The elegant yate

While many Western Australians will have heard of karri, jarrah, tuart or wandoo trees, perhaps few will have heard of yate. This lesser-known species was, however, the first Western Australian eucalypt to be named. It is a tree of great beauty, with other notable features, and deserves to be better known.

by Robert Powell

Yate (*Eucalyptus cornuta*) is a tree of the far south of Western Australia, extending from Geographe Bay to Rossiter Bay, east of Esperance. It is found mostly near the coast, but in the Albany region also extends further inland. It also occurs in the Manjimup area, where it extends into the inland valleys of the Perup and Tone rivers, about 100 kilometres from the coast. Yate does not form continuous populations over wide expanses, like jarrah (*E. marginata*) or wandoo (*E. wandoo*), but is typically found in smaller stands, in scattered spots, often in moist valleys or near granite outcrops.

In the Esperance area, yate occurs on some of the islands of the Recherche Archipelago, where, in 1792, it was originally collected from Observatory Island. The collector was the French botanist Jacques de Labillardière, on an expedition commanded by Admiral Bruni d'Entrecasteaux, in search of the ill-fated expedition of the *La Pérouse*, lost in 1788. Yate was botanically described in 1800 in Labillardière's *Relation du Voyage à la Recherche de la Pérouse*. Other islands of the archipelago on which yate occurs include Middle, Mondrain and Woody islands. On the Esperance mainland, yate can be found at Rossiter Bay, in Cape Le Grand National Park.

At the other end of its occurrence, in Geographe Bay, yate grows in a few spots in Tuart Forest National Park and particularly just west of there, near where the Sabina River enters the Vasse Estuary. There are also some occurrences towards Cape Naturaliste, along Cape Naturaliste Road.

In the Albany region, yate can be found in parts of Albany itself, and in many spots near Mount Barker, including Porongurup Range National Park and its surrounds. There is also a small occurrence in Stirling Range National Park, at the camping area near Mount Toolbrunup. From there west to Lake Muir, individual yate trees and small stands of yate can be found along roadsides and on farms, particularly in places where the soil is comparatively fertile.

It is in this area that many Perth people will have encountered yate, as they travel on the Albany Highway approaching Mount Barker from the north. Here the yate trees in paddocks stand out from the marri (*Corymbia calophylla*) and jarrah trees by their glossy foliage and smooth brownish-white bark on their upper branches, and by their purposeful spreading-erect habit.

Notable features

Yate is renowned for its timber, which is light in colour and very hard and dense. It is also exceptionally strong, one of the strongest in the world, with a strength reputed to be close to that of wrought iron. In the early years of last century, it was used for wheelwright work. Today it is used for making small timber poles and for woodturning, but its supply is extremely limited. Yate is also prized for its honey, light to mid-amber in colour, with a beautiful flavour. It is produced in early to mid-summer, but only in some years is there a good flow of nectar.

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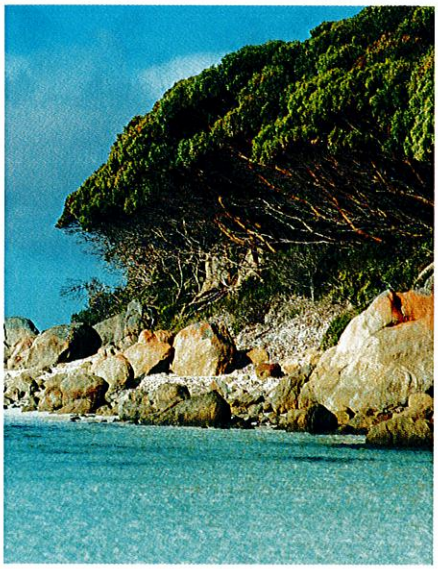
Main This yate tree, growing with plenty of room, has developed a broad dome shape and a wealth of exquisite detail.
Photo – Robert Powell
Inset Yate fruits.

Above Yate buds, opening into flowers.
Photos – Malcolm French

Left These coastal yate trees near Bremer Bay have developed a compact form and an abundance of foliage, for protection against salt winds.
Photo – Robert Powell



Above Yate on the shores of Table Island, Duke of Orleans Bay, Recherche Archipelago.

Right An old, complex yate tree, showing the rough, dark-grey, fibrous bark of the trunk and lower branches.
Photos – Malcolm French

Yate is one of the hardier eucalypts in tolerating salty or waterlogged soils, and is planted on farms to help control salinity. An adaptable, fast-growing tree, yate is also one of a number of eucalypts planted overseas, in countries such as Spain, Portugal, South Africa and the United States of America. In California, it grows particularly well along the coast, and is one of the most popular eucalypts. It is sometimes planted to help reclaim land with alkaline soils.

Yate's biological value has been little studied. Eucalypt trees growing in their areas of natural occurrence are ecologically important in supporting many associated insects. Insects comprise a large part of an ecosystem's biodiversity, and provide essential services such as pollination and the recycling of nutrients. They are also the main food of many birds and reptiles. As a fast-growing eucalypt of relatively fertile soils, yate is likely to support a particularly wide range of insect species. Yate flowers are attractive to honey-eating birds, large numbers of which visit, for instance, the grove of trees at Rossiter Bay in early summer, when they are in flower.

Yate and its relatives

The buds and fruits of yate are fairly distinctive. The bud-caps (opercula) are long, slender and reminiscent of horns (hence the scientific name *cornuta*, which means 'horned' in Latin), while the fruits have protruding valves, which remain fused together at the tips rather than completely separating when the fruit opens. Horn-shaped bud-caps and fruits with projecting valves are also found in close relatives of yate. These include the long-flowered marlock or river yate (*E. macrandra*), warted yate (*E. megacornuta*), and bushy yate (*E. lehmannii*). However, not all close relatives have 'yate' in their name (for example, the Bald Island marlock, *E. conferruminata*) and, conversely, not all eucalypt species with 'yate' in their name are considered among the closest relatives of yate (for example, flat-topped or swamp yate, *E. occidentalis*).

Yate and its relatives all have yellow or yellowish-green flowers and are endemic to southern regions of WA. Some have very restricted distributions, particularly Burdett's mallee (*E. burdettiana*), McQuoid's mallee (*E. mcquoidii*) and the Beaufort Inlet mallee (*E. newbeyi*). Others are more widespread, or are well known in cultivation, such as the Bald Island marlock and bushy yate. Yate occasionally hybridises with Bald Island marlock and river yate, and with less closely related species such as tuart (*E. gomphocephala*).

Beauty

Yate produces displays of colourful flowers. But we can appreciate trees best if we see them as whole objects; that is how they normally appear, unless we are standing very close to them. As whole objects, trees have shape, structure, patterns and detail. 'Structure' includes the number of main stems and the hierarchy of the branches. Patterns include repeated features, such as angles of branching,

Above Like many yate trees, this specimen has developed several main stems.
Photo – Malcolm French

and shapes of clumps of foliage; and more general features, such as the distribution of foliage through the tree. Variations in the overall patterns stand out as interesting details.

Some species of tree are very consistent in their shape and structure. The introduced Norfolk Island pine (*Araucaria heterophylla*) is a good example: virtually all specimens have a single, straight main stem, with short, parallel side-branches, producing a narrow conical shape. They look very much alike.

By contrast, many eucalypt species, including yate, are wonderfully varied, with different specimens varying enormously in shape, structure and detail. While this is partly due to genetic differences between the individual trees, a very important influence is the environment. Over yate's range, the rainfall varies from about 1,300 millimetres a year on the south coast near Walpole, to only about 500 millimetres a year in some of yate's inland and eastern occurrences. At a single site, conditions vary greatly too. Near the coast, salt winds are very damaging to foliage, so yate trees in exposed spots are reduced in height and much more asymmetrical in shape than specimens in slightly less exposed spots nearby. And soils over granite vary in depth, often quite suddenly; yate specimens growing where the soil is shallow can be much reduced in size.

Another influence on a tree is its neighbours. Yate trees with plenty of room will spread, whereas those confined or overshadowed by neighbours will adapt their growth to seek what light and space they can find.

For trees growing in their natural range, the activities of their associated insects cause irregularities in their growth. Different individual trees are affected in different ways or to different degrees. Where the associated vegetation has been preserved, an additional influence is damage by fire.

Most individual trees do nonetheless tend to display growth characteristics typical of their species—the woodiness of jarrah, the wiggly branches of marri, the weeping habit of pricklybark (*Eucalyptus todtiana*), for example, which give them their particular forms of beauty. Yate is an uncommonly elegant tree. Its foliage, at the ends of very slender branchlets, is nicely organised into small, dense clumps, which often join up into layers or larger masses. Between the concentrated areas of foliage are often large gaps, giving many of the trees a light, airy look. The spreading branches have a strong tendency to sweep upwards, resulting in the trees' 'purposeful' appearance, referred to earlier.

A big little tree

Another characteristic of yate is its readiness to grow more than one trunk, or main stem. Many small species of eucalypt grow as shrubs, and have a well-developed underground woody swelling, known as a 'rootstock' or 'lignotuber'. When burnt in a fire, all the above-ground parts of the shrub are killed, and it recovers by sprouting two or more stems from the lignotuber. Eucalypts with this habit of growth, common in areas of low rainfall, are known as mallees.

Many larger species of eucalypt have lignotubers too, but develop with a single stem that is protected from fire by well-insulating bark. They normally have a single trunk, and it is only after a very severe fire or injury that they may regrow with more than one stem.

Some smallish eucalypt species are in between these two categories. Perth's limestone marlock (*E. decipiens*), for example, often grows as a small tree, with a single stem. If burnt in even a moderate fire, it is killed above ground, and regrows from its lignotuber, with several stems. Even if unburnt,

Above In this regeneration of yate and wandoo, the yate trees, through their faster growth, have greatly suppressed the wandoos, most of which are hardly visible. *Photo – Robert Powell*

however, some specimens will develop one or two new strong stems from near the base or from the lignotuber, which grow strongly and develop to become a substantial part of the tree.

Yate is a largish tree, growing to 25 metres tall in the Albany region, where conditions are good—yet it has the same tendency as limestone marlock to send up additional stems from its lignotuber. It is thus a large tree with a growth characteristic more typical of smaller eucalypts: a 'big little tree'.

The present and future

Near the coast, some of the occurrences of yate are within national parks. Many of these specimens do not develop very fully, as a result of salt winds, shallow soils or recurrent fires. There are also some healthy stands of mature yate on land managed by the Department of Parks and Wildlife in State forest and Perup Nature Reserve.

Many of the best developed yate trees occur in the Albany region. Here yate grows chiefly on good agricultural soils, and many of its occurrences have been destroyed by clearing. Those that remain are mostly on farms, where cultivation of the soil, or grazing by livestock or feral animals, prevents them from regenerating. Agricultural weeds can often smother small seedlings. There may thus be few offspring to replace the present trees when they die.

As the climate of south-western Australia continues to become drier, trees of many species are dying or declining in health, and yate will be increasingly affected.

Thought should be given to preserving this distinctive and very elegant tree. On farms it would be helpful to fence off stands of yate trees to encourage them to regenerate, or, if they do not, to plant yate seedlings. In towns and cities within yate's natural range, yate (and other naturally occurring species) should be grown wherever space permits, including in irrigated parks, where they would be protected from the drying climate. And, as with all our wonderful and fascinating eucalypt species in WA, we should aim to make them better known and more highly valued by coming generations.

Below A yate specimen from the Western Australian Herbarium.
Photo – Julia Percy-Bower

Robert Powell's interest in trees began with the local species he discovered during his childhood. He has written about Perth's species in *Leaf and branch: Trees and tall shrubs of Perth*. Robert worked for 34 years for the Department of Parks and Wildlife's predecessor departments: Environment and Conservation, and Conservation and Land Management. He is now retired and living in Devon, United Kingdom. He can be contacted by email (robert.powell@graduate.uwa.edu.au).

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