

Wondering about wandoos



Wandoos, or white gum, is one of Western Australia's most significant woodland species. Wandoos have made a considerable economic contribution to the State's development, while conferring invaluable environmental benefits. However, in recent times, the species appears to have suffered from severe crown decline. Why is wandoos in decline, and what can be done to conserve our delightful and unique wandoos woodlands?

by Peter White and Liz Manning

Wandoo is a species that can strongly influence the character of the landscape. The observer's eye is drawn to the whiteness of the trunk. This, crowned by dull bluish-grey foliage, tends to stand out in the reddish-orange soils. The absence of a middle storey vegetation layer helps to accentuate its appearance.

Natural beauties

Wandoo (*Eucalyptus wandoo* subsp. *wandoo*) is commonly confused with many other species. Many have similar white bark, such as butter gum (*E. laeliae*) or salmon white gum (*E. lane-pooliei*). However, wandoo has many distinguishing features, which, if viewed correctly, make it easy to identify. Its closest relative is the subspecies *pulverea*, which, due to its restricted northerly distribution, is rarely encountered. Another close relative is the widespread inland wandoo (*E. capillosa* subsp. *capillosa*), which has different bark colouration, seedling leaf characteristics and landscape positioning. Although the

common name seems to suggest otherwise, wandoo is not closely related to powderbark or 'powderbark wandoo' (*E. accedens*), which has glossy leaves and rounded bud caps.

Wandoo can grow to 30 metres high, with a trunk girth up to three metres (one giant has been measured at more than five metres in girth at chest height). The largest trees are found in the highest rainfall areas, with the species being reduced to almost a mallee form in drier zones. Mature trees have a strong branching growth habit from the main trunk. Like most forest eucalypts, wandoo trees are estimated to live somewhere between 250 and 350 years.

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Main Wandoo stands out with its white, mottled bark.

Photo - Robert Powell

Below Wandoo tree and Bluff Knoll in the Stirling Range.

Photo - Rob Oliver

Distribution

Wandoo is found across much of south-western Australia. It has an unusual distribution in comparison with other eucalypts such as marri or jarrah. It is distributed partially along the base of the Darling Scarp, grows as a component of the jarrah forest in some of the medium rainfall areas, then south and eastwards into the Wheatbelt region. It is absent from the high rainfall areas between these regions. Within this distribution, it can span the topographic sequence, from some of the highest parts of the landscape to some of the lowest.

Clearing for agricultural activities has dramatically altered the occurrence of wandoo across its former distribution. While it remains intact in many parts of State forest, in agricultural areas wandoo is reduced to a component of roadside vegetation, paddock trees, isolated farmland remnants or conservation reserves.

Woodland structure

Wandoo may grow in pure stands or with other species. In the more





westerly areas, it frequently occurs with marri (*Corymbia calophylla*), jarrah (*E. marginata*) and flooded gum (*E. rudis*). Across the easterly part of its range, this mix changes to include York gum (*E. loxophleba*), salmon gum (*E. salmonophloia*), red morrel (*E. longicornis*), numerous mallee species and, occasionally, brown mallet (*E. astringens*). At the eastern edge of its range, it grows in conjunction with inland wandoo.

The understorey of wandoo woodland varies greatly across its distribution. A grassy or low shrub understorey can be common in some areas, but poison plants (*Gastrolobium* spp.), wattles (*Acacia* spp.) and sheoaks (*Allocasuarina* spp.) are prevalent in others.

Wandoo regenerates readily from seed, with most seedling recruitment occurring on ashbeds after a bushfire. It can also resprout from a lignotuber, cut stump or from dormant shoots along the trunk.

Wildlife haven

Wandoo is one of the most important trees for wildlife in WA, with many animal species using the hollows in the tree itself, as well as the shed branches on the ground for habitat. The dead wood is dense and durable, and is less affected by termites

than that of other eucalypts, hence standing dead trees and the shed branches can remain intact for many years.

Animals such as the brush-tailed wambenger (or phascogale), several bat species and a variety of birds—including the rufous treecreeper, regent parrot and barn owl—will inhabit hollows in standing trees. Hollow logs on the ground provide homes for wambengers, immature rufous treecreepers, brushtail possums, numbats, chuditch and echidnas, as well as carpet pythons, Gould's monitors, western bearded dragons and other reptiles.

The foliage and bark support a myriad of spiders, beetles, thrips, native cockroaches, flies and other insects, making it a good habitat for insectivorous birds. Flowers produce abundant nectar in most years and provide a good source of food for birds and insects. The insects are important in recycling plant matter and nutrients, dispersing seeds and pollinating many plants, and form an integral part of the ecological food web.

Wandoo trees are often parasitised by the mistletoe (*Ameyma miquelii*), which is the favoured food plant of the amaryllis azure butterfly (*Ogyris amaryllis*) and the wood white butterfly (*Delias aganippe*).

Above left Tree martins in a wandoo nesting hollow.

Photo – Sallyanne Cousans

Top An echidna in wandoo woodland at Boyagin Nature Reserve.

Photo – Mike Griffiths/WWF

Above Blossoms and the narrow, pointed bud caps of wandoo.

Photo – Tom Chojka

Commercial use

Wandoo is a first class structural timber, used for flooring (especially in areas subject to heavy wear), joinery, beams, girders and joists, and was once regarded as Australia's best wooden railway sleeper timber. The timber has been widely used for heavy construction purposes such as poles, bridges and wharfs and for warehouse flooring. In the early days, it was sought after by wheelwrights to make wooden implements. It is still in demand for heavy use such as stockyard construction, and is highly prized as feature flooring.

Wandoo timber has been much sought after, and some sawmills such as Boyup Brook and Narrogin were almost entirely dependent on its supply. However, availability of wandoo timber for commercial use is now extremely limited.



Left Wandoo in decline at Mount Observation, near York.
Photo – Duncan Steed

Above Dead clusters of leaves in wandoo crowns are termed 'flagging'. These occur early in the onset of wandoo decline, as well as later when the decline is strongly evident.
Photo – Paul Brown

Wandoo trees do not flower regularly, but in a good year for blossom they produce fine honey with a characteristic light colour and mild flavour. Wandoo honey has long been the mainstay of the apicultural industry in the South West of WA. However, the wandoo forest these days is most highly valued for watershed protection and recreation. Most of the eastern—or high-salinity-risk—areas of Perth's forested water supply catchments are dominated by wandoo. In addition, wandoo still maintains considerable popularity in landcare plantings, and is attracting some interest for timber production, as a farm forestry species in the medium rainfall areas.

Wandoo in decline

Like several other woodland species, wandoo has suffered greatly from the effects of land clearing. Many of the soil types on which wandoo grows were taken up for agriculture, and the tree's range has thus been severely fragmented. Many stands of trees are isolated (either as paddock or road verge trees) and the effects of

isolation are often compounded by factors such as waterlogging, salinity and—often more insidiously—old age.

Though the stature of the wandoo tree, along with its distribution and persistence in the landscape, may give the impression of amazing toughness, this notion has been challenged in recent times by the onset of a severe decline in the canopy of many trees.

The history of the wandoo crown decline is quite complex. There are some anecdotal references to it in the mid-1960s. In the late 1970s and early 1980s, symptoms were observed throughout many parts of the range of the wandoo, and this resulted in a research station being set up at Narrogin to study the decline. There was a period after this when the symptoms abated and tree crowns recovered. Symptoms recurred in the late 1980s early 1990s, however, the presence and severity of symptoms varied throughout the wandoo's distribution—and from year to year. It had been observed in the Brookton, Pingelly and Narrogin areas through most of this period, but also from areas such as Kojonup and Cranbrook. Crown

decline is widespread through many parts of the natural range of wandoo, being observed in woodlands, along road verges and in paddock situations.

Crown decline is characterised by an initial browning off and death of the upper and outer twigs, a symptom known as 'flagging'. Epicormic shoots sprout along the lower limbs to replace the dead twigs. Usually, these eventually die, resulting in the progressive downward movement of the tree crown and redistribution of the canopy, as the tree attempts to recover but cannot. Over a period of three to five years, the decline process transforms the tree from a condition of apparent health to advanced decline and sometimes death. However, the decline process can eventually stabilise and the tree may recover as epicormic growth replaces the lost canopy.

Wandoo Recovery Group

In response to increasing community concern over the failing health of



Above Wandoo Recovery Group member Roger Underwood explains aspects of wandoo decline within the Helena catchment to community members.

Above right A healthy wandoo growing beside York Road.
Photos – Liz Manning



wandoo, the Wandoo Recovery Group was formed in February 2003 to investigate the causes of wandoo crown decline and devise appropriate strategies and actions. The group aims to raise the profile of tree decline, to build partnerships with stakeholders and communities and to coordinate the development of government and community-based action.

The recovery group includes representatives from York and Cranbrook Land Conservation District Committees, the Department of Conservation and Land Management (CALM), the Department of Environment, Greening Australia WA, the Water Corporation, World Wide Fund for Nature (Woodland Watch), The University of Western Australia, the Forest Products Commission, Western Power, Beverley Naturalists Club and community interest groups.

One of the group's key objectives is to promote, support and coordinate research into wandoo decline and

recovery. Scientific investigations into possible causes of decline are now underway. This important work will provide the basis for understanding the relationships between climate, tree physiology and possible disease factors that could be contributing to wandoo decline. Knowledge gained through this research will be used to influence future research directions and to ensure that wandoo woodlands are properly conserved and managed.

Another important task is to accurately assess the extent and health of wandoo ecosystems through a coordinated vegetation mapping survey. CALM is taking a lead role in this project, utilising Landsat imagery and on-ground truthing to develop an invaluable tool to guide future management decisions.

The Wandoo Recovery Group has disseminated a series of news bulletins to local authorities, government agencies and community groups with an interest in natural resource management. These explain the nature of the decline and outline the progress of current research and the activities of the Wandoo Recovery Group. A recent bus trip to view wandoo decline within the Helena Catchment gave a large group of community participants the chance to learn more about the issues of decline and discuss research

investigations with scientists from The University of Western Australia.

How you can help

The Wandoo Recovery Group is currently developing a simple, illustrative guide to assessing the sequence of decline of wandoo crowns. Training and assistance will be given to community groups who would like to help map decline in their local area.

The recovery group also seeks local knowledge that will help to build an accurate historical account of previous decline events. For more information on the activities of the group—and how you can help—contact the Wandoo Recovery Group's Executive Officer Liz Manning (see below) or Chairman Alan Sands on (08) 9368 4399.



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