



# Australian forest profiles

## Melaleuca

There are hundreds of species in the genus *Melaleuca* and many other species in closely related genera, such as *Callistemon*. Classification of these species is being reviewed. When that review is completed, *Melaleuca* will likely contain 260 species or more, of which more than 220 are endemic to Australia. The remainder occur in New Caledonia, India, Indonesia, Malaysia, New Guinea and the Pacific Islands. Only a small number of these species develop the required community structure and height to be classified as forests.<sup>1</sup>

Although melaleuca forest makes up only 5% of Australia's forest area, it is the third most extensive forest type after eucalypts and acacia. There are more than 7.5 million hectares in Australia, almost all being woodland and open forests (Table 1).

The word 'melaleuca' comes from the Greek *melas* (meaning black) and *leucon* (meaning white) and, when first coined, was probably a reference to the fact that some species have white bark over an inner layer of black bark, although it might also have referred to trees with white trunks and bases burnt black by fire, or to the black trunks and white branches of some Asian species. Another commonly used name for melaleuca is



Light flaky bark is typical of some melaleucas.

tea tree, although this is also applied to the closely related genus *Leptospermum*. It stems from the observation that shed leaves and bark can turn stream water the colour of tea. Some melaleucas are known as paperbarks because of their distinctive light, flaky bark.

Melaleuca forests occur mainly as large tracts of low woodland forest across estuarine plains and seasonal swamps



Narrow strip of melaleuca on both sides of a stream, Northern Territory.

in the coastal and near-coastal areas of monsoonal northern Australia. They also occur as narrow strips of dense, pure stands beside streams and in and around swamps, although these ecologically important forests are often too small to be mapped at the national level.

### Where are Australia's melaleuca forests?

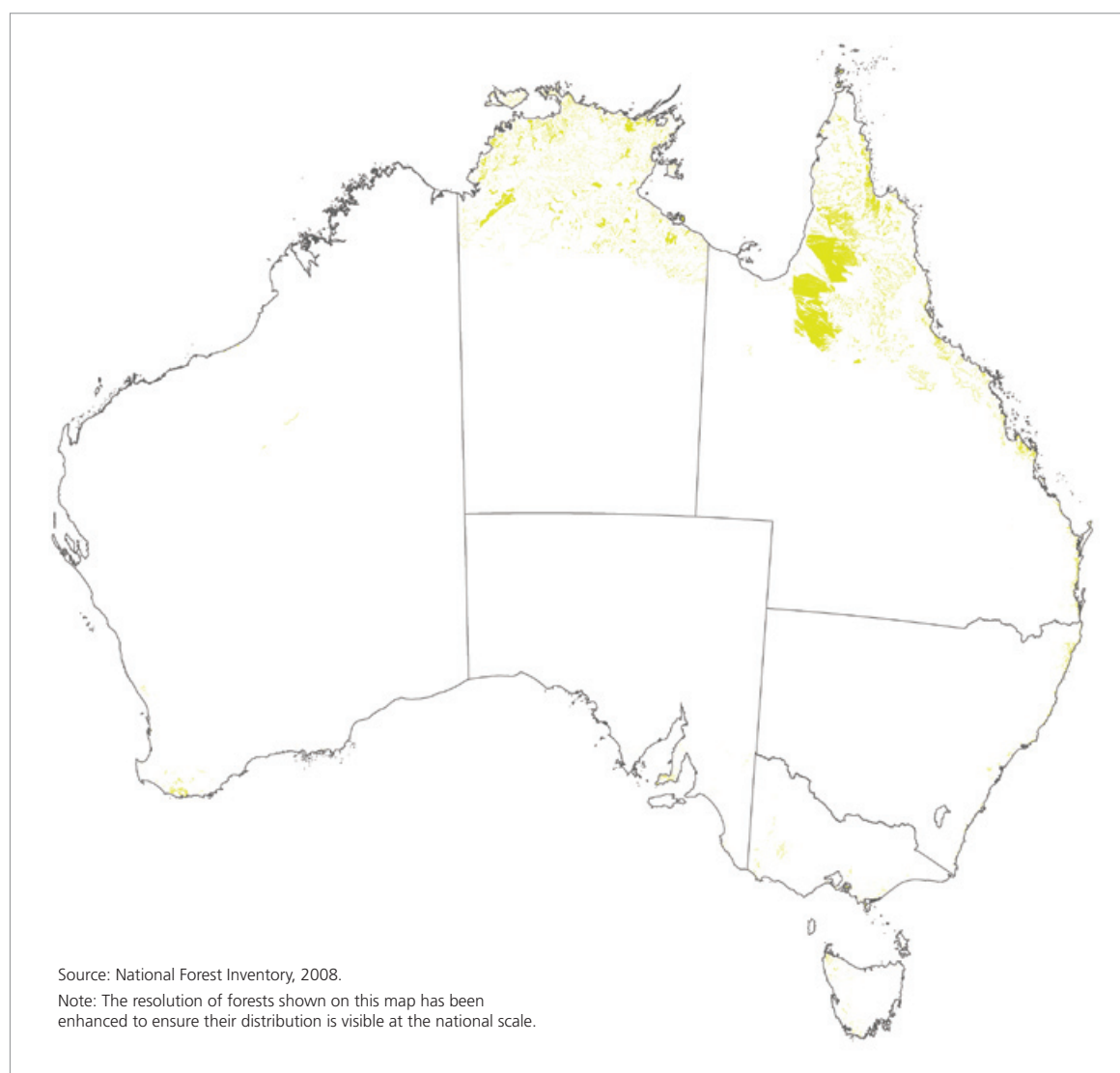
About 75% of Australia's melaleuca forest occurs in Queensland, particularly on Cape York Peninsula (Table 2 and Figure 1). A further 22% is found in the northern part of the Northern Territory. Small pockets occur along the subtropical and temperate coasts of Queensland, New South Wales and Victoria, and on the fringes of rivers and coastal wetlands, including in brackish and saline areas. Extensive stands of swamp dominated by melaleucas, blackwood (*Acacia melanoxylon*) and *Leptospermum* species occur on poorly drained sites in northwestern Tasmania.

The dominant species in melaleuca forests vary markedly. Northern Australian melaleuca forests are dominated by broad-leaved paperbark (*Melaleuca viridiflora*), weeping or long-leaved paperbark (*M. leucadendra*), silver paperbark (*M. argentea*), blue paperbark (*M. dealbata*) and yellow-barked paperbark (*M. nervosa*).

In southern and eastern Australia, melaleuca forests are confined to permanently wet watercourses and swamps. The most common coastal species is the paperbarked tea tree (*M. quinquenervia*). In Western Australia, melaleuca forests

<sup>1</sup> Australia's definition of forest is 'an area dominated by trees having usually a single stem and a mature or potentially mature height exceeding 2 m and with an existing or potential crown cover of overstorey about equal or greater than 20%.'

**Figure 1: Melaleuca forest distribution, 2008**



**Table 1: Area of melaleuca forest, by crown cover, 2003 and 2008 ('000 hectares)**

	Woodland	Open	Closed	Unknown crown cover	Total
Melaleuca 2003	1 056	763	15	5 222	7 056
Melaleuca 2008	6 654	878	26	0	7 556

Note: Crown cover is the area of ground covered by tree canopies, ignoring overlaps and gaps within individual canopies. It is usually measured from above using aerial photographs or other remote sensing imagery. In Australia, woodland has a crown cover of 20–50%, open forest a crown cover of 50–80%, and closed forest a crown cover of greater than 80%.

Source: NFI (2003), MIG (2008).

are restricted to small pockets on specific sites, such as Preiss's paperbark (*M. preissiana*) in near-coastal swampy areas and freshwater or swamp paperbark (*M. rhaphiophylla*) along watercourses.

## Ownership and management

Nationally, 72% of melaleuca forest occurs on leasehold land and 16% on private land (Table 2). In both cases, the main land use is grazing for cattle production. Only 8% of melaleuca forest is within nature conservation reserves, while about 2% is located in multiple-use public forest or on other Crown land.



Riverine melaleuca forest, northern Australia.

**Table 2: Tenure of melaleuca forest, by state and territory, 2008 (hectares)**

Tenure	NSW	NT	Qld	SA	Tas.	Vic.	WA	Australia
Leasehold land	391	863 476	4 600 156	530	0	54	2 281	5 466 888
Multiple-use forests	1 389	0	25 248	0	3 448	1 976	1 830	33 891
Nature conservation reserves	18 880	747	496 642	2 023	10 400	17 659	43 228	589 579
Other crown land	2 805	30 607	74 635	1 431	345	261	4 745	114 829
Private land	22 105	794 542	372 460	10 202	5 108	4 487	9 846	1 218 750
Unresolved tenure	2 411	877	128 709	266	0	0	0	132 263
Total	47 981	1 690 249	5 697 850	14 452	19 301	24 437	61 930	7 556 200

Note: Totals may not tally due to rounding. The six forest tenure categories above are defined in MIG (2008, pp xvii–xviii).

Source: MIG (2008).

## Values and uses

### Wood

Melaleuca wood contains a high proportion of silica, which makes it durable in both soil and water and highly resistant to termites. It also makes the wood difficult to mill and dry, so it is not widely used commercially. Logs of straighter trees are sometimes used locally for marine piling and in boat building.

### Environmental

Even small areas of melaleuca forests can provide important habitat for a wide range of species. Swamp paperbark (*Melaleuca ericifolia*) in the Damper Creek Reserve in Monash, Victoria, for example, contains a diversity of habitats and is considered to be a site of regional zoological significance. Melaleuca forests provide habitat for the vulnerable southern bell frog (*Litoria raniformis*) and an assortment of other fauna.

Drainage and flood mitigation measures, taken mostly during the 1970s and 1980s, as well as increased waterlogging and salinity, particularly in irrigation areas, have affected melaleuca forests along creek lines and watercourses in many agricultural areas. Peat and other materials have been extracted from swamps for use in horticulture, further damaging such forests. Melaleuca forests have also been cleared, including for sugarcane on the Herbert River floodplain in northern Queensland.

### Indigenous uses

Indigenous people in parts of the Northern Territory traditionally use the bark of long-leaved paperbark for many purposes, including for sheaths to hold stone knives and spearheads, as tinder for starting fires, to cover baking food, as a component of fish traps, as a material for blankets or capes, and to make canoes. The flowers can be sucked for nectar or soaked in water to make a sweet drink.



Bark harvested from melaleuca to make plates for food, Robinson River, Northern Territory.



Seasonally waterlogged stand of *Melaleuca leucadendra* near Lockhart River, Cape York.

### Other uses

Plantations of some melaleucas, particularly *Melaleuca alternifolia*, supply the raw material for the tea tree oil industry. Tea tree oil is an effective antiseptic and is used in creams for cuts and abrasions, shampoos, soaps, mouthwashes and toothpastes. Paperbark is used in the horticultural industry as a lining for hanging baskets. Melaleuca flowers are important for apiarists as a food source for bees and are sometimes known as 'honey myrtles' for this reason.



Weeping paperbark (*Melaleuca leucadendra*) Pilbara, Western Australia.

## Crocodile egg industry

Saltwater crocodile (*Crocodylus porosus*) eggs are often taken from melaleuca wetlands. The harvesting of saltwater crocodile eggs in the wild, largely by Indigenous Land and Sea Ranger groups on Indigenous lands, has been taking place in the Northern Territory since 1984, when the controlled international trade of the species and of products derived from it was legalised.

Harvested eggs are hatched in farms. The crocodiles are grown to the desired market size and then used for skin and meat production.



Above: Melaleuca forested wetlands, Northern Territory.  
Right: Saltwater crocodile (*Crocodylus porosus*).

Source: MIG (2008).

## References and further reading

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### Website

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## Tea tree oil industry

The indigenous Bundjalung people of eastern Australia use tea trees in traditional medicine. They inhale the oil from crushed leaves to treat coughs and colds. Leaves are sprinkled on wounds and also soaked in water to make an infusion for treating sore throats and skin ailments.

The commercial tea tree oil industry came into being after the medicinal properties of the oil were demonstrated in the 1920s. When applied topically, the anti-microbial activity of tea tree oil was rated 11 times more active than phenol. The oil was produced from foliage collected from natural stands of *Melaleuca alternifolia*. The plant material was hand-cut and often distilled in the forest in makeshift, mobile, wood-fired bush stills. Production declined after World War II but was revived in the 1970s as part of the general resurgence of interest in natural and organic products. Many small operators collected foliage from both the wild and a large number of small plantations to meet demand.

In the 1970s and 1980s some 6 000 hectares of *Melaleuca alternifolia* plantations were established and mechanisation enabled the large-scale production of a consistent essential oil product. The ingredient active in most of the antimicrobial actions of tea tree oil is terpinen-4-ol, which is now defined by an international standard.

A wide range of tea tree oil-based medical and cosmetic products is now available.

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