



# Gulf Fall and Uplands bioregion

## Description

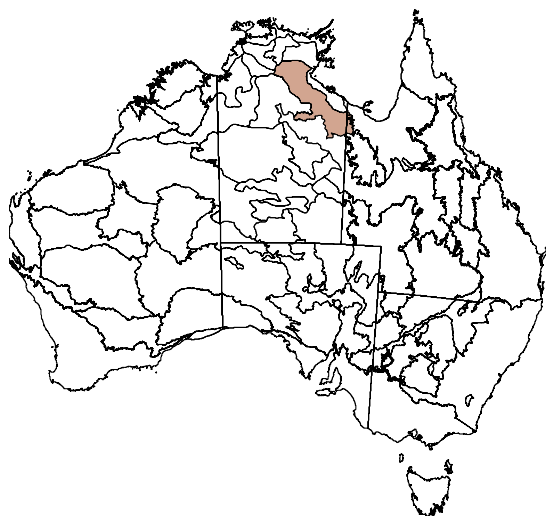
Area: 118 480 km<sup>2</sup>

The landscape of the Gulf Fall and Uplands bioregion includes spectacular gorges, water holes and dissected sandstone plateaus. Vegetation is predominantly eucalypt woodlands over spinifex grasslands. Cattle grazing and mining are the main industries. Other land uses include Aboriginal land and conservation reserves. Major population centres are Borroloola and Ngukurr.

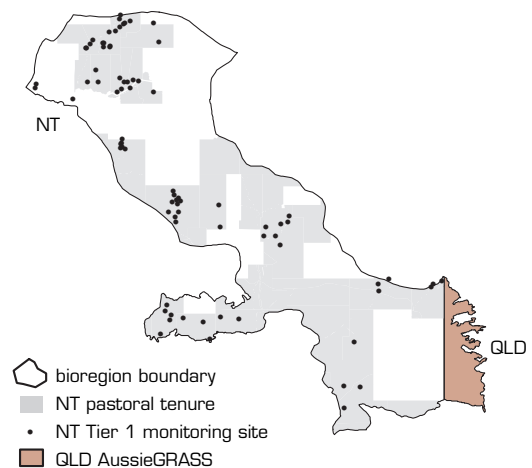
## Location

The Gulf Fall and Uplands bioregion is located in the northern half of the Northern Territory (NT; 95% of the **Interim Biogeographic Regionalisation for Australia — IBRA**), extending slightly into Queensland (5% of area). Figures 1 and 2 show the location of the Gulf Fall and Uplands bioregion, as well as the monitoring sites and pastoral tenure.

**Figure 1 Location of the Gulf Fall and Uplands bioregion**



**Figure 2 Monitoring sites and pastoral tenure**



## Data sources available

Data sources include:

- NT Tier 1 — moderate reliability for reporting change, with a moderate number of sites, although these are patchily distributed; estimated (rather than quantitative) data; and a focus on perennial herbage species
- Queensland — AussieGRASS simulation of pasture growth and utilisation supported by remote sensing (**Multiple Regression Bare Ground Index**, version bi1); this provides moderate reliability, with the whole of the bioregion analysed; simulated results with some ground validation (note that most of the bioregion is in the NT)
- domestic stocking density, which provides moderate reliability
- fire extent, intensity and frequency, which provides high reliability
- dust

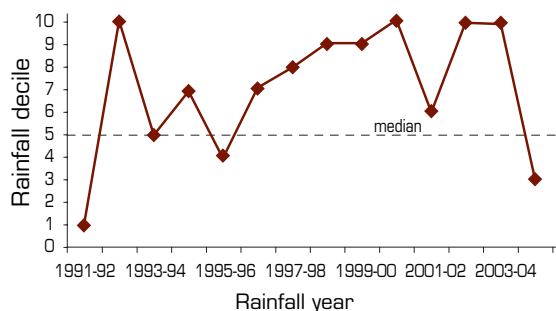


- distance from water
- distribution and relative abundance of invasive animals and weeds
- land use
- land values.

## Climate

The Gulf Fall and Uplands bioregion has a monsoonal climate with much higher rainfall in the north. Spatially averaged median (1890–2005) rainfall is 574 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.

*Seasonal quality*, based on decile rainfall, for the reporting period was variable but generally above average. The year 1991–1992 was particularly dry, while 1992–1993, 2000–2001, 2002–2003 and 2003–2004 were exceptionally wet.

Note that regional averaging of rainfall conceals spatial variability. Some parts of the Gulf Fall and Uplands bioregion may have experienced better *seasonal quality* and others worse during the 1992–2005 period.

## Landscape function

### Northern Territory

**Tier 1, index based on composition (by biomass) and cover of perennial herbage species**

When *seasonal quality* was above average, 8% of sites across the Gulf Fall and Uplands bioregion showed

a decline in the index of landscape function. It is not possible to report change following below-average *seasonal quality*.

<i>Seasonal quality</i>	Number of sites	Percentage of reassessed sites showing:		
		Decline: > 3 decrease in index	No change	Increase: > 3 increase in index
Above average	37	8%	68%	24%
Average	42	26%	64%	10%
Below average	n/a	n/a	n/a	n/a

### Queensland

**AussieGRASS simulation of pasture growth and utilisation**

There was no change in inferred landscape function over the reporting period.

## Sustainable management

### Critical stock forage

#### Northern Territory

**Tier 1, composition (by biomass) of palatable perennial herbage species**

When *seasonal quality* was above average, 15% of sites showed a decline in palatable perennial (2P) herbage species. It is not possible to report change following below-average *seasonal quality*.

<i>Seasonal quality</i>	Number of sites	Percentage of reassessed sites showing:		
		Decline: > 20% decrease in 2P grasses	No change	Increase: > 20% increase in 2P grasses
Above average	95	15%	65%	20%
Average	46	11%	67%	22%
Below average	n/a	n/a	n/a	n/a

## Queensland

There are no data for reporting change in critical stock forage.

## Plant species richness

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

## Change in woody cover

Based on the Australian Greenhouse Office definition and mapping of forest<sup>1</sup>, forest extent decreased slightly in the NT portion of the bioregion (from 0.94% in 1991 to 0.87% in 2004). Using mapping from the Statewide Landcover and Trees Study, there was no change in woody cover in the relatively small Queensland portion of the bioregion: the mapped woody cover was 84.5% in both 1991 and 2003. There was no clearing in the bioregion during this period. (Note that there are differences in definition and method for determining 'forest' and '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 of sub-IBRA area within three kilometres of permanent and semipermanent sources of stock water is:

McArthur — South Nicholson Basins (GFU1, NT and Qld)	3.8% (whole sub-IBRA analysed)
Gulf Fall and Uplands P2 (GFU2, NT)	7.6% (whole sub-IBRA analysed)

GFU = Gulf Fall and Uplands; IBRA = Interim Biogeographic Regionalisation for Australia; NT = Northern Territory; Qld = Queensland

This analysis does not include the locations of natural waters, which provide many sources of water for stock in the bioregion, particularly in the early dry season. It is not possible to report change in watered area for the 1992–2005 period.

## Weeds

Weeds known to occur in the Gulf Fall and Uplands bioregion include:

Common name	Scientific name
<i>Barleria prionitis</i>	<i>Barleria prionitis</i>
Bellyache bush	<i>Jatropha gossypifolia</i>
Chinee apple	<i>Zizyphus mauritiana</i>
Creeping lantana	<i>Lantana montevidensis</i>
Grader grass	<i>Themeda quadrivalvis</i>
Hyptis	<i>Hyptis suaveolens</i>
Mesquite	<i>Prosopis</i> spp.
Mimosa	<i>Mimosa pigra</i>
Mission grass	<i>Pennisetum polystachion</i>
Noogoora burr	<i>Xanthium occidentale</i>
Parkinsonia	<i>Parkinsonia aculeata</i>
Prickly acacia	<i>Acacia nilotica</i> subsp. <i>indica</i>
Sicklepod	<i>Senna obtusifolia</i> and <i>S. tora</i>
Sida spp.	<i>Sida</i> spp.
Snake weed	<i>Stachylarpheta</i> spp.

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

## Components of total grazing pressure

### Domestic stocking density (reporting for the whole bioregion)

A substantial proportion (75%) of the Gulf Fall and Uplands bioregion was grazed between 1992 and 1998, reducing to 67% in 2000. Based on data from the Australian Bureau of Statistics and taking account of this reduced area grazed, stocking density in 1992 was 10% below the average for the 1983–1991 period. Stocking density increased gradually to 1998 when it was 7% above the 1983–1991 base, decreased slightly in 1999 and then rose sharply in 2000 to be 43% above the base. Stocking density then remained between 27% and 41% above the 1983–1991 average until 2004 (latest available data). Some of the increase was probably attributable to generally improved *seasonal quality* between 1995 and 2004 (see Figure 3, above). Note that spatial averaging conceals likely variation in stocking density trends across the bioregion.

<sup>1</sup> See <http://www.greenhouse.gov.au/ncas/reports/tech09.html>

## Kangaroos

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

## Invasive animals

Invasive animal species known to occur in the Gulf Fall and Uplands bioregion include:

Common name	Scientific name
Feral pig	<i>Sus scrofa</i>
Wild dog	<i>Canis spp.</i>
Feral cat	<i>Felis catus</i>
Cane toad	<i>Bufo marinus</i>
Water buffalo	<i>Bubalus bubalis</i>
Donkey	<i>Equus asinus</i>
Horse	<i>Equus caballus</i>

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

### Fire

Fire data report for the whole bioregion. Substantial amounts of the Gulf Fall and Uplands bioregion were burnt in all years between 1997 and 2005, apart from 2003 and 2005. The large areas burnt in 1999, 2001 and 2004 were preceded by wetter years, contributing to probable increased fuel loads.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
% area burnt	25.9	21.8	34.4	24.3	54.1	16.7	9.6	55.0	4.6

The majority of the area burnt each year was in the late dry season (August to December), particularly in 2004. Late dry-season fires are likely to be more intense and damaging to the environment.

Fire frequency during the 1997–2005 period was moderate compared with other bioregions, with a mean frequency ( $\log_{10}$  transformed) of 0.36.

### Dust

Dust data report for the whole bioregion. The mean Dust Storm Index value (1992–2005) at 0.74 was low compared with other rangeland bioregions. Dust levels were higher in the far northwest of the bioregion and were negligible elsewhere.

## Biodiversity

In the Gulf Fall and Uplands bioregion, there are (Biodiversity Working Group indicator: Threatened species; see **Section 7 of Chapter 3** of *Rangelands 2008 — Taking the Pulse*):

- 2 threatened plant species
- 4 threatened mammal species
- 7 threatened bird species
- 1 threatened reptile species
- 1 threatened fish species.

## Socioeconomic characteristics

### Land use and value

Between 1992 and 1998, 75% of the Gulf Fall and Uplands bioregion was grazed; this reduced to 67% in 2000.

In the NT, the unimproved land value of pastoral leases increased considerably between 1991 and 2003, by approximately 30%.

No land value information was provided for Queensland because of the very small number of pastoral leases.

## Key management issues and features

Key features and issues of the Gulf Falls and Uplands bioregion include the following:

### ■ Queensland:

- Across the bioregion, there was woodland thickening, and a low fire frequency.

### ■ NT:

- Major infrastructure developments have occurred in the past 10 years, resulting in increased stock numbers in the bioregion.
- Increased development has led to a reduction in wildfires and lower numbers of feral animals. This has resulted in a general improvement in land condition.

- Aboriginal-held land is being developed and leased as pastoral holdings.
- Despite these improvements, the bioregion remains relatively undeveloped.
- Landscape function and land condition more generally have improved due to better fire management, destocking of some properties and overall infrastructure development, leading to better herd control.
- The unimproved land value of pastoral leases increased considerably between 1991 and 2003, by approximately 30%.