SCLEROPHYLL FORESTS AND WOODLANDS OF THE WET TROPICS BIOREGION

Melaleuca forests and woodlands (vegetation codes 50a-59g)

WET TROPICS MANAGEMENT AUTHORITY

The bioregion supports a large number of Melaleuca formations ranging from tall open forests to sparse shrublands. The genus displays a broad range of edaphic tolerances, with the majority of species being well adapted to soils with impeded drainage.

Associations dominated by *Melaleuca leucadendra*, *Melaleuca dealbata* and *Melaleuca fluviatilis* (to a lesser extent) in moist to very wet coastal lowland situations represent the optimal structural development in the Wet Tropics. Associations formed by the two former species occur in a range of landscape positions including riparian fringes, swampy alluvial flats, dune swales and broader loamy coastal alluvial plains. These often tall open forest communities can vary considerably in the composition of their lower strata, ranging from extremely sparse shrub and ground covers in swampy dune swales to well developed scrub in habitats formed on well drained, loamy soils. *Melaleuca fluviatilis* is restricted to well drained, riparian levees on major streams where it mixes with a range of rainforest and sclerophyll species.

Melaleuca quinquenervia has a wide range of edaphic tolerances. Structural and floristic variability within the alliance is often a response to variations in geological substrate and soil drainage. Representative associations occur in a range of landscape positions although its maximum development is as an open forest associated with permanently wet swamps on the coastal lowlands. A restricted alliance dominated by *Melaleuca cajuputi* open forest (51a) occupies a similar ecological niche, which can cause some confusion in terms of species identification in some locations. Lesser developed *Melaleuca quinquenervia* associations occur on prograding coastal dune systems (with shallow organic hardpan layers), on metamorphic footslopes (quartzites) and on brackish soils where the species mixes with a range of salt tolerant sedges and forbs.

Melaleuca viridiflora dominated alliances are found in a range of topographic positions with variations controlled largely by soil physical properties. Minor variations in soil drainage are a particularly important regulator of vegetation structure and floristics. On poorly drained alluvial flats, (extensive in the southern coastal portions of the bioregion), *Melaleuca viridiflora* dominates shrubland communities (association 59a), mixing with *Lophostemon suaveolens* (association 59d) and a range of eucalypt species (Association 59b) as soil drainage improves. Land management history plays a major role in determining vegetation structure given a long period in the absence of fire, species including *Allocasuarina littoralis* and *Grevillea pteridifolia* may become locally abundant or even become co-dominant species. The alliance also includes a number of unusual variations including an association with *Banksia robur* (59c) and a mixed shrubland variation which occupies metamorphic hillslopes in upland areas to the west of Kuranda (59f).

The remaining alliances within this formation are highly restricted in the Wet Tropics, being more typical of the Cape York Peninsula bioregion. These include low *Melaleuca argentea* forests along swampy drainage lines (50a) and low mixed swamp forest with *Melaleuca saligna* (57a). These species occupy similar niches to *Melaleuca quinquenervia*; however they may displace this species in the far northern coastal portions of the bioregion. *Melaleuca foliolosa* forms a low shrubland on the margins of saline flats near the Annan River in the far north of the bioregion. *Melaleuca stenostachya* shrubland (Association 58a) occupies areas of infertile, poorly drained alluvial wash to the west of Mt Molloy, representing perhaps the most adverse habitat conditions within the bioregion for the Melaleuca formation.

Facts and figures

Vegetation alliances	
	Melaleuca argentea forests and woodlands
	Melaleuca cajuputi woodlands
	Melaleuca dealbata forests and woodlands
	Melaleuca fluviatilis forests and woodlands
	Melaleuca foliolosa forests and woodlands
	Melaleuca leucadendra forests and woodlands
	Melaleuca quinquenervia forests and woodlands
	Melaleuca saligna forests and woodlands
	Melaleuca stenostachya forests and woodlands
	Melaleuca viridiflora forests and woodlands
Current extent in the bioregion	42,946ha
Area protected	12,217ha (28%)

Geography

Melaleuca forests and woodlands are extensive, occupying significant portions of the landscape across a range of topographic and climatic zones. The most extensive remaining occurrences are associated with poorly drained alluvial flats on the coastal plain south of Cardwell. Swamp forests formed by alliances of *Melaleuca quinquenervia*, *Melaleuca cajuputi*, *Melaleuca leucadendra* and *Melaleuca dealbata* are relatively extensive on the very wet portions of the coastal plain from Ingham northwards to Cape Tribulation. A rare highland example of *Melaleuca quinquenervia* swampland is also found in the Koombooloomba area.

Drier Melaleuca associations are common on the western margins of the bioregion with mixed shrubland associations formed by *Melaleuca viridiflora* and *Melaleuca stenostachya* common on metamorphic hillslopes and silty outwash plains between Myola (Kuranda map sheet) and Mt Carbine (Rumula map sheet).

Impacts and changes

Melaleuca quinquenervia forest dominated the coastal lowlands in what was known as the Babinda Swamp. No remnants of this swamp now remain and the area is occupied by an extensive drainage system. Large areas of peaty soil within this former swamp have proved totally unsuitable for sugar cane cultivation and remain essentially as wastelands. Changes to the structure of *Melaleuca quinquenervia* dominated communities may occur over time as a result of intense fire events which result in the reduction of previously tall open forest areas to whipstick shrubland. These whipstick shrublands form extremely dense stands of thin-stemmed melaleucas up to several metres high, often interspersed amongst tall forest or woodland.

Key values

- Seasonal wetland habitat for a range of fauna species
- Major seasonal resource for nomadic nectar seeking birds and mammals
- Swampland habitats have an important hydrological function. These habitats provide an important source of nutrient that is exchanged during period of overbank flow. Also provide pathways for overbank flow during flood events
- *Melaleuca viridiflora* communities host a number of rare and threatened plant species including *Calochilus psednus*, *Genoplesium tectum*, *Eulophia bicallosa*, *Pachystoma pubescens*, and *Myrmecodia beccarii*.

Threatening processes

- Alteration to floodplain hydrology including construction of drains
- Land clearing and reclamation
- Altered fire regimes
- Fragmentation of habitat and invasion by exotic shrub, grass and herb species.

Tenure

Represented within reserve system, including: Ngalba Bulal NP, Daintree NP, Girramay NP, Girringun NP, Halifax Bay Wetlands NP, Hinchinbrook Island NP, Hull River NP, Kuranda NP, Maria Creek NP, Mount Mackay NP, Mowbray NP, Paluma Range NP, Russell River NP, Djiru NP and Orpheus Island NP.

Management considerations

- Appropriate fire management and prescribed burning is important for the maintenance and dynamics of this extensive formation
- Control of Pond Apple (*Annona glabra*) in wetland habitats
- Return of natural hydrological regimes to swampland communities affected by drainage
- Invasion and replacement of groundcovers by exotic grass and herb species.