



Mount Isa Inlier bioregion

Description

Area: 66 640 km²

The landforms of the Mount Isa Inlier bioregion include rugged hills and mountain ranges separated by undulating valleys. The predominant vegetation is low open woodland over spinifex hummock grassland. The major land use is cattle grazing on pastoral leases. Mining (copper and lead-zinc) is very important to the bioregion's economy, and tourism is expanding. Major population centres are Mount Isa and Cloncurry.

Location

The Mt Isa Inlier bioregion is located in western Queensland with a very small portion (0.3%) extending into the Northern Territory (NT; see Figures 1 and 2).

Figure 1 Location of the Mount Isa Inlier bioregion

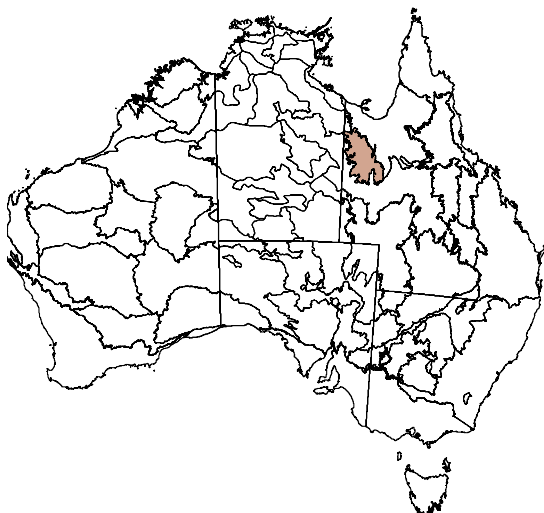
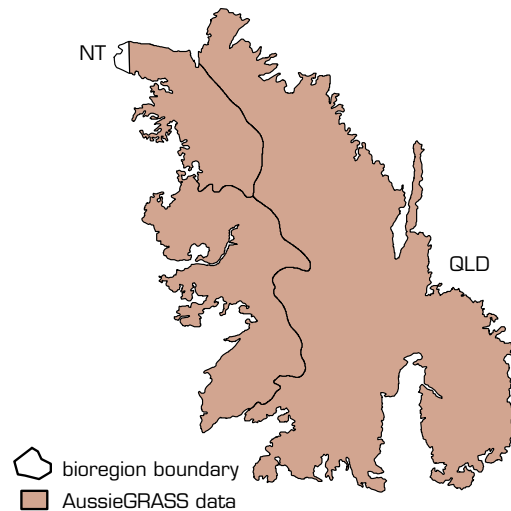


Figure 2 Monitoring data coverage



Data sources available

Data sources include:

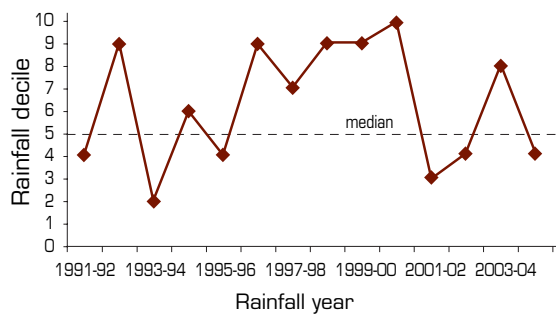
- AussieGRASS simulation (of pasture growth and utilisation) and remote sensing (**Multiple Regression Bare Ground Index**, version bi I); these data sources provide low to moderate reliability for reporting change (entire rangelands, simulated results with some ground validation rather than direct measurement or observation)
- 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 Mount Isa Inlier bioregion has a hot and semi-arid climate with summer-dominant rainfall. Spatially averaged median (1890–2005) rainfall is 388 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 over the reporting period but few yearly rainfalls were much below the long-term median. The years 1996–1997 to 2000–2001 were particularly wet.

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

Landscape function

AussieGRASS simulation suggests that landscape function increased across the three Queensland sub-Interim Biogeographic Regionalisation for Australia (IBRA) of the Mount Isa Inlier bioregion.

Sustainable management

Critical stock forage

AussieGRASS, levels of simulated pasture utilisation and change

Space- and time-averaged levels of simulated pasture utilisation for the 1991–2005 period were considerably above the specified safe level for the Mount Isa Inlier and Southwestern Plateaus and Floodouts sub-IBRAs.

Utilisation was close to the safe threshold for the Thornton sub-IBRA.

Utilisation decreased by 4% (absolute, and 19% in relative terms) for the Southwestern Plateaus and Floodouts sub-IBRA between 1976–1990 and 1991–2005. Further decreases are considered necessary to achieve a sustainable level of grazing. A lesser decrease occurred in the Thornton sub-IBRA (2% in absolute terms translating to a 14% relative decrease). There was no change in simulated levels of utilisation across the two time periods for the Mount Isa Inlier sub-IBRA.

Plant species richness

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

Change in woody cover

Statewide Landcover and Trees Study reporting

All sub-IBRAs have moderate levels of woody cover (2003: Mount Isa Inlier, 51.5%; Thornton, 46.5%; Southwestern Plateaus and Floodouts, 37.0%). There were very small decreases (of less than or equal to 0.05%) in woody cover in all regions 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:

Southwestern Plateaus and Floodouts (MII1)	23.4%
Thornton (MII2)	15.1%
Mount Isa Inlier (MII3)	17.5%

MII = Mount Isa Inlier

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 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 Mount Isa Inlier bioregion include:

Common name	Scientific name
Athel pine	<i>Tamarix aphylla</i>
Bellyache bush	<i>Jatropha gossypifolia</i>
Calotrope	<i>Calotropis procera</i>
Chinee apple	<i>Zizyphus mauritiana</i>
Creeping lantana	<i>Lantana montevidensis</i>
Lantana	<i>Lantana camara</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>
Water hyacinth	<i>Eichhornia crassipes</i>

See www.anra.gov.au for distribution maps

Components of total grazing pressure

Domestic stocking density

This section reports for the whole bioregion, although the results relate almost exclusively to Queensland.

Most (94%) of the Mount Isa Inlier bioregion is grazed. Stocking density increased consistently between 1992 and 2004 based on data sourced from the Australian Bureau of Statistics. The 1992 density was 5% above the average for the 1983–1991 period. Stocking density increased to 52% above this base in 2004. There were temporary dips in this overall increase in 1999 and 2003. Wetter years between 1996 and 2001 likely contributed to increased cattle numbers, and the reduced stocking density in 2003 probably reflected lower rainfall in 2001–2002 and 2002–2003. However, *seasonal quality* alone does not explain the strong growth in cattle numbers. It is likely that property development and herd improvement associated with the national Brucellosis and Tuberculosis Eradication Campaign, the expanding live-trade market into Southeast Asia and good cattle prices generally contributed to the increased stocking density.

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 Mount Isa Inlier bioregion include:

Common name	Scientific name
Feral pig	<i>Sus scrofa</i>
Fox	<i>Vulpes vulpes</i>
Rabbit	<i>Drycolagus cuniculus</i>
Wild dog	<i>Canis</i> spp.
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

This section reports for the whole bioregion, although the results relate almost exclusively to Queensland. Fire was a relatively minor feature of the bioregion between 1997 and 2005, apart from 2001 when 19.3% of the bioregion burnt. Increased fire activity in that year probably resulted from increased pasture growth and fuel accumulation in the preceding wetter period (see Figure 3, above). The largest areas burnt each year in the late dry season (between August and December), suggesting that most fires were potentially quite intense.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
% area burnt	1.2	6.6	4.4	2.4	19.3	2.5	1.1	3.4	0.8

The frequency of fire during the reporting period was moderate compared with all rangeland bioregions, with a mean frequency (\log_{10} transformed) of 0.13.

Dust

Although reporting is for the whole bioregion, results relate almost exclusively to the Queensland portion of the bioregion. The mean Dust Storm Index value (1992–2005) was 1.56, which was a relatively low value compared with all rangeland bioregions. Mapped dust levels decreased from south to north across 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

There are 43 regional ecosystems described for the Mt Isa Inlier bioregion (including the Queensland portion of the Gulf Fall and Uplands). Eleven of these are listed as 'of concern' under the *Queensland Vegetation Management Act 1999*, seven of which are currently represented in the reserve system. Three listed regional ecosystems have more than 10% of their pre-clear extent reserved, and four have less than 10% of their pre-clear extent reserved (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):

- no threatened plant species
- 1 threatened mammal species (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)

- 4 threatened bird species
- 1 threatened reptile species
- no threatened amphibian or fish species.

Under the *Queensland Nature Conservation Act 1994*, the grass wren is listed as a threatened species in the bioregion.

Socioeconomic characteristics

Land use and value

Most (94%) of the Mount Isa Inlier 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, \$16 246 ± \$11 424/km² (values expressed in 2005 dollars). There was a very large range in average unimproved value across sub-IBRAs (\$302 to \$19 074/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 Mt Isa Inlier bioregion are:

- high utilisation of valley floors (where Cloncurry buffel grass grows well) that may potentially expose the soils to increased erosion hazard
- woodland thickening
- low fire frequency.

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