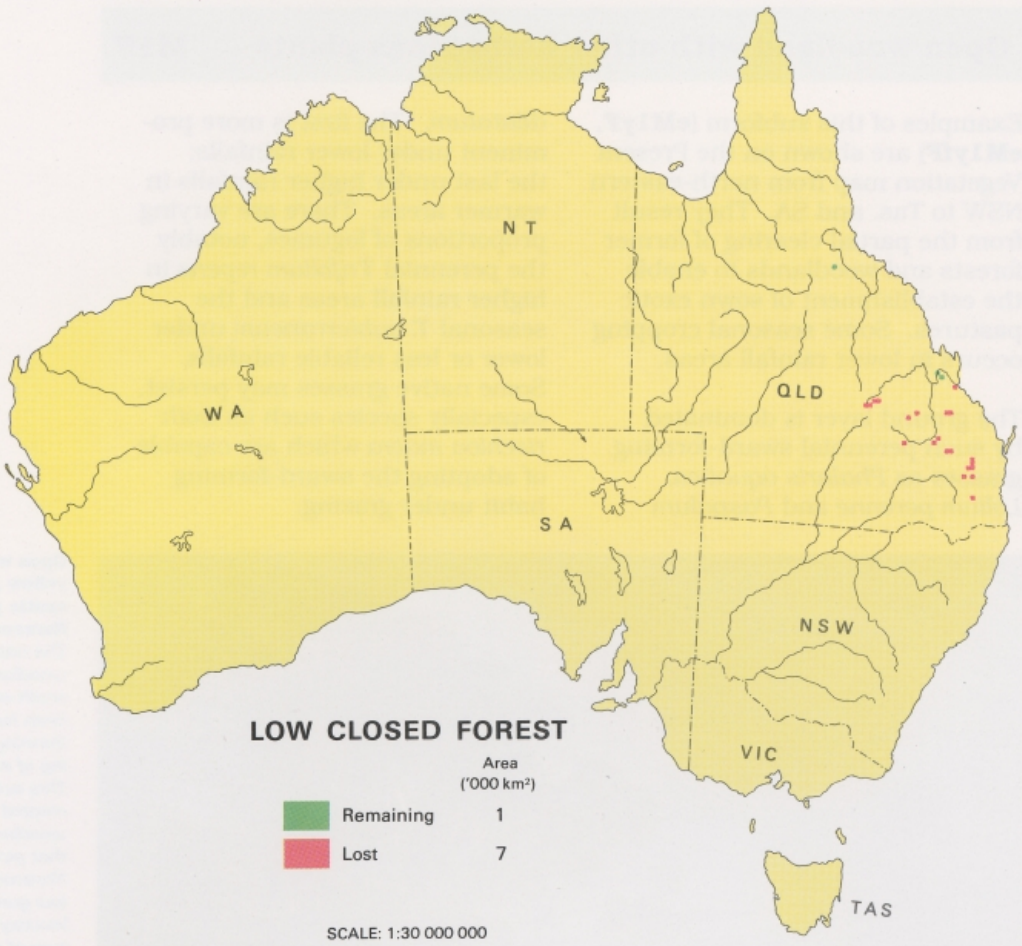
Low trees

Low closed forest — Trees <10 m high; >70% foliage cover — L4



The low closed forests have a widespread but patchy distribution, especially across northern Australia. The main occurrences are on rich soils or basalt outcrops in Qld. In monsoonal areas they are mostly confined to small, fire-protected sites.

Some examples of low closed forest are allied to rainforest (**M4**) but occur under less favourable conditions. They correspond to the various types of 'thicket' described by Webb (1959, 1968) and, like the related rainforests, are floristically distinct from the surrounding sclerophyll vegetation. Under lower rainfalls they tend to be associated with basaltic or other fertile soils.

The mapped occurrences (**xL4**) are all in Qld. Most are 'microphyll vine thickets' of lesser floristic diversity and structural complexity than the corresponding vine forests. Their classification is complicated in many places by the presence of emergents, notably *Araucaria cunninghamii* near the coast and species of *Brachychiton* (including *B. rupestris*, the Qld bottle tree, and the deciduous *B. australis*) further inland.

The largest areas of this subform on the Natural Vegetation map were associated with fertile soils in south-eastern Qld. Most have been cleared for native or exotic pastures, or for seasonal cropping. The presence of remnant *Eucalyptus* or *Acacia* in some cleared areas reflects the mosaic nature of some of the units that are generalised as **xL4** on the maps.

Some other types of low closed forest consist of little more than a tree stratum dominated by a single species. The natural vegetation of Rottnest Island (near Perth) appears to have been dominated by *Callitris preissii* (**pL4**) (Seddon 1972). The present vegetation of this island has been modified to low shrubland (**xZ2G**). Many areas of mangroves also come into this structural category, but form part of the mosaic mapped as 'littoral complex'.

Vine thicket on rock outcrop, northern Qld
Many of the areas of **xL4** *in northern Qld grow in rocky outcrops such as this one near Tozers Gap. The largest present area of this type is found on the Great Basalt Wall, north-west of Charters Towers.*

Hoop pine scrub in south-eastern Qld
The picture on the far right shows a remnant patch of **xL4** *(foreground) in the Blackbutt Ranges of south-eastern Qld. It has a dense canopy of mixed low trees and occasional emergents of the native hoop pine* (Araucaria cunninghamii). *The hillside in the background has been cleared for a plantation of the hoop pine.*

Summit forest in the Bunya Mountains (Qld)
One of the last remaining examples of **xL4** *in southern Qld occurs in the Bunya Mountains. This low closed forest is distinguished by emergent bunya pine* (Araucaria bidwillii).

Low open forest

Trees <10 m high; 30–70% foliage cover **L3**

Several distinct forest types fall into this category. The most extensive are the lancewood (*Acacia shirleyi*) forests of the escarpment country in the NT and inland Qld. Dense and waterless thickets of lancewood in the Newcastle Waters area of the NT forced the explorer John McDouall Stuart to turn back in 1861 from his second unsuccessful attempt to reach the Gulf of Carpentaria.

Low open forest with shrubs L3S–L3Z

Those examples of this vegetation with a mixed upper stratum (**xL3S**, **xL3Z**) are found towards the northern end of Cape York Peninsula and are floristically diverse in both the low tree and shrub layers. Some appear to be intermediate in character between the adjacent forests (especially **eM3Z**) and open heaths (**xZ3G**). Some forests dominated by *Eucalyptus* in western Vic. (**eL3Z**), especially in the rocky ranges of The Grampians, are lower in stature than surrounding forests in the area (**eM3Z**), but are otherwise similar.

Low open forest with tussock grasses L3G

The mapped examples of this subform are all in northern Qld. The largest (**eL3G**) covers a belt of poorer dissected country between taller tropical forests and woodlands (**eM3L**, **eM2L**) to the west of Cooktown. The dominant tree species include *Eucalyptus cullenii* and *E. dichromophloia*; the grasses include *Themeda australis* and species of *Aristida* and *Heteropogon*. On low-lying areas there are also a few examples of *Melaleuca viridiflora* grassy low open forest (**mL3G**) with a ground layer of grasses and graminoids. The denser parts of the vegetation mapped as *Melaleuca* grassy low woodland (**mL2G**) around the head of the Gulf of Carpentaria grade into low open forest.

Low open forest with no significant lower stratum L3

The principal examples are low open forests of *Acacia shirleyi* (**wL3**) which are closely associated with shallow gravelly soils under annual rainfalls of about 500 mm or more in the NT and north-eastern Qld. Much of this vegetation consists of pure stands of the dominant species with virtually no understorey though these usually alternate with more open stands characterised by a grassy understorey and by an admixture of other trees (including species of *Eucalyptus*). Some stands in Qld include other species of *Acacia*.

Lancewood forest, central Qld
Lancewood (Acacia shirleyi) *forms dense localised stands on shallow soils and scarps over a large area of the NT and Qld. Its range extends from the WA–NT border and southern Arnhem Land to the Darling Downs in south-eastern Qld. These forests (left) are characterised by fallen timber and little or no ground cover* (**wL3**). *Open forests of lancewood and of the related bendee* (A. catenulata) *in eastern Australia often reach the height limit for low trees (10 m), as in this stand near Dysart.*

***Eucalyptus* low open forest, northern Qld**
The deciduous white gum (Eucalyptus alba) *in flower stands out in the foreground of this dry-season scene from Cape York Peninsula (far left). This forest is similar in structure to those mapped as* **eL3G** *to the west of Cooktown. There is little evidence in this photo of the dense grassy understorey which is present for much of the year.*