



NVIS Fact sheet MVG 20 – Hummock grasslands

Australia's native vegetation is a rich and fundamental element of our natural heritage. It binds and nourishes our ancient soils; shelters and sustains wildlife, protects streams, wetlands, estuaries, and coastlines; and absorbs carbon dioxide while emitting oxygen. The National Vegetation Information System (NVIS) has been developed and maintained by all Australian governments to provide a national picture that captures and explains the broad diversity of our native vegetation.

This is part of a series of fact sheets which the Australian Government developed based on NVIS Version 4.2 data to provide detailed descriptions of the major vegetation groups (MVGs) and other MVG types. The series is comprised of a fact sheet for each of the 25 MVGs to inform their use by planners and policy makers. An additional eight MVGs are available outlining other MVG types.

For more information on these fact sheets, including its limitations and caveats related to its use, please see: 'Introduction to the Major Vegetation Group (MVG) fact sheets'.

Overview

Typically, vegetation areas classified under MVG 20 – Hummock grasslands:

- are characterised by an open groundcover of spiny hummocks formed by grasses in the genus *Triodia*
- are a uniquely Australian evergreen perennial growth form and grow as mounds up to one m tall. Also known as spinifex or porcupine grasses, they should not be confused with *Spinifex* spp. of coastal areas
- are separated by matrixes that are mostly bare, except for scattered shrubs, but may be populated with ephemeral herbs and grasses after substantial rain events
- comprise spinifex species that vary in their time of flowering, they tend to flower *en masse* during regular masting events apparently triggered by antecedent rain
- have scattered acacias or eucalypts that often emerge above the prominent hummock layer, while areas of hummock grass devoid of emergent trees or shrubs are relatively limited
- provide shelter for a great diversity of reptiles and small marsupials in inland Australia
- are among the most fire-prone desert ecosystems in the world
- are the most widely distributed biome on the Australian continent, occurring throughout the central and western deserts.

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Hummock grassland (*Triodia basedoweii*, *Triodia pungens*), south-west of Alice Springs, NT (Photo: T. Rosling)

Facts and figures

Major Vegetation Group	MVG 20 - Hummock grasslands
Major Vegetation Subgroups	33. Hummock grasslands
(number of NVIS descriptions)	
Typical NVIS structural formations	Hummock grassland with a range of covers and heights. May have sparse tree/
	shrub cover
Number of IBRA regions	43
Most extensive in IBRA region	Great Sandy Desert (WA and NT)
(Est. pre-1750 and Present)	
Estimated pre-1750 extent (km ²)	1 373 492
Present extent (km ²)	1 372 841
Area protected (km ²)	392 779

Structure and physiognomy

- Dominated by perennial hummock-forming grasses, typically covering about one-third of the ground surface.
- All hummock grasses have characteristically spikey leaves and exhibit low (<one m) domed, annular or mat-like growth forms.
- Hummocks develop through profuse divaricate branching of grass culms, with leaves becoming hardened with sclerophyll tissues, in-rolled and sharp-tipped to form rigid needles.
- Often with emergent trees or shrubs with a foliage of cover <10 per cent.
- In northern arid regions summer rainfall predominates and the spinifex landscapes are often punctuated by *Acacia, Corymbia* and *Eucalyptus* woodland or infiltrated by drier riparian systems.

- In the southern arid regions winter rainfall becomes dominant and hummock grasslands are replaced by mallee woodlands (MVG14).
- Density, height and form of hummocks, and composition of co-occurring species, depend on fire regimes and time since last fire. After fire, hummocks develop from resprouting rhizomes or seedlings and reach maximum development as domes at 20 - 30 years of age. The centre of domes subsequently dies and continuing expansion of the margin leads to annular growth forms (rings) that decline in height, cover and eventually fragment.
- Biological soil crusts consisting of cyanobacteria, lichens and mosses often occur on plains.



Hummock grassland (with scattered *Eucalyptus terminalis; Triodia basedowii; Acacia ligulata, Senna nemophila*) north-west of Warri Gate, Qld (Photo: M. Fagg)

Indicative flora

- Hummock grasslands across Australia are dominated by the grass genus *Triodia* (Spinifex).
- Widespread hummock-forming species include *Triodia* basedowii, *T. brizoides*, *T. irritans*, *T. pungens*, *T. scariosa*, *T. schinzii* and *T. wiseana*.
- The cane grass *Zygochloa paradoxa* co-occurs with *Triodia* in eastern sandy landscapes, such as Simpson Desert, Strzelecki Desert and Tirari Desert, while ephemeral speargrasses (*Austrostipa* spp.) occur extensively after rain.
- Scattered emergent trees include species of *Corymbia*, *Acacia* and *Eucalyptus* in the northern arid regions and *Eucalyptus* (mallee) in the southern arid region.
- Shrubs and small trees that occur at low densities include species of *Acacia, Hakea, Grevillea, Atalaya, Owenia, Gossypium, Crotalaria, Calytrix, Thryptomene* and *Allocasuarina*.
- A diversity of ephemeral herbs, forbs and grasses in families *Apiaceae*, *Asteraceae*, *Brassicaceae*, *Portulacaceae* and *Zygophyllaceae* lie dormant in soil seed banks until stimulated to germinate after significant rains.
- Species composition varies along a climatic gradient from tropical and subtropical latitudes with summer-dominant rainfall to temperate latitudes with a seasonal or slightly winter-dominant rainfall. Ancestral species such as *T. irritans* and *T. scariosa* dominate the south, while *T. basedowii*, *T. brizoides*, *T. longiceps*, *T. pungens*, *T. schinzii* and *T. wiseana* dominate Hummock grasslands across northern and central Australia.

Environment

- Occur where temperatures are extreme and annual rainfall varies from 150 mm to 350 mm.
- Restricted to arid and semi-arid climatic regions, although some species of *Triodia* extend to more humid regions within other MVGs.
- Hummock grasslands occur on extensive, deep and nutrient poor sandplains, as well as rocky ranges and gibber plains, clayey sands, saline paleodrainage lines or limestone.

Geography

- Occur in Western Australia, Northern Territory, Queensland, South Australia and a small area of NSW. They are the largest MVG in Western Australia (816 120 km²).
- Soils are sandy or skeletal on flat, undulating or hilly terrain from near coastal limestone islands (e.g. Barrow Island in Western Australia) to extensive inland sandy plains in semi-arid and arid areas of Australia.
- Support a large range of species, partly as a result of the geographical range and partly as a result of the variation in soils and site conditions.

The below image outlines the location of this MVG group in Australia.



Change

- Approximately 0.05 per cent (650 km²) cleared since European settlement.
- Generally, hummock grasslands have not been cleared.
- Seasonal conditions (including extremes such as drought and cyclonic events) and land management practices.
- Altered fire regimes.
- Grazing by domestic stock, mostly cattle and by feral animals.
- Soil erosion as a result of soil crust destruction by hard hoof animals.

List of key management issues

- Appropriate fire regimes.
- Weed control (e.g. aggressive weeds such as Buffel Grass, Mesquite, Mimosa Bush).
- Soil erosion.
- Total grazing pressure from domestic, feral and native animals, especially in times of drought and around watering points.
- Impacts of climate change.
- Long-term monitoring to inform future management strategies.

Key values

- Biodiversity including a variety of species and communities.
- Desert fauna habitat.
- Soil stabilizer in arid areas.
- Ecotourism including bushwalking and landscape features.



Hummock grassland associated with stony landscapes, Kimberley, WA (Photo: M. Fagg)

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Data sources

Interim Biogeographic Regionalisation for Australia (IBRA), Version 7.

National Vegetation Information System, Version 4.2

Collaborative Australian Protected Areas Database – CAPAD 2014 – Terrestrial.

Notes

- Hummock grasses are also present as the understorey of other MVG's in the arid and semi-arid zones. These vegetation types have been assigned to other MVG's, based on the dominant overstorey structure and composition.
- The area protected has more than doubled in the last 10 years.

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