



Daly Basin bioregion

Description

Area: 20 922 km²

The Daly Basin bioregion includes gently undulating plains with scattered low plateau remnants and some rocky hills and gorges along its western edge. The dominant vegetation is Darwin woollybutt and stringybark open forests. Land uses include extensive grazing, intensive horticulture, and tourism. There are also areas of Aboriginal land. The major population centre is Katherine.

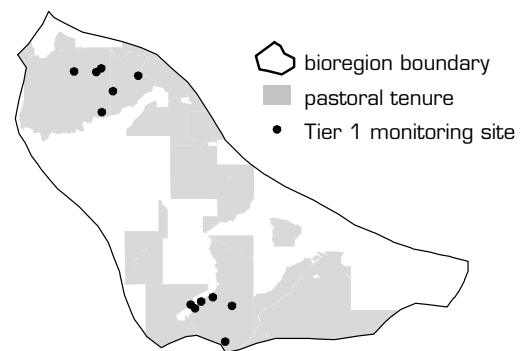
Location

The Daly Basin bioregion is located in the top end of the Northern Territory (NT; see Figures 1 and 2).

Figure 1 Location of the Daly Basin bioregion



Figure 2 Monitoring sites and pastoral tenure



Data sources available

Data sources include:

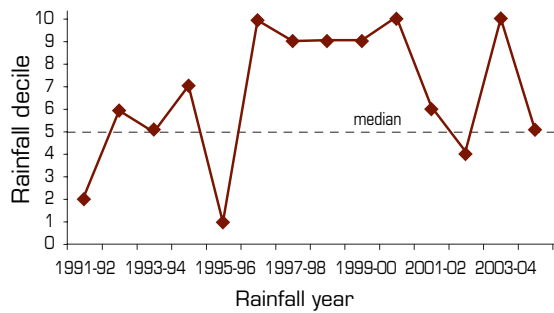
- NT Tier 1, which has low reliability for reporting change, with a small number of patchily distributed sites, estimated (rather than quantitative) data, but a focus on perennial herbage species
- domestic stocking density, which provides moderate reliability
- fire extent, intensity and frequency, which provides high reliability
- dust
- distance from water
- distribution and relative abundance of invasive animals and weeds
- land use
- land values.



Climate

The Daly Basin bioregion has a tropical monsoonal climate with distinct wet and dry seasons. Spatially averaged median (1890–2005) rainfall is 1021 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.

The Daly Basin bioregion had much greater than average rainfall between 1996–1997 and 2001–2002, and again in 2003–2004. This meant that the bioregion experienced generally good *seasonal quality* through the reporting period. The years 1991–1992 and 1995–1996 were notably dry.

The relatively small size of this bioregion means that regional averaging of rainfall is less likely to conceal spatial variability compared with other bioregions.

Landscape function

Index based on composition (by biomass) and cover of perennial herbage species

Fewer than 10 sites were assessed for above- and below-average *seasonal quality*. This is insufficient to reliably report change.

Sustainable management

Critical stock forage

When *seasonal quality* was above average, 8% of sites showed a decline in composition (by biomass) of **palatable perennial** (2P) grasses. 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	12	8%	92%	0%
Average	10	n/a	n/a	n/a
Below average	5	n/a	n/a	n/a

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 extent¹, forest cover increased appreciably between 1991 (6.52% of bioregion area) and 2004 (15.88%, increase of 9.36%). There is complete Landsat coverage for reporting this result.

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), 9.0% of the Daly Basin bioregion (and Daly Basin sub-**Interim Biogeographic Regionalisation for Australia (IBRA)**) is within three kilometres of permanent and semipermanent sources of stock water:

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

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

Weeds

Weeds known to occur in the Daly Basin 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>
Hymenachne	<i>Hymenachne amplexicaulis</i>
Hyptis	<i>Hyptis suaveolens</i>
Lantana	<i>Lantana camara</i>
Mexican poppy	<i>Argemone ochroleuca</i>
Mimosa	<i>Mimosa pigra</i>
Mission grass	<i>Pennisetum polystachion</i>
Noogoora burr	<i>Xanthium occidentale</i>
Parkinsonia	<i>Parkinsonia aculeata</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.
Snake weed	<i>Stachylarpheta</i> spp.

See www.anra.gov.au for distribution maps

Components of total grazing pressure

Domestic stocking density

Approximately 78% of the Daly Basin bioregion is grazed. Data from the Australian Bureau of Statistics showed that domestic stocking density between 1992 and 1995 was approximately 15% above the 1983–1991 average. The density then increased sharply over the next two years to be 46% above the 1983–1991 base. Stocking density held at this level until 2000 and then decreased to be approximately 35% above the base in 2001, 2003 and 2004. Stock numbers have increased over recent years due to further pastoral developments of some properties and government land releases in the Douglas–Daly bioregion for mixed farming purposes, most of which incorporate livestock grazing. Many of the older farms in the Douglas–Daly bioregion have undergone significant infrastructure development in the past few years. Wetter years in the late 1990s also contributed to herd buildup.

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 Daly Basin bioregion include:

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

See www.anra.gov.au for distribution maps

Products that support reporting of landscape function and sustainable management

Fire

Large areas of the Daly Basin bioregion were burnt every year between 1997 and 2005. Peak fire extents in 1999 and 2002 were probably partly attributable to above-average rainfall in preceding wet seasons.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
% area burnt	49.4	46.5	51.7	45.5	45.5	55.0	40.0	44.9	36.6

The proportional areas burnt with less intense (early dry-season) and more intense (late dry-season) fires varied. In 1997 and 2004, late dry-season fires were predominant, while in 1998, 1999, 2002 and 2005, early dry-season fires were more extensive. For other years (2000, 2001 and 2003), approximately equal areas burnt in the early and late dry season.

The frequency of fire between 1997 and 2005 was very high relative to other rangeland bioregions, with a mean frequency (\log_{10} transformed) of 0.65.

Dust

The mean Dust Storm Index value (1992–2005) was 0.53, which is very low among all rangeland bioregions. Dust levels were negligible in the east and slight in the west.

Biodiversity

There has been a relatively large amount of fauna and flora survey work in this bioregion, including the development of a regional conservation plan.

By 2005, there were 247 bird species recorded (Biodiversity Working Group indicator: Fauna surveys; see **Section 7 of Chapter 3** of *Rangelands 2008 — Taking the Pulse*) and approximately 1500 plant taxa recorded (Biodiversity Working Group indicator: Flora surveys).

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

- 1 threatened mammal species
- 1 threatened fish species
- 3 threatened bird species.

Socioeconomic characteristics

Land use and value

Approximately 78% of the Daly Basin bioregion is grazed. This area has not changed appreciably over the 1992–2005 reporting period.

The unimproved land value of pastoral leases increased by approximately 50% between 1991 and 2003.

Key management issues and features

Significant work has been done in the Daly Basin bioregion to address track and fence-line erosion in the bioregion, with positive results.