



Davenport Murchison Ranges bioregion

Description

Area: 58 050 km²

The Davenport Murchison Ranges bioregion is characterised by a chain of rocky ranges surrounded by lowland plains. Vegetation is predominantly eucalypt low, open woodland and acacia-sparse shrubland over hummock grassland. Land tenure includes Aboriginal land, pastoral leases and the Davenport Murchison National Park. Mining for gold production occurs at Tennant Creek. Major population centres are Tennant Creek and Warrego.

Location

The Davenport Murchison Ranges bioregion is located in the central Northern Territory (NT; see Figures 1 and 2).

Figure 1 Location of the Davenport Murchison Ranges bioregion

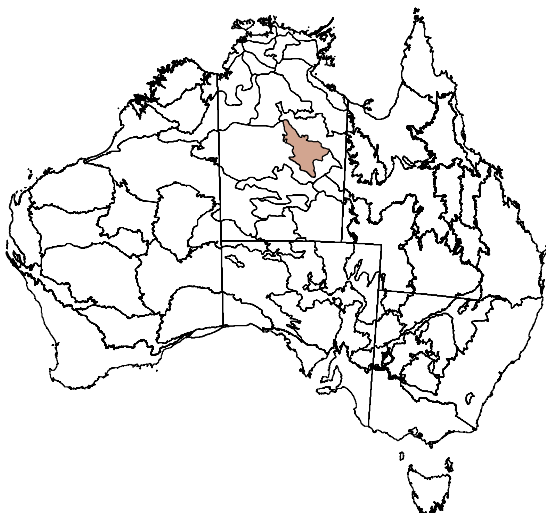
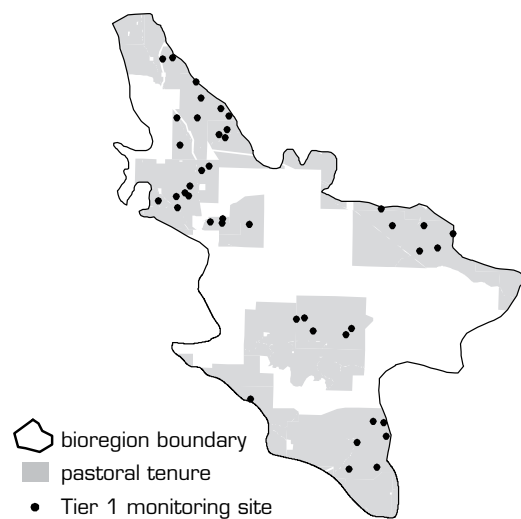


Figure 2 Monitoring sites and pastoral tenure



Data sources available

Data sources include:

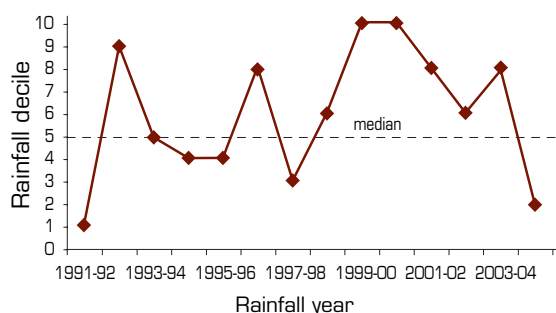
- NT Tier 1, which provides moderate reliability for reporting change, with a moderate number of sites, although these have a patchy distribution; estimated (rather than quantitative) data; and a focus on perennial herbage species
- domestic stocking density, which provides moderate reliability
- fire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



Climate

The Davenport Murchison Ranges bioregion has a semi-arid to subtropical climate. Most rainfall occurs in summer and is higher in the north of the bioregion. Spatially averaged median (1890–2005) rainfall is 289 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.

Rainfall was highly variable throughout the reporting period. The years 1991–1992 and 2004–2005 were particularly dry, while the years 1999–2000 and 2000–2001 were exceptionally wet.

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

Landscape function

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

Within the Davenport Murchison Ranges bioregion, 10% of sites showed a decline when *seasonal quality* was above average. Insufficient sites were reassessed following below-average *seasonal quality* to reliably report change at this time.

<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	29	10%	59%	31%
Average	8	n/a	n/a	n/a
Below average	6	n/a	n/a	n/a

Sustainable management

Critical stock forage

Across the bioregion, 6% of sites showed a decline in composition (by biomass) of **palatable perennial** (2P) herbage species when *seasonal quality* was above average. 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	32	6%	81%	13%
Average	10	10%	60%	30%
Below average	7	n/a	n/a	n/a

Plant species richness

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

Change in woody cover

Forest extent is negligible based on the Australian Greenhouse Office definition and mapping¹: forest covered 0.01% of the bioregion area in 1991 and 0.00% in 2004. There was only partial Landsat coverage of the bioregion (about 50%) in 1991 (although there was total coverage in 2004).

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

Distance from stock water

Based on the locations of stock waterpoints sourced from the NT Government's mapping of lease infrastructure, the percentage area of pastoral lease country within three kilometres of permanent and semipermanent sources of stock water for each sub-Interim Biogeographic Regionalisation for Australia (IBRA) is:

Davenport Murchison Ranges P1 (DMR1)	17.3% (26.8% of sub-IBRA analysed)
Davenport Murchison Ranges P2 (DMR2)	37.3% (24.9% of sub-IBRA analysed)
Davenport Murchison Ranges P3 (DMR3)	18.8% (14.4% of sub-IBRA analysed)

DMR = Davenport Murchison Ranges; IBRA = Interim Biogeographic Regionalisation for Australia

Note that this analysis does not include the locations of natural waters. These can provide significant additional sources of water for stock, particularly after substantial rainfall. It is not possible to report change in watered area for the 1992–2005 period.

Weeds

Weeds known to occur in the Davenport Murchison Ranges bioregion include:

Common name	Scientific name
Athel pine	<i>Tamarix aphylla</i>
Hyptis	<i>Hyptis suaveolens</i>
Parkinsonia	<i>Parkinsonia aculeata</i>
Prickly acacia	<i>Acacia nilotica</i> subsp. <i>indica</i>

See www.anra.gov.au for distribution maps

Components of total grazing pressure

Domestic stocking density

Approximately 57% of the Davenport Murchison Ranges bioregion is grazed. Data from the Australian Bureau of Statistics showed that domestic stocking density fluctuated within 10% above the 1983–1991 average between 1992 and 1995. Stocking density then progressively increased over the next two years (to 23% above the base in 1997), stabilised until 2000 and then further increased to 2002 (38%

above the 1983–1991 average). Stocking density then declined slightly in 2003 and remained the same in 2004 (30% above that for 1983–1991). Increased stocking density over the 1992–2004 period was probably facilitated by wetter years, particularly in the middle and latter part of the reporting period (see Figure 3, above). It may have also partly resulted from improved herd control following the national Brucellosis and Tuberculosis Eradication Campaign. The stocking record does not extend sufficiently far to determine if stocking density declined (and to what extent) with much poorer *seasonal quality* in 2004–2005. 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 Davenport Murchison Ranges bioregion include:

Common name	Scientific name
Fox	<i>Vulpes vulpes</i>
Wild dog	<i>Canis</i> spp.
Feral cat	<i>Felis catus</i>
Donkey	<i>Equus asinus</i>
Horse	<i>Equus caballus</i>

See www.anra.gov.au for distribution maps.

Products that support reporting of landscape function and sustainable management

Fire

Large areas of the bioregion were burnt in 2000 and 2001, while fires were less extensive in 2002 and 2004. These peaks in fire activity are related to antecedent high rainfall. Most areas were burnt between April and November of each year, suggesting that these fires were less intense than if they had burnt in the summer months.

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005
% area burnt	0.9	1.6	0.9	30.7	44.1	11.5	2.7	16.9	0.0

Fire frequency between 1997 and 2005 was low compared with all rangeland bioregions, with a mean frequency (\log_{10} transformed) of 0.12.

Dust

The mean Dust Storm Index value (1992–2005) was 1.43, which is low when compared with all rangeland bioregions. Dust distribution was fairly uniform throughout the bioregion.

Biodiversity

In this bioregion, there are 10 threatened mammal species, including 2 extinct species (Biodiversity Working Group indicator: Threatened species; see **Section 7 of Chapter 3** of *Rangelands 2008 — Taking the Pulse*).

There is a very low density of flora and fauna records in much of this bioregion.

Socioeconomic characteristics

Land use and value

Approximately 57% of the Davenport Murchison Ranges bioregion is grazed (ie occupied as pastoral leasehold). This area has not changed appreciably over the 1992–2005 reporting period.

Key management issues and features

Key features and issues of the Davenport Murchison Ranges bioregion are as follows:

- Fire and, specifically, lack of coordination across the bioregion leads to extensive wildfires. This was particularly the case in 2001.
- Feral animals, particularly donkeys and horses, occur in large populations across all tenures, most notably throughout the eastern portion of the bioregion.
- Parkinsonia is becoming a problem along some rivers and creeks flowing north from the Davenport Range.
- The conservation estate includes the Devils Marbles and the proposed Davenport Range National Park.