable *Acacia aneura* and *A. tetragonophylla*. The pasture is a rather sparse, annual grass–forb type.

Aristida contorta

Other grasses and forbs in season

Pastures without top-feed

Where annual pastures are without top-feed their value for pasturage is very short-lived, even though they may have a good nutritional level for that period. Adequate seed bank of the desirable species is allowed to fall each year.

ANNUAL SHORT GRASSLAND – LOW OPEN WOODLAND*

LPU 143. Northern calcareous pastures (NT/VRD)

This unit, also referred to as arid shortgrass, occurs mainly in the central Victoria River basin where it is rather diffusely distributed on calcareous loamy soils. The pastures are very sweet and often selectively grazed by livestock, often being very severely degraded by overgrazing. Much of this pasture is now recovering. The pastures are sometimes an open grassland, but more usually associated with a bloodwood–southern box woodland.

***Enneapogon* spp.**

Aristida contorta

Sporobolus australasicus

Tragus australianus

Chloris scariosa

[*Sida fibulifera*]

[*Portulaca oleracea*]

[*Cleome viscosa*]

LPU 144. Southern calcareous pastures (NT/CA)

This unit, also called southern calcareous shrubby grassland, is associated with calcareous, generally loamy soils, usually with scattered witchetty bush (*Acacia kempeana*). Mostly it occurs in the southern part of the region. The pastures are soft or sweet and are therefore selectively grazed, which can place them at risk of overgrazing if not carefully managed and periodically spelled. Witchetty bush has also declined. Rabbits are a further problem, both from their grazing and their burrowing.

***Enneapogon* spp.**

Aristida contorta

[*Sclerolaena* spp.]

[*Sida* spp.]

LPU 145. Shortgrass grassland (WA/EK)

This unit, also called arid shortgrass, is essentially the same as that for the Victorian River District of the Northern Territory. (See LPU 143.)

LPU 146. Shortgrass grassland–ribbongrass (WA/WK)

This unit is widespread in the southeastern and central part of the region, occurring on nearly flat alluvials to undulating slopes of the interfluves. The soils are variable from skeletal reddish sands to deeper red to yellow sands or sandy loams over clay. The vegetation is a low, open eucalypt woodland.

<i>Enneapogon polyphyllus</i>	<i>Enneapogon polyphyllus</i>	<i>Aristida contorta</i>
<i>Aristida contorta</i>	<i>Aristida contorta</i>	<i>Enneapogon polyphyllus</i>
<i>Chrysopogon fallax</i>	<i>Aristida inaequiglumis</i>	<i>A. inaequiglumis</i>
<i>Dactyloctenium radulans</i>	<i>Sporobolus australasicus</i>	<i>Sporobolus australasicus</i>
<i>Brachyachne convergens</i>	<i>Brachyachne convergens</i>	
<i>Eriachne obtusa</i>	<i>Eriachne obtusa</i>	
<i>Sehima nervosum</i>	<i>Heteropogon contortus</i>	
<i>Eulalia fulva</i>		
<i>Dichanthium</i> sp.		

LPU 147. Shortgrass–curly spinifex (WA/WK)

This unit occurs mostly in the southeast part of the region where it is associated with sandy and gravelly skeletal soils. It is a very open eucalypt woodland with annual shortgrass associated with curly spinifex rather than ribbongrass.

<i>Enneapogon polypyllus</i>	<i>Plectrachne pungens</i>	<i>Plectrachne pungens</i>
<i>Aristida contorta</i>	<i>Enneapogon polyphyllus</i>	<i>Aristida</i> spp.
<i>Plectrachne pungens</i>	<i>Eriachne obtusa</i>	<i>Ennaepogon polyphyllus</i>
<i>Sporobolus australasicus</i>	<i>Aristida contorta</i>	
<i>Dactyloctenium radulans</i>	<i>Dactyloctenium radulans</i>	
<i>Aristida</i> spp.	<i>Aristida</i> spp.	
<i>Chrysopogon fallax</i>		
<i>Eriachne obtusa</i>		

SHRUB PASTURE LANDS

Chenopod shrublands – pastures mostly of top-feed

CHENOPOD SHRUBLAND PASTURES*

LPU 148. Southern bluebush (NT/CA)

(a) Southern bluebush (*Maireana astrotricha*), also known as chenopod shrubland, is found dispersed in pockets over much of the country in the southern half of the region. Towards the South Australian border, there are some areas of (b) bladder saltbush (*Atriplex vesicaria*). These shrubs are only lightly grazed, most grazing being confined to the forbs and few grasses growing amongst the shrubs. This unit is often found in association with mulga, witchetty bush, georgina gidgee and myall.

(a) Southern bluebush:	(b) Bladder saltbush:
<i>Maireana astrotricha</i>	<i>Atriplex vesicaria</i>
<i>Enneapogon cylindrica</i>	<i>Astrebla pectinata</i>
[<i>Maireana</i> spp.]	
[<i>Salsola kali</i>]	
<i>Eriachne</i> spp.	
<i>Eragrostis</i> spp.	
<i>Aristida</i> spp.	
[<i>Sclerolaena</i> spp.]	

LPU 149. Northern bluebush (NT/VRD)

This small unit is a low open shrubland with ephemeral grassland understorey, occurring mainly in the south-west of the region on drainage depressions or swamps subject to shallow seasonal or periodic flooding. The soils are usually heavy clay and the shrub layer dominated by bluebush (*Chenopodium auricomum*), which also provides good top-feed.

Chenopodium auricomum

Panicum whitei

Astrebla elymoides

Eriachne spp.

Astrebla spp.

Iseilema spp.

LPU 150. Northern bluebush (NT/BT)

On the Barkly Tableland, this unit combines the two sub-communities, both of which are low open shrublands, denoted by (a) the presence of an open coolibah woodland, or (b) absence of coolibah. As the former, it occurs largely as a single area within the north-western sector of the mitchell grass plains, while, as the latter, in a scatter of small islands, mostly around the perimeter of the former. Both systems occur on grey to yellow-grey cracking clays, though the coolibah system is characterised by having red earth or calcareous rises. The pastures are seasonally very attractive for livestock, but because of the ephemeral nature of the pastures, care in management is needed during the pasture regeneration period after rain.

(a) Coolibah present:

Chenopodium auricomum

Zygochloa paradoxa

Eulalia aurea

Dichanthium fecundum

Aristida latifolia

Panicum spp.

(b) Coolibah absent:

Chenopodium auricomum

Panicum whitei

Astrebla elymoides

Eriachne spp.

Astrebla spp.

Iseilema spp.

LPU 151. Saltbush–bluebush samphire (WA/PIL)

This is a rather variable and minor unit. Along parts of the Fortescue River Valley, largely on plastic clay soils, it has a samphire (*Halosarcia* spp.) low shrubland with some *Atriplex bunburyana*. In the southwest of the region, mostly on duplex soils of hard setting loams over red clayey subsoils, it has a Gascoyne bluebush (*Maireana polypterygia*) low shrubland with saltbush and a scattered overstorey of snakewood (*Acacia xiphophylla*). Sparse seasonal grasses occur.

Halosarcia spp.

Atriplex bunburyana

Maireana polypterygia

Maireana spp.

Sclerolaena spp.

Ephemeral grasses and forbs

Name changes

There have been numerous changes to botanical names in recent years. Recent changes to names in this appendix include:

Old name	New name
<i>Aristida arenaria</i>	<i>Aristida contorta</i>
<i>Aristida armata</i>	<i>Aristida calycina</i>
<i>Aristida browniana</i>	<i>Aristida holathera</i>
<i>Chloris scariosa</i>	<i>Oxychloris scariosa</i>
<i>Coelorhachis rottboellioides</i>	<i>Mnesithea rottboellioides</i>
<i>Dichanthium affine</i>	<i>Dichanthium sericeum</i> subsp. <i>sericeum</i>
<i>Digitaria decumbens</i>	<i>Digitaria eriantha</i> subsp. <i>pentzii</i>
<i>Echinochloa coloum</i>	<i>Echinochloa colona</i>
<i>Echinochloa turnerana</i>	<i>Echinochloa turneriana</i>
<i>Eulalia fulva</i>	<i>Eulalia aurea</i>
<i>Monachatha paradoxa</i>	<i>Monachatha paradoxus</i>
<i>Sorghum australiense</i>	<i>Sorghum timorense</i>
<i>Themeda australis</i>	<i>Themeda triandra</i>