



# Wildlife Notes



DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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Information Notes for the *Land for Wildlife* Scheme in Western Australia

## Old Trees and Wildlife

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### INTRODUCTION

All living things grow old and eventually die, but some trees take a very long time doing so! Trees are among the oldest living things on Earth. Scarred by lightning but still carrying on, a bristlecone pine in California has been measured at 4500 years old!

Old trees are living history books, recording in their tissues the conditions which occurred around them during their lives – the occurrence of fires, droughts and even increases in radioactivity, can all be measured by studying the wood of old trees. Some people may remember the huge karri log that used to be on display in Kings Park, with historical dates marked alongside the appropriate tree ring. Old trees also give us a glimpse back into the pre-European past, before axes changed our forests and woodlands into predominantly regrowth areas. Many landholders stand next to gigantic jarrah stumps that still remain, and wonder just how different the forest was then.

But apart from their curiosity value to wondering humans, old trees have a very important role in the forest or woodland environment.

### WHY ARE OLD TREES VALUABLE FOR WILDLIFE CONSERVATION?

#### Help to create patchiness in forest or woodland

Large old trees dominate their immediate surroundings, capturing the resources of light, water and mineral nutrients very effectively. The area beneath their crowns tends to be fairly open, and to carry rather specialised plants able to cope in that environment. The open areas are favourite foraging sites for echidnas and birds such as red-capped robins. Thus large old trees help to create patchiness and diversity in the understorey – important for maximising different resources for fauna.

#### Hollows

Hollows in trees are a vital resource for Australia's fauna – around 400 different vertebrate species use hollows and, of these, some 100 must have them, or they will not survive.

Hollows are only found in mature trees and it takes many

years for one to form – in jarrah, wandoo and salmon gum, hollows are seldom found before the tree has reached 120-150 years old, and many hollow-bearing trees are much older. The number of hollows per tree also increases with age, thus providing a choice of sites from which animals can select their preference.

The size of the hollow and its entrance hole will determine which animals can use it. striated pardalotes, for example, prefer a hollow with an entrance only 3 cm wide, while Carnaby's cockatoos require one 25 cm wide at least. Large hollows, such as those used by black cockatoos, can only be found in large trees – which means the very oldest.

#### Resources available

By virtue of their size, old trees provide more food and nesting resources than younger trees.

For example, a study in Victoria of a 300 year old grey box (*Eucalyptus microcarpa*) with a height of 20m and a diameter of 1.5m, showed that it had a bark surface area of approximately 94 sq m. A 20 year old tree with a trunk diameter of 20cm and a height of 15m had a bark surface area of just 9 sq m. A bird such as a treecreeper can therefore forage as profitably on the one large tree as on 10 smaller ones, at the same time decreasing the risk of predation by not having to travel from one tree to the next.

Nesting sites high on stout upper limbs are important for many birds, especially large raptors.

These upper branches are also important as perching and roosting sites. For example, between spectacular aerial forays to catch insects, a flock of wood swallows will rest on a dead upper branch, jostling and talking to one another as they do so. Birds which call to establish their territory may do a circuit of favourite old trees – from where a pyramid of magpies can often be heard giving their lovely carol at dawn and dusk.

The Northern Territory Conservation Commission coined an apt, and now famous, phrase to describe the huge old river gums alongside desert watercourses, they called them "nature's boarding house" because of the huge variety of creatures that depend on them in some way. Without the boarding house, the lodgers must move – or die.

## Litter fall

The larger the tree, the more leaves, spent flowers, buds and branches it will drop to form the litter layer on the forest floor. Litter is a key component in forest and woodland ecosystems. It lessens the impact of water on the soil, reducing soil erosion and leading to a more gradual run-off. As it decomposes, it releases nutrients back into the system. Large numbers and a great variety of invertebrates live in and among the litter, some spending their whole lives there and others merely their larval stages. The litter layer thus provides food not only for decomposers but also the animals that eat them, from echidnas and numbats to malleefowl.

The litter layer also provides refuge and nesting sites for many species of reptiles, amphibians and birds – think how many tonnes of litter a mallee-fowl needs to build his nest mound! Loss of leaf litter may lead to widespread declines in abundance of ground-dwelling species, as well as an overall decline in the fertility of the site.

## Old trees are not replaceable in a human lifetime

With modern machinery, it may take only minutes to push over a tree that has taken hundreds of years to grow.

## HOW VALUABLE ARE OLD TREES TO LANDHOLDERS?

Large trees in blocks of vegetation provide more shade, and in groups provide more protection from inclement weather, than do small trees. They provide a more stable microclimate so that the soil beneath large trees is relatively cooler in summer and warmer in winter.

They are often prolific nectar producers and so valued by apiarists as well as nectar-feeding birds.

Large trees have extensive root systems and many species contribute substantially to the stability of the water table in their vicinity. In other words, they use the water where it falls, so that it does not contribute to waterlogging or salinity downslope. These qualities will be most significant if the trees are on recharge areas such as ridges and the fringes of rock outcrops.

Large trees are appreciated by many people as an aesthetic or recreational attribute, as they contribute to the character of the land. These old trees provide a deep 'sense of place' helping us to define and empathise with the land where we live. The distinctive umbrella-shape of a salmon gum, for example, is almost a signature of the wheatbelt.

## DO OLD TREES HAVE TIMBER VALUE?

In the early days of European settlement, logging old-growth timber was very profitable. In the struggling colony, jarrah, and later karri, became an important export commodity. The biggest and best trees were taken first, later cuts took the less good material, though twisted and hollow trees were often left. Many of these, however, were later removed to provide wood for the charcoal needed for iron smelting. The need for tanning products saw huge areas of old wandoo trees being cleared. Species such as

marri, which had not found a previous use, were converted to woodchips. Nevertheless, some old trees do remain, especially in woodlands.

Those old eucalypts that are left often have very limited timber value due to the deterioration of the wood. They are typically full of hollows and may contain cracked or rotten limbs. Even as firewood they have limited value. However, as has been noted above, their ecological value is immense!

## MANAGING OLD TREES

Nearly all the benefits of trees attributed to large trees assumes that they are growing in a natural, functioning ecosystem where the trees are healthy, producing viable seed and are part of an environment that contains other species of wildlife. (The special values of paddock trees are discussed in Wildlife Note No. 15.)

Grazing by stock disrupts this natural system. Not only does it remove the shrub and ground layer, but even more importantly, trampling compacts the soil surface. This leads to less on-site infiltration and more run-off, altering the water balance not only at the site but also downslope. Trampling will also damage the trees' surface feeder roots, and interrupt the nutrient cycling process. All this leads to a decline in tree health. Protection of these trees will increase their chance of living for another 100 years, by which time any replacement trees you might be planting will just be beginning to form their first hollow and attract their first bat or owl.

Therefore, for old tree survival, the most important initial action is to fence out stock (and control rabbits, if they are present). The fence should extend beyond the canopy of the mature trees, because natural regeneration is most likely to occur just outside the drip line. Understorey can be re-introduced to the fenced area by the use of suitable techniques. To ensure that small birds will be able to use the resources the trees provide, it is important to connect all areas of remnant vegetation by planted or natural bush corridors.

## Summary

Where mature trees are present in a landscape, the retention and protection of those stands of old trees is probably the single most important wildlife conservation action that can be taken on private land.

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The text of this 'Wildlife Note' is adapted with permission from "Old Trees for Wildlife", *Land for Wildlife* (Victoria) Note No 18, Sept. 1992. Thanks also to Ken Atkins and Avril Baxter for helpful comments on earlier drafts.

## About the author

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