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 retrozii*

WANDERRIE GRASS (ERIACHNE SPP.)*

LPU 3. Wanderrie 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*
*Coelorachis rottboellioiodes*
*Ectrosia leporina*
*Eriachne avenacea*
*Sorghum intrans*
*Ischaemum arundinaceum*
*Oryza sativa var. fatua*

LPU 4. Cockatoo grass = Marraki mid-height grassland (WA/NK)
(a) Wanderrie 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 wanderrie 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*
*Coelorachis rottboellioiodes*
*Leptochloa digitata*
*Pseudopogonatherum contortum*
*Sorghum stipoides*
*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.*
*Coelorrhachis rotboellioides*
*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 triseta*
*Plectrachne pungens*
*Aristida holathera*
*A. ingrata*
*Eragrostis schultzii*
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 bladhii*
*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 tecifica 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.

*Sehima nervosum*  
*Sorghum stipoideum*  
*S. plumosum*  
*Chrysopogon fallax*  
*C. latifolius*  
*Themeda triandra*  
*Heteropogon contortus*  
*Cymbopogon procerus*  
*Triodia intermedia*  
*T. pungens*  
*Plectrachne pungens*  
*Eriachne obtusa*  
*Enneapogon polyphyllus*

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 bladhii*  
*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)
*Allotheropsis 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 rotboellioides*
*Heteropogon contortus*
*Aristida pruinosa*
*Cymbopogon* spp.
*Panicum* spp.
*Eriachne triseta*
*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*
*Allopteropsis semialata*
*Heteropogon triticeus*
*Sorghum plumosum*
*Chrysopogon latifolius*
*Coelorrhachis rotboellioides*
*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 mitchelli*
*Eriachne spp.*
*Schizachyrium spp.*
*Allopteropsis 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.

LPU 24. Curly spinifex—Schizachyrium (NT)
On leached sandy soils with mixed eucalypt–teatree woodland/open grassland plains of the lower Gulf of Carpentaria.

<table>
<thead>
<tr>
<th>Dicranium tenuiculum</th>
<th>Dicranium fecundum</th>
<th>Aristida spp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schizachyrium fragile</td>
<td>Chrysopogon fallax</td>
<td>Schizachyrium fragile</td>
</tr>
<tr>
<td>Eulalia fulva</td>
<td>Aristida latifolia</td>
<td>Eriachne spp.</td>
</tr>
<tr>
<td>Schizachyrium fragile</td>
<td>Eriachne squarrosa</td>
<td>Schizachyrium fragile</td>
</tr>
</tbody>
</table>

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):

<table>
<thead>
<tr>
<th>Pennisetum clandestinum</th>
<th>Paspalum dilatatum</th>
<th>Imperata cylindrica</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trifolium repens</td>
<td>Axonopus affinis</td>
<td></td>
</tr>
<tr>
<td>Paspalum dilatatum</td>
<td>Trifolium repens</td>
<td>Axonopus affinis</td>
</tr>
<tr>
<td>Axonopus affinis</td>
<td>Digitaria didactyla</td>
<td></td>
</tr>
<tr>
<td>Digitaria didactyla</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Central (Wide Bay–Burnett):

<table>
<thead>
<tr>
<th>Paspalum dilatatum</th>
<th>Sorghum leiocladium</th>
<th>Aristida spp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pennisetum clandestinum</td>
<td>Eragrostis spp.</td>
<td>Chloris virgata</td>
</tr>
<tr>
<td>Chloris gayana</td>
<td>Sporobolus spp.</td>
<td>[L. montevidensis]</td>
</tr>
<tr>
<td>Panicum maximum var. trichoglume</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Northern (lowland, highland):

(a) Lowland:

<table>
<thead>
<tr>
<th>Panicum maximum</th>
<th>Paspalum conjugatum</th>
<th>Chrysopogon aciculatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. humidicola</td>
<td>[Nimosa pudica]</td>
<td>[Casua obtusifolia]</td>
</tr>
<tr>
<td>Setaria spachelata</td>
<td>Sporobolus spp.</td>
<td>[Ageratum sp.]</td>
</tr>
<tr>
<td>Centrosema pubescens</td>
<td>Imperata cylindrica</td>
<td>[Hyptis capitata]</td>
</tr>
<tr>
<td>Pueraria phaseoloides</td>
<td></td>
<td>[Lantana camara]</td>
</tr>
<tr>
<td>Macropliium atropurpureum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brachiaria mutica</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digitaria decumbens</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) Highland:

<table>
<thead>
<tr>
<th>Pennisetum clandestinum</th>
<th>Axonopus affinis</th>
<th>Imperata cylindrica</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setaria spachelata</td>
<td>Paspalum paniculatum</td>
<td></td>
</tr>
<tr>
<td>Panicum maximum</td>
<td>P. dilatatum</td>
<td>[Pteridium yarrabense]</td>
</tr>
<tr>
<td>Chloris gayana</td>
<td></td>
<td>[Lantana camara]</td>
</tr>
<tr>
<td>Trifolium repens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neototonia wightii</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Desmodium intortium</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 spartetus
Bylitis linifolia
Eriocaulon spp.
Nepenthes sp.
Utricularia crysantha

Sown species:
Digitaria decumbens
Paspalum plicatum
Setaria sphacelata
Chloris gayana
Trifolium repens
Lotonomis 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
Chrysochloa 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.

BLACK/BUNCH SPEARGRASS (Heteropogon contortus)*

This is the second largest pasture community in Queensland, stretching for ¾ 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.

<table>
<thead>
<tr>
<th>Heteropogon contortus</th>
<th>Chrysopogon fallax</th>
<th>Cynodon dactylon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bothriochloa bladhii</td>
<td>Cymbopogon spp.</td>
<td>Eragrostis spp.</td>
</tr>
<tr>
<td>Themeda triandra</td>
<td>Bothriochloa decipiens</td>
<td>Sporobolus spp.</td>
</tr>
<tr>
<td>Heteropogon triticeus</td>
<td>Bothriochloa pertusa</td>
<td>Chloris barbata</td>
</tr>
<tr>
<td>Bothriochloa pertusa</td>
<td></td>
<td>Aristida ramosa</td>
</tr>
</tbody>
</table>

LPU 29. Central black speargrass (Qld)
This community occurs in the Prosperpine–Calliope area of Queensland.

<table>
<thead>
<tr>
<th>Heteropogon contortus</th>
<th>Bothriochloa bladhii</th>
</tr>
</thead>
<tbody>
<tr>
<td>B. decipiens</td>
<td></td>
</tr>
</tbody>
</table>

LPU 30. Southern black speargrass (Qld)
This community occurs south of Miriam Vale.

<table>
<thead>
<tr>
<th>Heteropogon contortus</th>
<th>Eragrostis spp.</th>
<th>Aristida spp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bothriochloa bladhii</td>
<td>Cymbopogon refractus</td>
<td>Sporobolus elongatus</td>
</tr>
<tr>
<td>Bothriochloa decipiens</td>
<td>Bothriochloa decipiens</td>
<td>Chrysopogon fallax</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Heteropogon contortus</td>
</tr>
</tbody>
</table>

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 (CHYSOPOGON)*

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.

<table>
<thead>
<tr>
<th>Chrysopogon fallax</th>
<th>Sehima nervosum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heteropogon triticeus</td>
<td>Erichne spp.</td>
</tr>
<tr>
<td>Eulalia aurea (syn. fulva)</td>
<td>Dianthus fulgida</td>
</tr>
<tr>
<td>Dichanthium fecundum</td>
<td>Heteropogon contortus</td>
</tr>
</tbody>
</table>
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*)
*Aloteropsis semialata*
*Coelorrhachis rotboelliioides*
*Aristida holathera*
*A. hygrometrica*
*Eriachne spp.*
*Brachychne 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.
Pasture lands of northern Australia

[Text continues from the image]
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.

<table>
<thead>
<tr>
<th>Chrysopogon fallax</th>
<th>Dichanthium fecundum</th>
<th>Sorghum plumosum</th>
<th>Cenchrus setiger</th>
<th>C. ciliaris</th>
<th>Sehima nervosum</th>
<th>Trodia pungens</th>
<th>Plectrachne pungens</th>
<th>Cymbopogon procerus</th>
<th>Themeda triandra</th>
<th>Brachiaria holosericea</th>
<th>Eriachne obtusa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chrysopogon fallax</td>
<td>Dichanthium fecundum</td>
<td>Brachyachne convergens</td>
<td>Heteropogon contortus</td>
<td>Sporobolus mitchelli</td>
<td>Xerochloa barbata</td>
<td>Cenchrus setiger</td>
<td>C. ciliaris</td>
<td>Sehima nervosum</td>
<td>Aristida hygrometrica</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Xerochloa laniflora</td>
<td>Dactyloctenium radulans</td>
<td>Sporobolus australasicus</td>
<td>Chrysopogon fallax</td>
<td></td>
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</tr>
</tbody>
</table>

**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 sub-tropics. 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.

<table>
<thead>
<tr>
<th><em>Themeda triandra</em></th>
<th><em>Chrysopogon fallax</em></th>
<th><em>Aristida hygrometrica</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Bothriochloa erwartiana</em></td>
<td><em>Aristida spp.</em></td>
<td><em>Aristida hygrometrica</em></td>
</tr>
<tr>
<td><em>Chrysopogon fallax</em></td>
<td><em>Sorghum plumosum</em></td>
<td><em>Perotis rara</em></td>
</tr>
<tr>
<td><em>Aristida ingrata</em></td>
<td><em>Schizachyrium fragile</em></td>
<td></td>
</tr>
<tr>
<td><em>Aristida pruinosa</em></td>
<td><em>Eriachne armitti</em></td>
<td></td>
</tr>
<tr>
<td><em>Sorghum plumosum</em></td>
<td><em>Eragrostis spp.</em></td>
<td></td>
</tr>
</tbody>
</table>

| *Heteropogon contortus* | |

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.

<table>
<thead>
<tr>
<th><em>Chrysopogon fallax</em></th>
<th><em>Aristida hygrometrica</em></th>
<th><em>Aristida holothera</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Sorghum plumosum</em></td>
<td><em>Aristida pruinosa</em></td>
<td><em>Aristida hygrometrica</em></td>
</tr>
<tr>
<td><em>Aristida pruinosa</em></td>
<td><em>Chrysopogon fallax</em></td>
<td><em>Schizachyrium fragile</em></td>
</tr>
</tbody>
</table>

| *Sorghum plumosum* | *Eragrostis spp.* | *Eriachne 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.

<table>
<thead>
<tr>
<th>Aristida spp.</th>
<th>Cleistochloa subjuncea</th>
<th>Heteropogon contortus</th>
<th>Cymbopogon spp.</th>
<th>Dimorphochloa rigid</th>
<th>Erichne spp.</th>
<th>Triodia pungens</th>
</tr>
</thead>
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<td>Aristida spp.</td>
<td>Cleistochloa subjuncea</td>
<td>Heteropogon contortus</td>
<td>Cymbopogon spp.</td>
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<td>Triodia pungens</td>
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<td>Dimorphochloa rigid</td>
<td>Erichne spp.</td>
<td>Triodia pungens</td>
</tr>
</tbody>
</table>

LPU 49. Aristida–Thrydolepis (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.

<table>
<thead>
<tr>
<th>Bothriochloa decipiens</th>
<th>Thyridolepis michelliana</th>
<th>Aristida jericchoensis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bothriochloa decipiens</td>
<td>Thyridolepis michelliana</td>
<td>Aristida jericchoensis</td>
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<td>Bothriochloa decipiens</td>
<td>Thyridolepis michelliana</td>
<td>Aristida jericchoensis</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Bothriochloa ewartiana</th>
<th>Bothriochloa decipiens</th>
<th>Aristida spp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bothriochloa ewartiana</td>
<td>Bothriochloa decipiens</td>
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<tr>
<td>Bothriochloa ewartiana</td>
<td>Bothriochloa decipiens</td>
<td>Aristida spp.</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Cymbopogon refractus</th>
<th>Bothriochloa decipiens</th>
<th>Aristida spp.</th>
</tr>
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<tr>
<td>Cymbopogon refractus</td>
<td>Bothriochloa decipiens</td>
<td>Aristida spp.</td>
</tr>
<tr>
<td>Cymbopogon refractus</td>
<td>Bothriochloa decipiens</td>
<td>Aristida spp.</td>
</tr>
</tbody>
</table>
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*  
*Aristida spp.*  
*Eragrostis lacunaria*  
*Panicum effusum*

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
Astrebla lappacea
Brachychne convergens
Chloris pectinata
Chrysochogon fallax
Dactyloctenium radulans
Dichanthium sericeum
Cenchrus ciliaris
Eragrostis spp.
Eulalia falva
Iseilema membranaceum
I. vaginiflorum
Leptochloa digitata
Panicum decompositum

Cool season pastures:
[Chenopodium cunninghamii] [Chenopodium cunninghamii] [Muehlenbeckia cunninghamii]
[Muellerbeckia auricoma] [Muellerbeckia auricoma] Sclerolaena spp.
Trigonella suavissima Trigonella suavissima Eragrostis setifolia
Atriplex nummularia Echinochloa turnerana Eragrostis australasica
Craspedia pleiocephala Iseilema spp. Dactyloctenium radulans
Echinochloa turnerana Eragrostis setifolia
Cenchrus ciliaris Cenchrus ciliaris

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 insaequeglumis
Cenchrus ciliaris
Astrebla lappacea
Themeda triandra
Bothriochloa ewartiana
Chrysopegon 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.

*Bothriochloa bladhii*  
*B. ewartiana*  
*Dichanthium affine*  
*D. sericeum*  
*Eulalia fulva*  
*Paspalidium spp.*

*Bothriochloa decipiens*  
*Chrysopogon fallax*  
*Cymbopogon spp.*  
*Eriochloa spp.*  
*Paspalidium spp.*  
*Chloris spp.*  
*Aristida spp.*  
*Chloris spp.*  
*Cynodon dactylon*  
*Enneapogon spp.*  
*Enteropogon acicularis*  
*Eragrostis spp.*  
*Panicum spp.*  
*Sporobolus spp.*  
*Dactyloctenium radulans*

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.

*Bothriochloa bladhii*  
*Dichanthium sericeum*  
*D. affine*  
*Paspalidium spp.*  
*Ancistrachne uncinulata*  
*Stipa verticillata*  
*Chloris spp.*  
*Diplachne parviflora*  
*Leptochloa digitata*  
*Stipa setacea*  

*Bothriochloa decipiens*  
*Panicum queenslandicum*  
*Paspalidium spp.*  
*Cymbopogon spp.*  
*Eriochloa pseudoacdrotricha*  
*Chloris spp.*  
*Aristida spp.*  
*Chloris spp.*  
*Cynodon dactylon*  
*Enneapogon spp.*  
*Enteropogon acicularis*  
*Eragrostis spp.*  
*Panicum spp.*  
*Sporobolus spp.*  
*Dactyloctenium radulans*

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)

**Bothriochloa ewartiana**  
*Bothriochloa decipiens*  
*Chloris spp.*  

**Dichanthium affine**  
*Cynodon dactylon*  
*Eragrostis setifolia*  

**Cenchrus ciliaris**  
*Eriochloa spp.*  
*Eragrostis ciliaris*  

*Enneapogon spp.*  
*Eragrostis spp.*  

*Enteropogon acicularis*  
*Panicum spp.*  

*Sporobolus 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)

**Astrebla lappacea**  
*Chloris pectinata*  
[Sclerolaena spp.]  

**Chloris pectinata**  
*Eragrostis setifolia*  
[Salsola kali]  

**Eragrostis parviflora**  
*Echinochloa colonum*  
*Tragus australianus*  

*E. setifolia*  
*Enneapogon spp.*  

*Eriochloa spp.*  
*Eragrostis ciliarensis*  

Grasslands on clay soils

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

**QUEENSLAND BLUEGRASS (DICHANTHIDIUM 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)

**Dichanthium sericeum**  
*Eriochloa spp.*  
*Aristida leptopoda*  

*Astrebla spp.*  
*Panicum spp.*  

**Bothriochloa erianthoides**  
*Paspalidium spp.*  
*Aristida latifolia*  

*Bothriochloa ewartiana*  
*Iseilema spp.*  
*Sporobolus spp.*

**Dichanthium queenslandicum**  
*Enteropogon spp.*  
*Chloris spp.*  

*Thellungia sp.*  
*Eragrostis spp.*
LPU 66. Southern Queensland bluegrass (Qld)

*Dichanthium sericeum*  
*Bothriochloa erianthoides*  
*Themeda avenacea*  
*Astrebla* spp.  
*Paspalidium globoidum*  
*Stipa aristiglumis*  
*Agropyrum scabrum*  
*Danthonia* spp.

*Chloris* spp.  
*Aristida leptopoda*  
*Sporobolus* spp.  
*Eragrostis* spp.  
*Panicum* 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.

*Dichanthium fecundum*  
*Eulalia fulva*  
*Astrebla elymoides*  
*Astrebla squarrosa*  
*Sorghum australiense*  
*Chrysopogon fallax*  
*Iseilema* spp.

*Aristida latifolia*  
*Eulalia fulva*  
*Iseilema* spp.  
*Astrebla elymoides*  
*Astrebla squarrosa*  
*Dichanthium fecundum*

*Cyperus bifax*  
*Brachyachne convergens*  
*Pennisetum basedowii*  
*Sporobolus virginicus*  
*Iseilema* 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*  
*Astrebla 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
earts 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 fecondum_
_D. sericeum_
_D. sericeum ssp. polystachyum_
_D. annulatum_
_Bothriochloa ewartiana_
_B. bladhii_
_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)

Astrebla spp.   Astrebla spp.   Aristida latifolia
Dichanthium sericeum   Aristida latifolia   A. leptopoda
Eulalia fulva   Panicum spp.    Panicum spp.
Iseilema spp.   Sporobolus spp.    [Sclerolaena spp.]
Dactyloctenium radulans   Dactyloctenium radulans    [Salsola kali]

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.

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

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.**  
*Dactylocentenium radulans*  
*Tripogon loliiformis*  
*Eragrostis setifolia*  
*E. xerophila*  
*[Helipterum charsleyae]*  
*[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*  
*Dactylocentenium radulans*  
*Sporobolus spp.*  
*Echinochloa colonum*  
*Sorghum australiensis*  
*S. timorens*  
**Aristida latifolia**  
**Iseilema spp.**  
*Astrebla pectinata*  
*A. squarrosa*  
*Chrysopogon fallax*  
*Brachyachne convergens*  
*Sorghum australiensis*  
*Eriachne sulcarte*  
*E. glauca*  
*Setaria dielsii*
LPU 80. Chichester Range basalts (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.

**Astrebla 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.

**Astrebla spp.**
**Iseilema spp.**
**Dactylactenium radulans**
**Brachyachne convergens**
**Panicum spp.**

**Astrebla pectinata**
**Dactylactenium radulans**
**Sclerolaena spp.**
**Ptilotus spp.**
**Salsola kali**
**[Euphorbia spp.]**
**[Salsola kali]**
**[Neobassia proceriflora]**

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.

**Astrebla elymoides**
**A. pectinata**
**Iseilema spp.**
**Eragrostis spp.**

**Astrebla pectinata**
**Dactylactenium 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)

**Astrebla 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. bladhi*
*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. *bladhi*)
*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*
*Dactylolcemenium radulans*
*Tripogon loliformis*
*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 forb *Helipterum charlesiae* 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.

**Plectrachne pungens**
Plectrachne pungens
Sorghum australiensis
Chrysochogon fallax
Triodia intermedia
T. pungens
Themeda triandra
Dichanthium spp.
Eulalia fulva
Brachiaaria holosericea
Eriachne obtusa

**Plectrachne pungens**
Eriachne obtusa
Cymbopogon bombycinus
Eriachne sulcata
Triodia spp.
Sorghum stipoides
Aristida inaequiglumis
A. latifolia
A. hygrometrica
Eriachne obtusa

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.

**Plectrachne pungens**
Plectrachne pungens
Chrysochogon fallax
Sorghum plumosum
Sorghum stipoides
Triodia pungens
Sehima nervosum
Eragrostis eriopoda
Eriachne obtusa

**Plectrachne pungens**
Eriachne obtusa
Aristida inaequiglumis
A. latifolia
A. holathera

**Eragrostis eriopoda**
Sorghum stipoides
Panicum cymbiforme
Chrysochogon fallax

**Eriachne obtusa**
Aristida holathera
A. inaequiglumis
Sorghum stipoides
Eriachne obtusa
Eragrostis eriopoda
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 etiopoda*

*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)

<table>
<thead>
<tr>
<th><em>Triodia pungens</em></th>
<th><em>Enneapogon polyphyllus</em></th>
<th><em>Tragus australianus</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Enneapogon polyphyllus</em></td>
<td><em>Triodia pungens</em></td>
<td><em>Aristida spp.</em></td>
</tr>
<tr>
<td><em>Aristida spp.</em></td>
<td><em>Aristida spp.</em></td>
<td><em>Schizachyrium fragile</em></td>
</tr>
</tbody>
</table>

(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.

<table>
<thead>
<tr>
<th><em>Triodia pungens</em></th>
<th><em>Cymbopogon refractus</em></th>
<th><em>Aristida spp.</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>T. mitchelli</em></td>
<td><em>Triodia mitchelli</em></td>
<td><em>Enneapogon spp.</em></td>
</tr>
<tr>
<td><em>Cleistochloa subjuncea</em></td>
<td><em>T. pungens</em></td>
<td></td>
</tr>
<tr>
<td><em>Heteropogon contortus</em></td>
<td><em>Aristida spp.</em></td>
<td></td>
</tr>
</tbody>
</table>

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_
_Eudalia 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 the 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_  
_Plecrachne 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 dune fields 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_  
[Helipterum spp.]
[Crotalaria spp.]

_Triodia basedowii_  
_Aristida spp._  
_Zygochloa paradoxa_  
[Helipterum spp.]
[Crotalaria spp.]

_Triodia basedowii_  
_Aristida spp._  
_Zygochloa paradoxa_  
[Helipterum spp.]
[Crotalaria spp.]

[Helipterum spp.]
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 molestata*

*T. longiceps*

*T. burkensis*

*T. pungens*

*Enneapogon polyphyllus*

*Eragrostis eriopoda*

*Triogon loliformis*

*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 inaequilateral, 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

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

Chrysopogon fallax

Eriachne obtusa

Triodia wiseana

Dichanthium fecundum

Eragrostis eriopoda

Sehima nervosa

Eriachne obtusa

Triodia wiseana

Eragrostis eriopoda

Triodia wiseana

Enneapogon polyphyllus

Eriachne obtusa

Enneapogon polyphyllus

Eriachne obtusa

Brachyachne convergens

LPU 121. Hard spinifex (NT/CA)
Occurring on small hills of quartzite or sandstone dispersed through the region.

Triodia spp.
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 inaequilateral*, *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 ANEUR*). 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 michelliana*  
*Themeda triandra*  
*Eriachne helmsii*  
*Aristida* spp.  
*Eragrostis eriopoda*

**Digitaria** spp.  
*Eriachne helmsii*  
*Aristida* spp.  
*Eragrostis eriopoda*  
*Amphipogon caricinus*  
*Tripogon loliformis*  
*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.

<table>
<thead>
<tr>
<th>Digitaria ammophila</th>
<th>Eriachne mucronata</th>
<th>Eriachne mucronata</th>
</tr>
</thead>
<tbody>
<tr>
<td>E. pulchella</td>
<td>Aristida spp.</td>
<td>Aristida spp.</td>
</tr>
<tr>
<td>Neurachne munroi</td>
<td>[Ptilotus spp.]</td>
<td>[Eremophila latrobei]</td>
</tr>
<tr>
<td>Aristida spp.</td>
<td>[Sclerolaena spp.]</td>
<td>[Dodonaea spp.]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Neurachne munroi</th>
<th>[Sclerolaena spp.]</th>
<th>[Dodonaea spp.]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aristida spp.</td>
<td>[Chenopodium rhadinostachyum]</td>
<td>[Cassia sturtii]</td>
</tr>
</tbody>
</table>

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 GEORGINAEE) 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.

Astrebla pectinata
Astrebla pectinata
Dactyloctenium radulans
Iselrema vaginiflorum
Aristida latifolia
Aristida pectinata
Dichanthium affine
Eragrostis setifolia
Dichanthium affine
Eragrostis setifolia
Enneapogon spp.
A. elymoides
Aristida latifolia
Pasture lands of northern Australia

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 loliiiformis*
*Fimbristylis dichotoma*
*Dactylolctenium 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: (b) Shrubby grassland:

*Eragrostis xerophiln*  
*Triodia pungens*
*Eriachne benthamii*  
*Chrysopogon fallax*
*Cenchrus ciliaris*

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*
*Sporobolus virginicus*
*Diplachne fusca*
*Eragrostis falcata*
*Chrysopogon fallax*
*Dichanthium fecundum*
*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.

<table>
<thead>
<tr>
<th><em>Eragrostis eriopoda</em></th>
<th><em>Eragrostis spp.</em></th>
<th><em>Aristida contorta</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Enneapogon avenaceus</em></td>
<td><em>Dactylolentium radulans</em></td>
<td>[Ptilotus polystachyus]</td>
</tr>
<tr>
<td><em>Aristida contorta</em></td>
<td>[Ptilotus polystachyus]</td>
<td>[Cassia desolata]</td>
</tr>
<tr>
<td><em>Eragrostis spp.</em></td>
<td>[Salsola kali]</td>
<td>[Dodonaea attenuata]</td>
</tr>
<tr>
<td><em>Aristida spp.</em></td>
<td><em>Aristida spp.</em></td>
<td>[Eremophila duttonii]</td>
</tr>
<tr>
<td><em>Eriachne spp.</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Ptilotus polystachyus]</td>
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</tr>
</tbody>
</table>

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]
*Dactylolentium 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.*
*Dactylolentium 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–ribsbongrass (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 interfluvces. 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.

Enneapogon polyphyllus
Aristida contorta
Chrysozogon fallax
Dactyloctenium rafialans
Brachyachne convergens
Eriachne obtusa
Sehima nervosum
Eulalia fulva
Dichanthium 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.

Enneapogon polyphyllus
Aristida contorta
Plectrache pungens
Sporobolus australasicus
Dactyloctenium radulans
Aristida spp.
Chrysopogon fallax
Eriachne obtusa

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:
Maireana astrotricha
Enneapogon cylindrica
[bMaireana spp.]
[Salsola kali]
Eriachne spp.
Eragrostis spp.
Aristida spp.
[Sclerolaena spp.]

(b) Bladder saltbush:
Atriplex vesicaria
Astrebla pectinata
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: (b) Coolibah absent:
*Chenopodium auricomum*  *Chenopodium auricomum*
*Zygochloa paradoxa*  *Panicum whitei*
*Eulalia aurea*  *Astrebla elymoides*
*Dichanthium fecundum*  *Eriachne spp.*
*Aristida latifolia*  *Astrebla spp.*
*Panicum 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.

*Halosarica 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:

<table>
<thead>
<tr>
<th>Old name</th>
<th>New name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aristida arenaria</td>
<td>Aristida contorta</td>
</tr>
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<td>Aristida armata</td>
<td>Aristida calycina</td>
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<td>Aristida browniana</td>
<td>Aristida holathera</td>
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<td>Chloris scariosa</td>
<td>Oxychloris scariosa</td>
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<td>Coelorrhachis rothboellioides</td>
<td>Mnesitha rothboellioides</td>
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<td>Dichanthium affine</td>
<td>Dichanthium sericeum subsp. sericeum</td>
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<td>Digitaria decumbens</td>
<td>Digitaria eriantha subsp. pentzii</td>
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<td>Echinochloa colonum</td>
<td>Echinochloa colona</td>
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<td>Echinochloa turnerana</td>
<td>Echinochloa turneriana</td>
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<tr>
<td>Eulalia fulva</td>
<td>Eulalia aurea</td>
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<td>Monachatha paradoxus</td>
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<td>Sorghum timorense</td>
</tr>
<tr>
<td>Themeda australis</td>
<td>Themeda triandra</td>
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</tbody>
</table>