

The Value of Habitat Trees

Large, old trees and standing dead trees are unique and irreplaceable features of our landscapes. Termed 'habitat trees', they provide numerous living places and other resources for many kinds of animals and plants. This Note discusses the value of habitat trees and practical steps that can be taken to preserve them.

Habitat trees have lots of hollows, cracks and crevices of various sizes,

where animals may live, breed or shelter. Old and dead trees are an essential part of all native forests and can be referred to as 'nature's community dwellings' as they provide an important resource to wildlife 24 hours a day.

Trees and hollows

Hollows are an important element of the Australian landscape and ecosystem processes. In South East Queensland alone, over 130 species of wildlife have been identified as being dependent on hollows for their survival.

A diversity of tree species including rainforest trees and mangroves have a tendency to develop hollows as

they age, and in doing so, provide innumerable living places for native animals and plants. Most habitat trees however are old 'gum trees'. These seasoned trees play a crucial role within their ecosystems for maintaining biodiversity.

The age at which trees develop hollows varies widely, however, large hollows are typically associated with trees that are at least 100 years old. As a general rule as a tree becomes older, it develops more and larger hollows. Bushland areas in good condition typically have 3-10 hollow-bearing trees per hectare, each containing as many as 30 hollows of varying sizes and supporting a diverse wildlife population.



This dead tree provides nesting sites for Dollarbirds and Galahs, as well as perching and shelter sites for a host of other animals.



Rainbow Lorikeets nest in a hollow of a habitat tree. Hollows are usually only found in trees that are at least 100 years old. Photo by Darryl Larsen.

Important features of habitat trees

Habitat trees provide many resources for wildlife including:

- Cracks, crevices, notches and hollows that provide breeding sites, shelter, refuge and living quarters for a wide range of wildlife species.
- Nesting sites in high branches for birds such as Ospreys, eagles, kites and other raptors.
- Dead branches above the canopy that are utilised by some birds for roosting, sunning, preening and to watch for prey.
- A reliable and plentiful seasonal food supply such as nectar, pollen, exudate (sap), fruit, seeds, leaves, wood and litter for animals of many kinds.
- Large surface areas of trunks and branches that provide extensive hunting sites for animals that feed on organisms that live on and under the bark.

By virtue of their size, old trees provide more food and nesting resources than younger trees. For example, one 300 year old Grey Box (*Eucalyptus microcarpa*) with a height of 20 metres and a trunk diameter of 1.5 m has a bark surface

area of approximately 94 m². A 20 year old tree with a trunk diameter of 20 cm and a height of 15 m has a bark surface area of just 9 m². An animal can therefore forage as profitably on one large tree as on ten smaller trees, at the same time decreasing the risk of predation by not having to travel from one tree to the next.

Dead trees

Dead trees with hollows are just as important for wildlife as live ones. Often viewed as a source of firewood, the loss of dead trees from some areas has had a significant impact on wildlife. Old trees may stand for 50 years or more after death and continue to function effectively as habitat trees. When a tree dies, new living spaces are formed as cracks develop and the bark loosens. Before removing dead wood from your property, consider its values to wildlife and the environment.

Old trees

Old trees are irreplaceable with many of the ones alive today being at least 200-800 years old. Such trees represent the vestiges of a once-intact ecosystems and provide some sense of what the landscape was like before European arrival. Trees planted today will need two centuries or more before they attain a similar form and position in the landscape. However, estimates of rural tree decline suggest that most large trees on agricultural land will die within 100 years, unless actions are taken now to protect them.

A Lace Monitor lays her eggs inside an active arboreal termite mound found on a dead wattle tree. Termites help decompose the dead timber while also providing nesting sites for Lace Monitors. Once this Lace Monitor has laid her eggs, the termites seal up the nest and incubate the eggs. Photo by Matt Mawson and Sandra Watkins.



Fallen giant - this habitat tree was destroyed because protective mechanisms, such as raking away leaf litter from the base of the tree and follow-up extinguishment of embers, were not in place.



Leaf litter and fallen timber

As part of the ageing process, trees (especially eucalypts) tend to shed branches, both small and large. They also drop large quantities of leaves which serve a number of useful purposes. The shed branches and leaves provide a unique and valuable resource for a vast array of fungi, invertebrates, small mammals, reptiles and frogs. The leaf matter and rotting log and branch detritus add to soil fertility and protects the soil surface.

Some of the functions provided by fallen timber include:

- Breeding and sheltering sites (hollow logs are especially important in this role).
- Foraging sites for insects, birds, mammals and reptiles.
- Basking and hibernation sites.
- Perching sites for birds.
- Nurseries for plants and fungi to germinate and grow.
- Natural traps that help to accumulate leaf litter and soil and create moist, nutrient rich sites.
- A source of lichen and cobweb that is used by birds in nest construction.

Threatened species

Many species of wildlife are threatened due to a reduction in available habitat, absence of hollows, fragmentation, edge-effects and associated pressures. Some threatened species known to depend on hollows include Spotted-tailed Quolls, Powerful Owls, Glossy Black-Cockatoos and numerous species of micro-bats. In addition to threatened species, many other mammals, birds, frogs, reptiles and invertebrates depend on hollows found in habitat trees for their survival.

Micro-climates

Large trees provide shade and protect neighbouring trees from weather extremes. They provide a more stable 'micro-climate' in their direct surrounds. The soil beneath old trees tends to be cooler in summer and warmer in winter.

Large eucalypts also draw water from far below the soil and will out-survive younger trees. They do this by a process called hydraulic lift where the phloem or sapwood (vascular tissue) in the trunk of the tree acts like a giant straw drawing water from roots extending far below the surface. This can also be beneficial to surrounding shallower rooted species and helps prevent dryland salinity.

Other important functions of habitat trees

Eucalypts in particular provide food for large numbers of megabats (flying foxes and blossom bats). An interesting feature of many eucalypts is that they produce a high nectar flow between 10 pm and 2 am, the time when megabats are feeding.

Many large old trees play an important role by hosting mistletoe. These semi-parasitic plants derive water and minerals from the tree, but also photosynthesise to make their own organic compounds. Mistletoes provide food (nectar, pollen, fruit and leaves) and breeding sites for many animals (e.g. butterflies, other insects and their larvae, birds, flying-foxes and possums). Old trees are also important hosts for many orchids, lichen, epiphytes and ferns.

Many native animals such as gliders, possums and phascogales that utilise hollows in habitat trees, feed on and help to control leaf-eating insects that would otherwise contribute to dieback in our native forests.

Trees and insectivorous bats

Insectivorous bats provide a unique ecosystem service by consuming up to one and a half times their body weight in insects each night. Many of the insectivorous bat species that occur across Queensland prefer to roost in tree hollows. They usually select tree hollows that have entrances not much bigger than their own body size, about 3 cm or less in diameter. Larger colonies, especially those formed when females congregate to give birth, require a large internal hollow with a small entrance. These types of hollows are usually found only in large old trees.



Habitat trees that have a large hollow core may offer a protected place for micro-bats to breed and to roost during the day.

Looking after our old trees

Livestock have a tendency to congregate under isolated habitat trees which can lead to soil compaction, concentration of nutrients, damage to the bark and ultimately the death of the tree. Consider fencing off old trees to protect them from livestock and to allow the regeneration of young replacement trees to occur.

Old trees can be susceptible to fire, either from controlled burns or bushfires. Rake leaves, bark, grass and other flammable material away from habitat trees prior to undertaking control burns. This helps to protect them during controlled burns and also from hot fires that could destroy them at other times of the year.

Keep it messy mate - the KIMM principle

Resist the urge to tidy-up your property so that it looks like a park. Instead, wherever you can, leave old and dead trees along with fallen branches and woody debris so that they can continue to provide an important ecosystem service. Tidying-up removes these important wildlife habitat resources.

What you can do

- ✓ Retain large old trees - both living and dead.
- ✓ Fence off areas around large old trees to allow regeneration to occur.
- ✓ Retain some fallen woody debris for wildlife.
- ✓ Protect habitat trees before undertaking a prescribed burn by raking around the base of the tree to avoid it burning.
- ✓ Plant suitable trees to provide nesting hollows in the future.
- ✓ Establish timber plots for future firewood and fencing needs.
- ✓ Install nest boxes if your property lacks large old trees (see *Land for Wildlife Note A2 - Nest Boxes*).

References and further reading

Gibbons P & Linder Mayer DB (2002) *Tree Hollows and Wildlife Conservation in Australia*. CSIRO Publishing, Melbourne.



Fire rakes can be used to rake leaf litter away from the base of habitat trees prior to undertaking a prescribed burn. Photo by Nick Clancy.



Hollows are used by a wide range of animals such as this Carpet Python. There are over 130 species of wildlife that are dependent on hollows for their survival in South East Queensland alone. Photo by Deborah Metters.

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