



# Gulf Plains bioregion

## Description

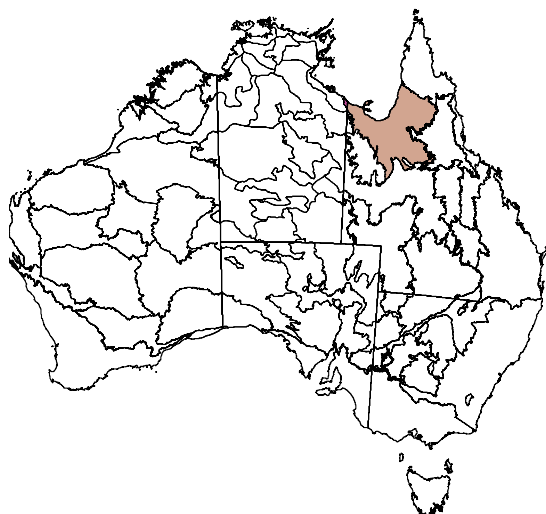
Area: 121 100 km<sup>2</sup>

The Gulf Plains bioregion is characterised by extensive alluvial plains and coastal areas. The tropical savanna vegetation comprises mainly eucalypt and tea-tree open woodlands. The regional economy is mainly based on cattle grazing with some prawn fishing, mining and tourism. Tenure is pastoral lease, Aboriginal land and nature reserves. Major population centres are Burketown, Normanton, Karumba and Doomadgee Aboriginal Community.

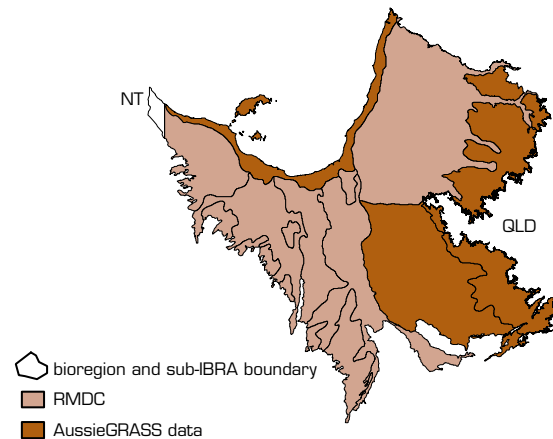
## Location

The Gulf Plains bioregion is located in the Gulf of Carpentaria in northern Queensland, with a small area (0.7% of bioregion area) in the Northern Territory (NT; see Figures 1 and 2).

**Figure 1 Location of the Gulf Plains bioregion**



**Figure 2 Monitoring data coverage**



## Data sources available

Data sources include:

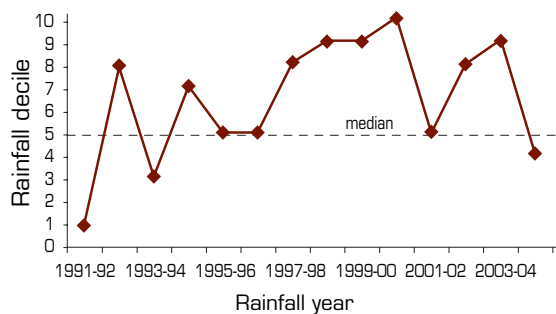
- Rapid Mobile Data Collection (RMDC) supported by **AussieGRASS** simulation (of pasture growth and utilisation) and remote sensing (**Multiple Regression Bare Ground Index**, version bi1); these provide moderate reliability for reporting change (RMDC — road traverses and visual estimates; AussieGRASS — entire rangelands, simulated results with some ground validation)
- domestic stocking density, which provides moderate reliability
- fire extent, intensity and frequency, which provides high reliability
- dust
- distance from water
- distribution and relative abundance of invasive animals and weeds
- land use
- land values.



## Climate

The Gulf Plains bioregion has a monsoonal climate with a winter dry season and a summer wet season. Spatially averaged median (1890–2005) rainfall is 737 mm (April to March rainfall year; see Figure 3).

**Figure 3 Decile rainfall for the period 1991–1992 to 2004–2005**



**Annual rainfall is for the 12-month period 1 April to 31 March.**

Decile rainfall was variable throughout the reporting period. The year 1991–1992 was very dry while 1998–1999 to 2000–2001 and 2003–2004 were notably wet periods.

The intense nature of monsoonal and cyclonic rainfall probably means that the spatially averaged rainfall reported here conceals local variability in yearly rainfall across the Gulf Plains bioregion.

## Landscape function

### **RMDC, change in visually assessed vegetation and soil attributes contributing to landscape function score**

Four sub-Interim Biogeographic Regionalisation for Australia (IBRA) regions showed either some loss or significant loss of function (significant loss for the Armraynald Plains and Doomadgee Plains, some loss for the Donors Plateau and Mitchell Gilbert Fans). The Woondoola Plains sub-IBRA was considered stable. RMDC data were insufficient to report for five other IBRAs (Claraville Plains, Gilberton Plateau, Holroyd Plain — Red Plateau, Karumba Plains and Wellesley Islands). AussieGRASS simulation suggested these areas had stable landscape function.

## Sustainable management

### Critical stock forage

#### **AussieGRASS, levels of simulated pasture utilisation and change**

The Donors Plateau sub-IBRA had space- and time-averaged pasture utilisation for the 1991–2005 period considerably above that considered a level of safe utilisation for the Gulf Plains bioregion. Eight of the remaining nine sub-IBRAs were rated marginal for sustainability (ie simulated utilisation was close to, and more likely just above, the safe level). The Wellesley Islands was the one exception where simulated utilisation was well below the threshold.

Utilisation decreased by 2–4% in absolute terms between 1976–1990 and 1991–2005 on three sub-IBRAs (Donors Plateau, Armraynald Plains and Woondoola Plains). This was an encouraging sign for pasture sustainability. There was little change in utilisation elsewhere.

### Plant species richness

There are no suitable data for reporting change in plant species richness.

### Change in woody cover

#### **Statewide Landcover and Trees Study (SLATS) reporting**

Six of the ten sub-IBRAs have substantial woody cover (greater than 70%). In comparison, the Woondoola Plains, Armraynald Plains and Kurumba Plains sub-IBRAs are relatively 'open', with 2003 woody cover levels of 11.15% to 25.30%. There was very little change in woody cover for any sub-IBRA between 1991 and 2003. There is high reliability for reporting change in woody cover.

### Distance from stock water

Based on the locations of stock waterpoints sourced from Geoscience Australia's GEODATA TOPO 250K vector product (Series 3, June 2006), the percentage area within three kilometres of permanent and semi-permanent sources of stock water for each sub-IBRA is:

Karumba Plains (GUP1)	7.1%
Armraynald Plains (GUP2)	42.5%
Woondoola Plains (GUP3)	38.8%
Mitchell — Gilbert Fans (GUP4)	7.5%
Claraville Plains (GUP5)	22.7%
Holroyd Plain — Red Plateau (GUP6)	9.3%
Doomadgee Plains (GUP7)	6.8%
Donors Plateau (GUP8)	37.0%
Gilberton Plateau (GUP9)	10.5%
Wellesley Islands (GUP10)	5.9%

GUP = Gulf Plains

Note: complete sub-IBRA area analysed

Note that this analysis does not include the locations of natural waters, which provide additional sources of water for stock, particularly during and following the wet season. It is not possible to report change in watered area for the 1992–2005 period.

## Weeds

Weeds known to occur in the Gulf Plains bioregion include:

Common name	Scientific name
African boxthorn	<i>Lycium ferocissimum</i>
Athel pine	<i>Tamarix aphylla</i>
Bellyache bush	<i>Jatropha gossypifolia</i>
Calotrope	<i>Calotropis procera</i>
Chinee apple	<i>Zizyphus mauritiana</i>
Giant rats tail grass	<i>Sporobolus natalensis</i> and <i>S. pyramidalis</i>
Hyptis	<i>Hyptis suaveolens</i>
Mesquite	<i>Prosopis</i> spp.
Parkinsonia	<i>Parkinsonia aculeata</i>
Parthenium weed	<i>Parthenium hysterophorus</i>
Prickly acacia	<i>Acacia nilotica</i> subsp. <i>indica</i>
Rubber vine	<i>Cryptostegia grandiflora</i>
<i>Salvinia molesta</i>	<i>Salvinia molesta</i>
Sicklepod	<i>Senna obtusifolia</i> and <i>S. tora</i>
<i>Sida</i> spp.	<i>Sida</i> spp.
Water hyacinth	<i>Eichhornia crassipes</i>

See [www.anra.gov.au](http://www.anra.gov.au) for distribution maps

## Components of total grazing pressure

### Domestic stocking density

Most (93%) of the Gulf Plains bioregion is grazed. Data from the Australian Bureau of Statistics (ABS) showed that stocking density gradually increased from 7% below the 1983–1991 average in 1992 to equal the average in 1998. Stocking density then decreased to 89% of this base in 1999 and increased to 19% above the base in 2000. It then fluctuated at 10–20% above the base until 2003 and increased to 27% above the 1983–1991 average in 2004. The increase from 1999 onwards was probably facilitated by some wetter years. However, it is also likely that the growing live export trade into Southeast Asia boosted the expansion of cattle numbers in the Gulf Plains bioregion in the latter years of reporting. Note that spatial averaging conceals likely variation in stocking density trends across the bioregion. There is also reduced reliability in ABS surveys of stock numbers in years between their full census (1997 and 2001). This is also likely to contribute to variability in stock numbers over time.

### Kangaroos

There are no suitable data for reporting change in kangaroo populations.

### Invasive animals

Invasive animal species known to occur in the Gulf Plains bioregion include:

Common name	Scientific name
Feral pig	<i>Sus scrofa</i>
Fox	<i>Vulpes vulpes</i>
Rabbit	<i>Dryctolagus cuniculus</i>
Wild dog	<i>Canis</i> spp.
Feral cat	<i>Felis cattus</i>
Cane toad	<i>Bufo marinus</i>
Starling	<i>Sturnus vulgaris</i>

See [www.anra.gov.au](http://www.anra.gov.au) for distribution maps

## Products that support reporting of landscape function and sustainable management

### Fire

Moderate proportions (greater than 15%) of the bioregion were burnt in 1997, 2001 and 2004. The annual area burnt in the late dry season (August to December) far exceeded the area burnt earlier in the year in all years between 1997 and 2005. Late dry-season fires are presumed to be more intense.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
% area burnt	15.5	4.6	14.5	9.7	29.3	11.7	12.1	24.9	3.9

The frequency of fire between 1997 and 2005 was moderate to high compared with all rangeland bioregions, with a mean frequency ( $\log_{10}$  transformed) of 0.30.

### Dust

The mean Dust Storm Index value (1992–2005) was 0.76, which was a low value among all rangeland bioregions. Dust levels were slightly higher in the central east and western parts.

## Biodiversity

In Queensland, regional ecosystems are defined by Sattler and Williams (1999) as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. Descriptions of regional ecosystems can be sourced from the Regional Ecosystem Description Database.<sup>1</sup>

There are 84 regional ecosystems described for the Gulf Plains bioregion, one of which is listed as endangered and 17 of which are listed as 'of concern' under the *Queensland Vegetation Management Act 1999*. Five of the listed regional ecosystems are currently represented in the reserve system, but at less than 4% of their pre-clear extent (Accad et al 2006) (Biodiversity

Working Group indicator: Threatened communities; see **Section 7 of Chapter 3** of *Rangelands 2008 — Taking the Pulse*).

In this bioregion, there are (Biodiversity Working Group indicator: Threatened species):

- 6 threatened plant species
- 2 threatened mammal species
- 8 threatened bird species (including one extinct species, the paradise parrot)
- 3 threatened reptile species
- no threatened amphibian or fish species.

There are areas of dense rubber vine in the Gulf Plains bioregion (Biodiversity Working Group indicator: Transformer species).

## Socioeconomic characteristics

### Land use and value

Most (93%) of the Gulf Plains bioregion is grazed. This area has not changed appreciably over the 1992–2005 reporting period.

For Queensland, unimproved rangeland values as at June 2006 were, on average, \$2876 ± \$392/km<sup>2</sup> (values expressed in 2005 dollars). There was a large range in average unimproved value across sub-IBRAs (\$38 to \$12 610/km<sup>2</sup>). It is not possible to report change in land values.

## Key management issues and features

Key features and issues of the Gulf Plains bioregion are:

- Pasture utilisation is increasing in some areas.
- There is a low fire frequency relative to similar areas in the NT and WA which may alter vegetation floristics and structure.
- Woody weeds of national significance are increasing.
- Woodland thickening and an increase of woody species, such as whitewood, have been observed, but have not been formally measured.
- There has been a change in understorey species.

<sup>1</sup> See [http://www.epa.qld.gov.au/nature\\_conservation/biodiversity/regional\\_ecosystems/how\\_to\\_download\\_REDD/](http://www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/how_to_download_REDD/)