



Desert Uplands bioregion

Description

Area: 68 850 km²

The Desert Uplands bioregion is characterised by upland landforms, which are dominated by sandstone ranges and sand plains. The bioregion is thickly vegetated with eucalypt woodlands and a spinifex understorey, as well as acacia woodlands. Most of the bioregion is under leasehold tenure and is used for cattle grazing and some sheep grazing in the west. Major population centres are Barcaldine and Pentland.

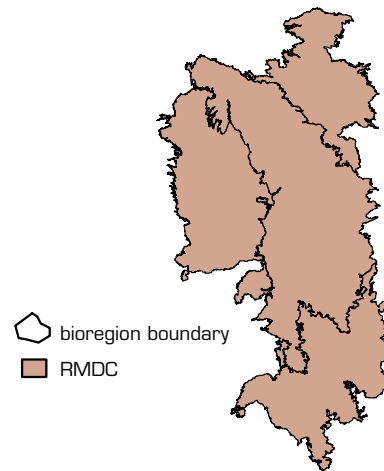
Location

The Desert Uplands bioregion is located in central Queensland (see Figures 1 and 2).

Figure 1 Location of the Desert Uplands bioregion



Figure 2 Monitoring data coverage



Data sources available

Data sources include:

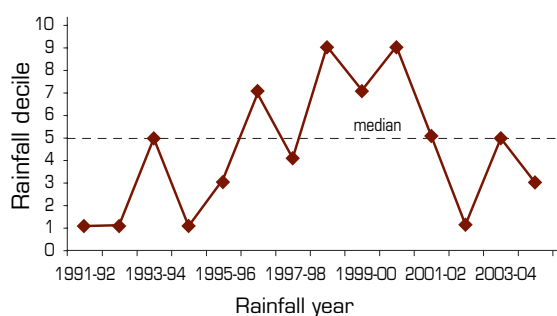
- Rapid Mobile Data Collection (RMDC) supported by AussieGRASS simulation (of pasture growth and utilisation) and remote sensing (**Multiple Regression Bare Ground Index**, version bi1); these data sources provide moderate reliability for reporting change (RMDC — road traverses and visual estimates; 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 Desert Uplands bioregion has a semiarid climate with variable rainfall. Spatially averaged median (1890–2005) rainfall is 456 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 improved from very dry conditions and then declined in later years of the reporting period. There were several very dry years (1991–1992 and 1992–1993, 1994–1995 and 2002–2003) and a wetter period between 1998–1999 and 2000–2001.

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

Landscape function

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

All sub-Interim Biogeographic Regionalisation for Australia (IBRA) regions showed either some or significant loss of function:

- some loss: Cape-Campaspe Plains, Jericho, Prairie — Torrens Creek Alluvials
- significant loss: Alice Tableland.

Sustainable management

Critical stock forage

AussieGRASS, levels of simulated pasture utilisation and change

Data in this section compare the periods 1976–1990 and 1991–2005. The four sub-IBRA regions had simulated space- and time-averaged pasture utilisation of 24–26% for the 1991–2005 period. This is considered marginal for sustaining native pastures in the Desert Uplands bioregion, although areas where buffel grass has successfully established should be able to cope with higher levels of utilisation. Simulated utilisation increased by more than 4% to nearly 10% (in absolute terms) on all sub-IBRAs between 1976–1990 and 1991–2005. This represents relative increases between 20% and 60% (with the largest increases being in the Alice Tableland and Jericho sub-IBRAs. The increased levels of utilisation reflect increases in stock numbers and periods of low pasture production.

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

All sub-IBRAs, particularly the Alice Tableland and Cape-Campaspe Plains, have a high level of woody cover: There was a relatively large reduction in woody cover in the Jericho sub-IBRA between 1991 and 2003, mainly due to clearing. Changes elsewhere were relatively minor (3–6% loss of woody cover). There is high reliability for reporting change in woody cover:

Sub-IBRA	SLATS woody cover		Change 1991–2003
	1991	2003	
Jericho	74.22%	59.93%	–14.30%
Cape-Campaspe Plains	78.77%	73.29%	–5.48%
Prairie — Torrens Creek Alluvials	67.00%	62.77%	–4.23%
Alice Tableland	87.48%	84.15%	–3.33%

IBRA = Interim Biogeographic Regionalisation for Australia;
SLATS = Statewide Landcover and Trees Study

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:

Prairie – Torrens Creek (DEU1)	62.7%
Alice Tableland (DEU2)	41.2%
Cape Campaspe Plains (DEU3)	17.8%
Jericho (DEU4)	63.6%

DEU = Desert Uplands; IBRA = Interim Biogeographic Regionalisation for Australia
Note: complete sub-IBRA area was analysed

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

Weeds

Weeds known to occur in the Desert Uplands bioregion include:

Common name	Scientific name
Chinese apple	<i>Zizyphus mauritiana</i>
Creeping lantana	<i>Lantana montevidensis</i>
Lantana	<i>Lantana camara</i>
Mesquite	<i>Prosopis</i> spp.
Mother of millions	<i>Bryophyllum tubiflorum</i> and hybrids
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>

See www.anra.gov.au for distribution maps

Components of total grazing pressure

Domestic stocking density

Most (94%) of the Desert Uplands bioregion is grazed. Data from the Australian Bureau of Statistics showed that stocking density initially decreased (to

1994), then increased (to 2001) and again decreased in the latter part of the reporting period. The 1992 density was 15% above the average for the 1983–1991 period and decreased to 95% of this base in 1994. Stocking density gradually increased to 15% above the base in 1999, peaked at 38% above base in 2001 and then decreased to 27% above base in 2004. These changes follow the *seasonal quality* trend, although the recent decrease in stocking density appears to have been less than the indicated decline in *seasonal quality*. Note that spatial averaging conceals likely variation in stocking density trends across the bioregion.

Kangaroos

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

Invasive animals

Invasive animal species known to occur in the Desert Uplands bioregion include:

Common name	Scientific name
Feral pig	<i>Sus scrofa</i>
Deer	<i>Cervidae</i> family
Fox	<i>Vulpes vulpes</i>
Rabbit	<i>Dryctolagus cuniculus</i>
Feral cat	<i>Felis catus</i>
Cane toad	<i>Bufo marinus</i>

See www.anra.gov.au for distribution maps

Products that support reporting of landscape function and sustainable management

Fire

Fire was generally insignificant: approximately 3% of the bioregion burnt in 1997, 1998 and 2000, and 5.3% burnt in 2001. The frequency of fire between 1997 and 2005 was low, with a mean frequency (\log_{10} transformed) of 0.03.

Dust

Reported dust levels were low, with the mean Dust Storm Index value (1992–2005) being 0.86. Dust levels were low in the west and negligible in the east of the bioregion.

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.¹

The Desert Uplands bioregion has 77 regional ecosystems mapped. Under the *Queensland Vegetation Management Act 1999*, two ecosystems are listed as endangered and a further 26 are listed as 'of concern'. Seven of the listed regional ecosystems are represented in the reserve system (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):

- 8 threatened plant species
- 3 threatened mammal species (including the western quoll, which is listed as Vulnerable under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), but is extinct from this bioregion)
- 6 threatened bird species
- 4 threatened reptile species
- no threatened amphibian species
- 2 threatened fish species.

A case study (see **Case studies: habitat loss and fragmentation effects on biodiversity in Chapter 3**) has examined how clearing affects biodiversity (Biodiversity Working Group indicator: Habitat loss).

There is a case study (see **Buffel grass, Transformer weeds in Chapter 3**) on how buffel grass transforms habitats (Biodiversity Working Group indicator: Transformers).

Socioeconomic characteristics

Land use and value

Most (94%) of the Desert Uplands bioregion is grazed. This area has not changed appreciably over the 1992–2005 reporting period.

Unimproved rangeland values as at June 2006 were, on average, \$4953 ± \$428/km² (values expressed in 2005 dollars). There was a large range in average unimproved value across sub-IBRAs (\$1183 to \$14031/km²). It is not possible to report change in land values for the 1992–2005 period.

Key management issues and features

Key features and issues of the Desert Uplands bioregion are:

- areas of inappropriate clearing
- reduced fire frequency
- areas of high pasture utilisation and a general trend to higher levels of utilisation in a relatively infertile area
- understorey species change (eg buffel grass, *Aristida* spp. becoming dominant in some areas)
- woodland thickening and significant areas of tree death in the north after the early 1992 drought
- loss of biodiversity.

¹ See http://www.epa.qld.gov.au/nature_conservation/biodiversity/regional_ecosystems/how_to_download_REDD/