Australian Government
Department of the Environment and Energy

NVIS Fact sheet
MVG 12 – Tropical eucalypt woodlands/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 12 – Tropical eucalypt woodlands/grasslands:

- are also known as tropical savannas
- contain the so-called tall bunch-grass (Beard et al. 2013) savanna woodlands and tropical woodlands of far north Western Australia, and related eucalypt woodland and open woodland communities in the Northern Territory and in far north Queensland, including Cape York Peninsula
- comprise dominant eucalypts include species of *Corymbia* and *Eucalyptus*, notably the subgenera *Fibridia* and *Leprolaena*, but the tree canopy also includes a range of tropical non-eucalypt genera
- have trees and shrubs that are dry-season deciduous, with even some eucalypts exhibiting semi-deciduous leaf phenology
- are typified by a suite of annual C4 grasses (notably *Sorghum* species) but is replaced by woodlands with hummock grass understoreys as mean annual rainfall declines or on more stony sites
- are seasonally fire-prone due to curing of the annual grasses during the dry monsoonal winters
- are an evolutionarily recent biome thought to have assembled within the last five to 10 million years
- are used extensively for rangeland beef production.

(Banner Photo) *Eucalyptus tetrodonta* (Darwin stringybark) woodland, annual *Sorghum* spp. grassland, NT (Photo: D. Napier)

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Facts and figures

Major Vegetation Group	MVG 12 - Tropical eucalypt woodlands/ grasslands
Major Vegetation Subgroups	7. Tropical Eucalyptus open forests and woodlands with a tall annual grassy understorey
Typical NVIS structural formations	Open Forest (mid, low) Woodland (mid, low) Open Woodlands (mid, low) Tussock grassland (mid)
Number of IBRA regions	16
Most extensive in IBRA region **(Est. pre-1750 and present)**	Northern Kimberley (WA)
Estimated pre-1750 extent (km2)	138 543
Present extent (km2)	135 728
Area protected (km2)	47 760

Structure and physiognomy

- Consist of an open-tree layer with a continuous grassy-ground layer and are characterised by:
  - eucalypt-dominated woodland and open woodland, transitioning to savannah open forest as rainfall increases;
  - various non-eucalypt genera in the tree canopy stratum or subcanopy stratum; and
  - understorey composed of a largely continuous cover of tussock grasses exhibiting the C4 photosynthetic pathway, a diversity of other herbaceous species and a variable shrub layer.
- Most types of this MVG are dominated by *Eucalyptus* species. Broad leaved, pan tropic trees and shrubs may occur in the upper-mid storeys and may form the tree stratum of some savannas.
- Some broad-leaved taxa and some eucalypts may be semi-deciduous or wholly deciduous in the monsoonal dry season.
- Many of the grasses have annual life cycles, although some are perennial.
- In drier areas there may be mosaics of wooded areas with open patches of tall savanna grassland.
- Treeless grasslands occurring on extensive areas of heavy clay soils, or in sites of impeded drainage are assigned to MVG 19.

Tropical eucalypt woodlands/grasslands (*Erythrophleum chlorostachys; Eucalyptus tectifica; Sorghum intrans*) NT (Photo: D. Napier)

Indicative flora

- Tree layer is dominated by eucalypt genera *Eucalyptus* (subgenera *Fibridia* and *Leprolaena*, with *Symphyomyrtus* section *Adnataria* becoming important in northern Queensland) and *Corymbia* (section *Rufaria*) usually with two or three species occurring in various combinations. Widespread species include *E. tectifica* (Darwin box), *E. tetrodonta* (Darwin stringybark), *E. megasepala, E. miniata, E. phoenicea, C. dichromophloia, C. foelscheana, C. latifolia, C. flavescens, C. polycarpa, C. nesophila, C. clarksoniana, C. grandifolia, C. bleeseri and C. ferruginea*.
- Non eucalypt genera may be prominent in the tree canopy or subcanopy. Widespread species include *Brachychiton diversifolius*, *Erythrophleum chlorostachys*, *Lysiphyllum cunninghamii*, *Callitris intratropica*, *Brachychiton diversifolius* and various species of *Acacia*, *Alphitonia*, *Livistona*, *Melaleuca*, *Petalostigma* and *Terminalia*. *Adansonia gregorii* (boab) may be prominent in parts of the southern Kimberley and Victoria River region.
- The understorey includes scattered shrubs from any of the above genera, as well as species of *Cochlospermum*, *Grevillea*, *Persoonia*, *Calytrix*, *Planchonia*, *Jacksonia* and *Buchanania obovata*.
- Grass species dominate the ground layer and include species of *Sorghum*, *Schizachyrium*, *Chrysopogon*, *Themeda*, *Heteropogon*, *Sehima*, *Astrebla*, *Dichanthium*, *Iseilema*, *Aristida*, *Panicum*, *Scleria*, *Digitaria* and *Thaumastochloa*. Many of these species have annual life cycles and all have C4 photosynthetic pathways. Triodia species may be present in localised stony sites but is rarely dominant over the tussock grasses.
- Species composition varies considerably from east to west and with the rainfall gradient from north to south.

Environment

- Tropical climates with highly seasonal, monsoonal, summer rainfall with mean annual rainfall generally exceeding 600 mm.
- Where mean annual rainfall exceeds about 900 mm, MVG 12 intergrades with more mesic forested savannas assigned to MVG 4. To the south, where mean annual rainfall is less than 900 mm MVG 12 is gradually replaced by more open semi-arid savannas (MVG 11), that lack many of the annual grasses and characteristic eucalypt species.
- Along with water availability, nutrients and herbivory, fire regimes play a critical role in regulating the floristic composition, vegetation structure, function and dynamics of savanna systems. Vegetation responses vary with the timing of fires in early, mid or late dry season, and determine fire intensity due to increasing levels of grass curing and flammability, which increases as the dry season progresses.
- Occurs on flat lowland plains, escarpments, slopes and plateaux of lateritic stony country and outwash at the base of slopes and plateaux.
- Substrates vary from deep sandy alluvial and colluvial loams, basalt, residual sandstone and metasediments with shallow rudisols.

Tropical eucalypt woodlands, Kakadu National Park, NT (Photo: B. Pellow).

Geography

- Principally found across monsoonal and tropical northern Australia, stretching from the Kimberley in Western Australia through the Top End of Northern Territory to Cape York and the north Queensland coast.
- The major distribution is in the top end of the Northern Territory (73 890 km^2) and the Kimberley region of Western Australia (61 521 km^2).

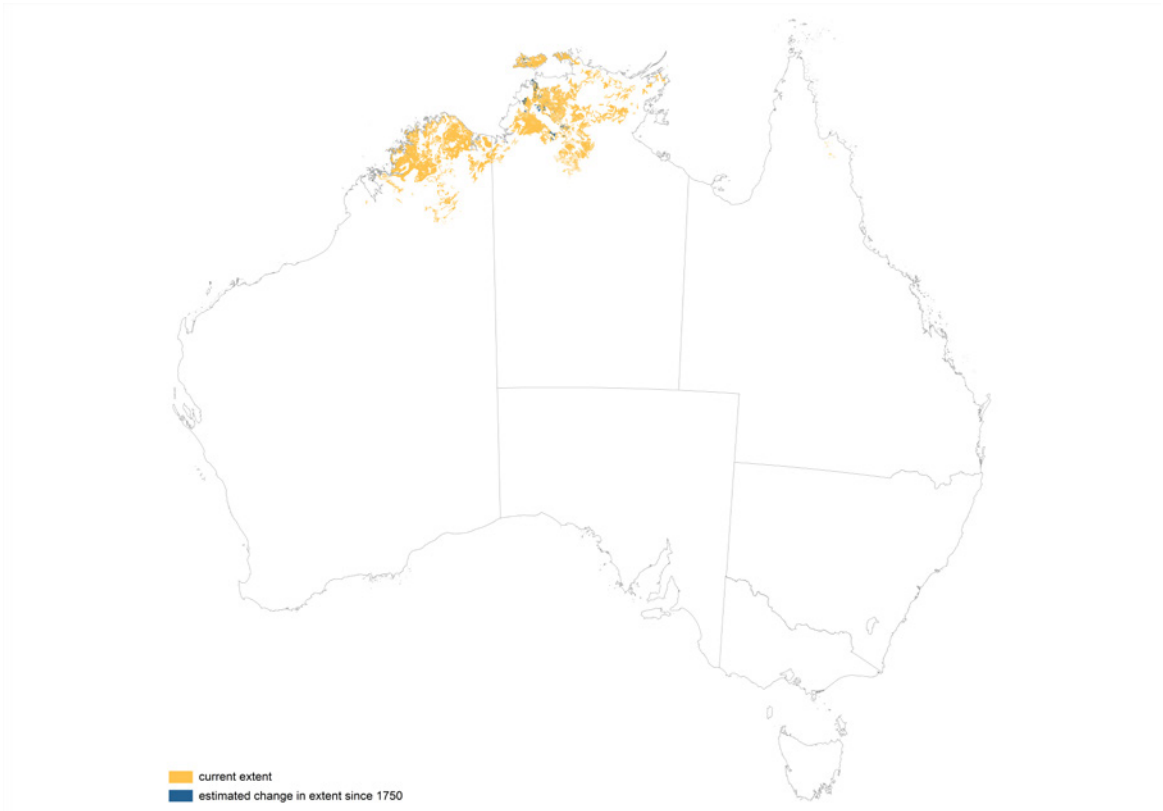
The image below outlines the location of this MVG group in Australia.

Change

- Approximately two per cent (2800 km2) of the estimated pre-1750 extent cleared accounting for 1.9 per cent of total clearing in Australia. Clearing has accelerated in recent years with expansion of tropical agriculture, irrigated cropping and plantations.
- Contemporary land uses and changed fire regimes are having significant regional impacts on the biodiversity of Australian savannas.
- Invasive plants such as *Andropogon gayanus* (Gamba grass) are excluding native species and changing savanna fire regimes.
- Introduction of large grazing animals has led to profound changes in vegetation structure, abundance and distribution with flow on effects to native fauna.
- Increased frequency of intense late-season fires is modifying woodland structure and composition.
- Invasive feral cats and cane toads are implicated in recent declines of native vertebrate fauna through trophic interactions.
- Threats include fragmentation, weed infestation, inappropriate fire regimes (e.g. fires too regular and/or too intense) and over-grazing.
- There are issues associated with understanding and managing these areas for multiple values. Part of this is providing support to Indigenous groups and developing among these groups an understanding of methods of feral animal and weed control.

Key values

- Biodiversity including a unique mixture of biota with arid and wet tropical origins.
- Globally one of the most extensive continuous tracts of woodland and the only savanna dominated by eucalypts.
- Product of recent global evolutionary processes associated with the spread of C4 grasses.
- Critical habitat for populations of a wide range of tropical vertebrate and invertebrate species.
- Globally significant, growing carbon pool.
- Ecotourism and scenic landscapes.
- Beef cattle production.



List of key management issues

- Total grazing pressure management.
- Feral animal impacts e.g. cats, and cane toads, and associated decline in mammal populations (Russell-Smith 2014).
- Fire management particularly mitigating fire regimes with a high frequency of severe fire brought about by the fuel loads of introduced grasses and ignitions associated with grazing land management practices.
- Control of invasive grasses and other weeds.
- Expansion and intensification of mining and agriculture.
- Long-term monitoring to inform future management strategies.

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Data sources

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National Vegetation Information System, Version 4.2.

Collaborative Australian Protected Areas Database – CAPAD 2014 – Terrestrial.

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