

MESOPHYLL RAINFORESTS OF THE WET TROPICS BIOREGION

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Mesophyll rainforests (vegetation codes 1a-3c)



Webb (1959) devised a classification system for Australian rainforests based on physiognomic and structural features rather than a species-based floristic approach. In Webb's system, leaf size is a primary descriptor of forest type with the major sub-divisions of mesophyll, notophyll and microphyll found in the rainforests of the Wet Tropics. Mesophyll is the largest leaf size category, with a blade length of greater than 12.5cm, notophyll leaves are greater than 7.5cm, while leaf blades of less than 7.5cm are classified as microphyll. Webb (1959) found that the size of a rainforest tree's leaves were highly correlated with the wetness, temperature, fertility and/or altitude of the site in which they are found. An assessment of forest complexity under Webb's system considers structural features such as height, number of tree storeys, presence of emergent trees and a range of other physiognomic characters, including the abundance of life forms (lianes, palms, ferns and epiphytes) and the presence of plank buttressing.

Mesophyll rainforest types generally occur in very wet to moist lowlands and foothills, typically below 400m, although variants may also be found in upland localities. Mesophyll rainforests include all those forest types where mesophyll sizes dominate the sun exposed canopy leaves.

Mesophyll rainforests can be described as 'complex mesophyll' or 'mesophyll' based on the relative diversity of structural and physiognomic features. Complex mesophyll vine forest (CMVF) represents the optimal development of rainforest in Australia under the most favourable conditions of climate and soil (Tracey, 1982). It is found on the most nutrient rich alluvial and basaltic soils particularly in very wet lowland areas. Mesophyll vine forest (MVF) may occupy similar topographic and climatic zones, although development of complex structural and physiognomic features (for example, plank buttresses, trunk epiphytes and robust lianes) is limited by sub-optimal soil fertility or seasonal soil moisture availability.

Semi-deciduous mesophyll vine forests (SDMVF) are those where deciduous and semi-evergreen species comprise a major component of the forest canopy. SDMVF typically occupies the drier or more seasonal peripheries of the bioregion within areas receiving less than 2000mm annual rainfall. *Bombax ceiba*, *Ficus albipila* var. *albipila* and *Nauclea orientalis* are typical defining species.

Facts and figures

Vegetation alliances

Complex mesophyll vine forest (CMVF)
Mesophyll vine forest (MVF)
Semi-deciduous mesophyll vine forest (SDMVF)

Current extent in the bioregion

310,529ha

Area protected

212,156ha (68%)

Geography

Mesophyll rainforests form an extensive and relatively continuous belt along the foothills of the coastal escarpment and adjacent coastal lowlands between Mt Spec in the south and Ayton in the north. It is also found on the Atherton Tablelands extending westward to near Ravenshoe.

Within this belt, CMVF is confined to wet and very wet areas on the most fertile soils, typically of basaltic or alluvial origin. The best preserved lowland examples are found in the Cape Tribulation area, the Jarrah and McNamee Creek areas west of Tully, and the Mulgrave River Valley. Some spectacularly tall and well preserved examples are found on basaltic terraces in the lower Russell River Valley. Upland examples are most extensive and best preserved in the Towalla area south-east of Topaz.

MVF is a highly variable forest type which is widespread and extensive on the foothills of the coastal escarpment and on lowlands throughout the bioregion.

The major occurrences of SDMVF are located on foothills to the west and north of Bloomfield. Scattered examples of SDMVF are found on the footslopes to the west of Cairns (Barron Gorge /Stratford area) with a small anomalous occurrence on Hinchinbrook Island.

References

Webb, L.J. (1959). A physiognomic classification of Australian rainforests. *Journal of Ecology* 47: 551-570.



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Impacts and changes

Mesophyll rainforest has been heavily impacted throughout much of its range. Lowland CMVF is one of the most heavily fragmented forest types in the bioregion, reduced to minor discontinuous remnants throughout much of its original range.

Much of the current extent of MVF was subject to logging prior to 1987 and this disturbance has undoubtedly resulted in an inability to adequately define and delineate a number of forest structures and floristic variations that might have been apparent in an undisturbed landscape (Peter Stanton pers. comm.). Large areas of MVF are dominated by *Acacia celsa*, a transient species indicative of prior canopy disturbance.

Key values

- Habitat to an extensive range of threatened flora and primitive plant species
- Major habitat for the southern cassowary (*Casuarius casuarius johnsonii*)

Threatening processes

Major threatening processes relate largely to natural disturbance events, the effects of which tend to be severe in previously disturbed forests. Incursion of weeds into forest margins along clearings and road edges has facilitated some habitat degradation. In summary the threatening processes are:

- Edge effects in fragmented remnants exacerbated by regular cyclone damage
- Exotic species and native vine (e.g. *Merremia peltata*) invasion in severely disturbed areas
- Impacts of wildfire on forest margins.

Tenure

Sixty-eight percent occur within the boundaries of the World Heritage Area, most of which is now National Park or proposed National Park. Fragmented remnants are also present on freehold land.

Management considerations

- Weed control
- Rehabilitation and revegetation of fragments