



# Wildlife Notes



DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

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

## Tree Hollows and Wildlife

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### INTRODUCTION

Tree hollows are essential to provide shelter and breeding sites for many native animals. Australia-wide, it is estimated that around 300 species of vertebrates use hollows at some time and many of these are now endangered, in part because of the removal of hollow-bearing trees. The hollows provide refuge from the weather and predators, and safe sites for roosting and breeding. In order to maintain this essential wildlife habitat, it is important to retain both living and dead hollow-bearing trees.

### HOW DO HOLLOWES FORM?

Hollows form as trees age. Over time, the trees are subject to various natural forces such as fire or storm that cause injury to the protective bark. While the living, outer sapwood may remain healthy, wood-rotting fungi and termites gain access to the heartwood, beginning the decay process. In Western Australia, fire often contributes to the initial cause of injury, as well as, by burning decayed wood, enlarging existing hollows. Wildlife can also renovate hollows using beaks, teeth or claws.

### HOW LONG DO HOLLOWES TAKE TO FORM?

Only old trees have hollows. Research has shown that jarrah, wandoo and salmon gum rarely form hollows before they are 120-150 years of age. A hollow large enough for a black cockatoo (which requires an entrance hole 25cm in diameter) will only be found in a tree that is even older than that.

### WHICH TREE SPECIES PRODUCE HOLLOWES?

Most species of eucalypts produce hollows, if they live long enough. In the wetter south-west of WA, jarrah, wandoo and flooded gum produce the best hollows, while inland wandoo and salmon gum are the most important hollow-bearing trees in the wheatbelt.



An owllet nightjar dozes in a wandoo hollow

As the climate becomes more arid, many eucalypts adopt a mallee growth form. In this, the long-lived old part of the plant is the woody lignotuber (mallee root) that forms at or just below the soil surface. The aerial stems of the mallee die during fire or severe drought, and are replaced by shoots from the lignotuber. If damaged, it too can decay and become hollow, and this may be used by mardos, other small marsupials or rodents and animals as large as chuditch and brush-tail possums. Some mallees are rather vulnerable to termites, and even apparently healthy living stems can be completely hollow. Though didgeridoos were not traditionally made by Aboriginal people in the south-west of WA, in other parts of Australia an experienced instrument maker knew which mallee species were likely to have hollow stems and, by tapping the stem, could determine which one had been hollowed out sufficiently for use.

### DIFFERENT TYPES OF HOLLOWES

Eucalypts often have hollows in living or dead branches in the crown or high in the main trunk. These sites usually arise where a branch has been lost, thus exposing heartwood to decay and sometimes fire. At the base of the trunk a fire scar may burn in each succeeding fire until there is a

completely hollow butt. Dead trees or branches can twist under stress and so longitudinal cracks or fissures form. Branches or whole trees may fall, leaving hollow logs lying on the ground.

Animals select hollows according to their own individual needs. Factors such as the size and shape of the entrance hole and the interior cavity, as well as the degree of insulation, affect how and when a hollow is used. Rufous treecreepers, for example, require an entrance hole no larger than 5cm, and it can be quite close to the ground, whereas the regent parrot (smoker) needs a 16cm hole high up. Therefore, a range of hollow sizes and shapes is necessary to support a variety of wildlife.

## WHICH ANIMALS USE TREE HOLLOWES?

In the south-west of WA, possums, phascogales and bats are our most important arboreal hollow-using mammals, though low hollows and hollow logs on the ground are also used by numbats, chuditch, echidna and numerous mouse-sized animals. Hollow-butt trees often shelter kangaroos and wallabies.

Australia-wide, 15% of all the land birds use hollows. These 114 species include parrots, cockatoos and lorikeets, ducks, treecreepers, owls, owl-nightjar, kingfishers, pardalotes, martins and woodswallows. Most only use the hollows seasonally while they are rearing their young, but some, for example owls, also use them as roosting sites.

Many reptiles, especially some skinks and geckos, are arboreal and may use hollows, but in the south-west of WA the most obvious reptilian hollow user is the black goanna which, besides hunting other hollow-dwelling fauna, will regulate its body temperature while resting by choosing a warmer or cooler position within the hollow. Carpet pythons also hibernate in hollows, sometimes up to 10 metres off the ground.

There have been very few studies of the invertebrate use of tree hollows, but even a cursory inspection will show that they are used by many different organisms, including the termites that help create them.

## PROBLEMS WITH PESTS

Unfortunately, some introduced species also use hollows and so compete with native wildlife. Feral honeybees are the most important of these.

Research is showing that the endangered forest red-tailed black cockatoo and Baudin's cockatoo are being displaced from nesting hollows by feral bees. Since these long-lived birds are very choosy about their nesting site, returning to the same hollow year after year, this take-over by bees may mean the end of a pair's capacity to breed.

## CAN ARTIFICIAL HOLLOWES HELP?

Where suitable hollows are not present, enterprising animals can make use of unusual sites – for example pygmy

possums have been found nesting in the emptying chute of a grain silo, and pardalotes in the horizontal pipe which formed the top bar of a childrens' swing!

Where hollows are scarce, such as in timber plantations and recent revegetation, artificial hollows such as nest boxes may be used to encourage hollow-using fauna to use the area. Design features such as the nest box dimensions, the material used and the location of the box will influence the species that will use them. (For detail, see Wildlife Note No. 3 "Nest boxes for Wildlife".)

Nest boxes are not a substitute for natural hollows. They are most often used by common species such as twenty-eight parrots or wood ducks, or appropriated by pests such as feral honeybees. Nevertheless, designed and placed with care, they can be a useful tool to help threatened hollow users; as the large boxes being installed as part of the Carnaby's cockatoo recovery programme are demonstrating. A nest box placed where it can be observed from the verandah can also provide a lot of interest for the householder.

## WHAT CAN YOU DO?

Natural tree hollows are essential for the survival of many wildlife species but, as mentioned before, they only form in very old trees. Therefore, managing your land so as to protect existing hollow-bearing trees within remnants, or even individual paddock trees if they contain hollows, is an important management goal. Hollow trees near watercourses and wetlands are especially important for ducks. When doing any revegetation, include local native trees that produce hollows - even though those hollows will not begin to be useful until your grandchildren's time! If preparing an area for revegetation, leave hollow logs to retain this essential habitat for ground-dwelling animals. Finally, if there are very few natural hollows, consider installing nest boxes.

## ACKNOWLEDGEMENT

The text of this 'Wildlife Note' is adapted with permission from "Wildlife needs natural tree hollows", *Land for Wildlife* (Victoria) Note No 6, Dec. 1990. Thanks also to Ken Atkins, Avril Baxter and Peter Mawson for helpful comments on earlier drafts.

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## FURTHER READING

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