

Nestboxes for Natives

Replacing lost hollows to shelter native birds and mammals

Many of us have gardens which we like to see as microcosms of the natural environment, which we plan, plant and manage with varying levels of sophistication, or depth of romantic imagination, to encapsulate the complex systems and symbolism of nature. A part of this passion is devoted to enhancing the garden's attractiveness to native animals, and enticing them to stay and breed. For birds we may provide food and shelter; there are some benefits and dangers associated with both of these. In this information sheet we look at the latter, and especially at the function of nestboxes.

Nests and Nest Sites

Birds' nests are not the 'houses' of birds, but places where their eggs may be incubated and chicks fledged. Few birds have any need for nests as such outside the breeding season, although they may roost in the cavities or on the ledges where they will nest later in the season. However, a nest site is often the focus of a breeding territory, and may be used regularly year after year. The lack of appropriate nest sites will limit the breeding distribution of a species.

At its simplest, a nest may be no more than a patch of bare rock or leaf-litter where a seabird or nightjar lays an egg. It may also be a complex container, woven from twigs, plant fibres, leaves and hair, a massive mud bowl, or a pile of sticks. The ability of some birds to construct complex nests enables them to breed in places with no suitable pre-existing platforms or hollows.

Falcons do not build their own nests, but use rock ledges and the old nests of other raptors or crows. Kingfishers and pardalotes tunnel into rotten wood, termites' nests and earth banks. Bee-eaters, Little Penguins and several kinds of petrel dig burrows in sandy soil. Many owls and parrots nest in hollow trees. Most cuckoos have solved the nesting problem by duping other species into raising their young.

Lost Hollows

Many of Australia's bird species are threatened by a variety of causes. However, birds are often most vulnerable when breeding. The loss of their traditional nest sites to agricultural clearing, logging and higher fire frequencies can lead to the extinction of local populations and endanger entire species. Of all the different kinds of nest sites used by birds in Australia, the most threatened are the natural hollows in the trunks and branches of old trees in our forests and woodlands.

It is not just living trees that are important for birds. Many standing dead trees, ringbarked years ago or killed by bushfires, are inhabited by birds. These may still stud the paddocks on farms when all the living ones have gone. One of the biggest threats to these dead trees is the firewood collection industry, which destroys more valuable bird nesting habitat in Australia each year than is turned into woodchips. Those Red Gum logs blazing in suburban fireplaces may have sheltered the chicks of an endangered bird.

Since natural hollows in trees take time to develop, with the largest and deepest hollows only found in the oldest trees, it is the largest of the hollow-nesting birds that are the most vulnerable. These include Australia's large owls and the black-cockatoos. Hollows suitably spacious for these birds to nest in may take centuries to develop. If there is still sufficient food for them to eat, the birds may be present for many years as an ageing population which, unable to breed effectively, fades into extinction.

Parrots, People and Pests

Almost all of Australia's parrots, including the cockatoos and lorikeets, use tree hollows for nesting. Where eucalypt forests and woodlands have been extensively cleared, first for farming and later for industrial and housing development, some species have adapted to nesting in artificial hollows in buildings as well as in introduced ornamental trees. For the smaller parrots in industrial and suburban areas, there is not so much a shortage of potentially suitable hollows as a problem with predation and disturbance.

The Common Starling and Common Myna are deliberately introduced pest species that infest many cities and towns in eastern Australia. They are well-adapted to urban and suburban habitats by being able to feed on a wide variety of foods, including much scavenged from human refuse. They compete aggressively and persistently with native birds for nesting hollows. Many suburban householders are familiar with nesting attempts by rosellas, lorikeets or other parrots in their gardens failing because of destruction of eggs or chicks by Mynas.

Another nest hollow and nestbox pest is the feral Honeybee. These may take over nestboxes permanently, as well as natural tree hollows in bushland. They are also suspected of competing with birds such as honeyeaters for nectar, and interfering with the pollination of native plants. Black Rats are good climbers and are known to use nestboxes, as well as to eat the eggs and nestlings of birds using them. Black Rats have caused the extinction of many kinds of birds on islands through predation at the nests.

Design

We must be careful that, if we want to help native birds by providing them with artificial breeding habitat, we do not put more stress on them by building nestboxes for Mynas, Starlings and feral bees. The traditional nestbox design of a cubic box with a sloping roof, a small circular hole neatly cut at the front, with a little perch beneath, comes from countries with different climates and other kinds of birds. It is usually not appropriate in Australia without modifications and some care given to its dimensions.

The first thing to consider is what kind of birds, or other animals, we wish to encourage to breed in our parks and gardens. Nestboxes are only suitable for birds which naturally nest in hollows, and which occur locally; in most Australian suburban areas these include some parrot species, pardalotes, kookaburras and boobook owls. There are also various kinds of possums and bats that will use nestboxes for breeding and shelter.

Each species varies in size, shape or breeding requirements, and has different, although frequently overlapping, needs which a nestbox can supply. These include different depths, lengths or shapes of hollow, size and placement of entrance, height above ground, and protection from predators. There are different designs of nestbox, and different placement requirements, for most kinds of hollow-using bird or mammal you are likely to find in Australia's suburban parks and gardens.

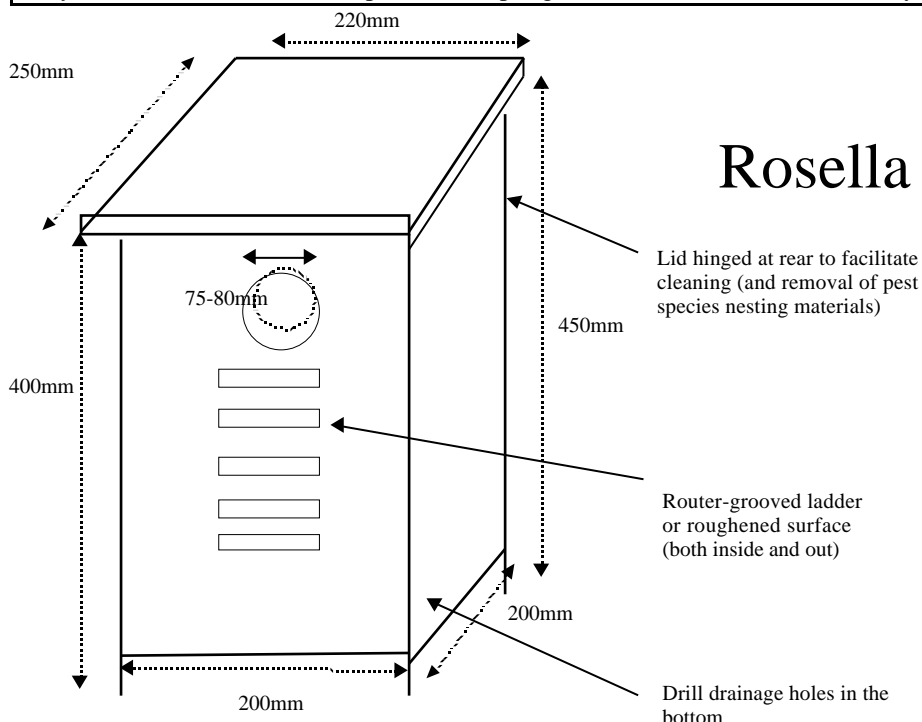
Materials

A huge variety of materials can and have been used to make nestboxes, with some more appropriate than others. Wood is traditionally the most widely used - as plywood, sawn timber or as sections of naturally hollow log. However, because of the continuing decline in the number of natural tree hollows, it would be tragically ironic to create a market for hollow logs as nestboxes. Sawn plantation timber, plywood and recycled timber can all be used; but must be painted or otherwise treated for durable outdoor use. Generally, the thicker and more insulative the material the better.

There have been recent experiments with materials such as sections of PVC stormwater piping in the conservation management of black-cockatoos. Ceramic nestboxes have been used in the past, and may be worth experimenting with. Ultimately, nestboxes of any kind must be judged by whether they are chosen as nest sites by birds which subsequently breed successfully.

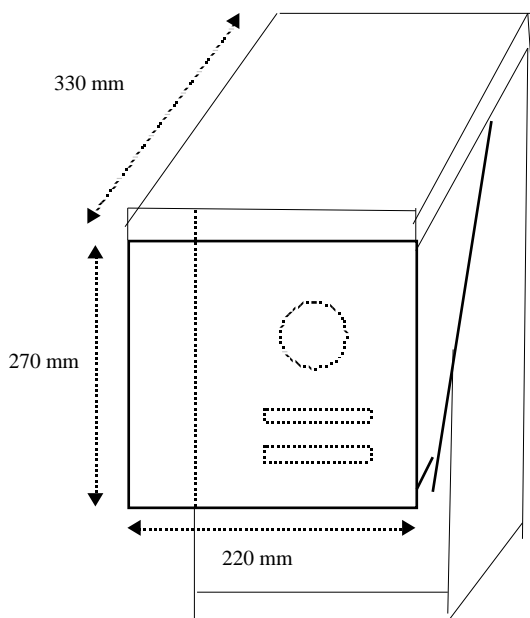
Help Baffle the Common Myna

The best way to restore native birds to your garden is to provide an environment that favours them over introduced species. A nesting box designed to exclude Mynas may help. Feedback from people who have experimented with anti-myna nestbox designs emphasise the importance of the baffle or hood completely enclosing the nestbox entrance, apart from the underside. There should also be no places for Mynas to perch on, either on the box itself or close by, as they may continue to harass native species attempting to nest. The roof of the box may be steeply sloped to ensure this.



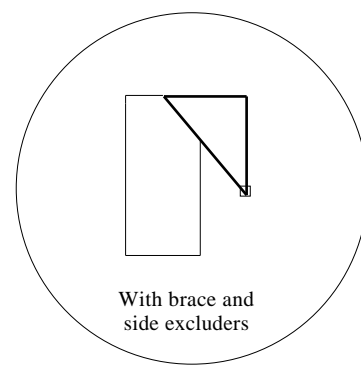
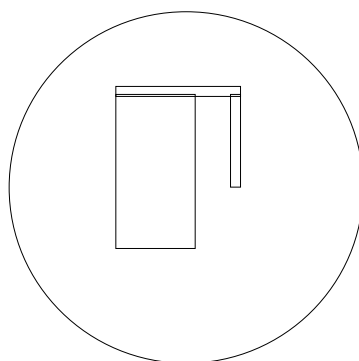
Rosella Nest Box

- Materials:**
 19mm+ timber (Marine Ply preferred - expensive but long-lasting)
 2 x Brass hinges
 PVA Wood Glue
 8-10 45mm Wood screws
 Magnetic latch
 Paint



...with Anti-Myna Baffle.

Side View



With brace and side excluders

Produced by BIRDS AUSTRALIA (the former RAOU) from a design by Tim Gunn. Feedback on effectiveness and modifications would be appreciated. Please send to Hugo Phillipps, BIRDS AUSTRALIA, 415 Riversdale Road, HAWTHORN EAST 3123.

Placement

Nestboxes, more than anything else, provide protection from the weather and from disturbance. They need to be well insulated from wide temperature fluctuations, rain-proof and facing away from prevailing winds and direct midday summer sunlight. They need drainage holes to prevent moisture build-up, and must be attached firmly so that they will not vibrate nor be easily detached by a predator.

Nestboxes may be ideally designed, but still be useless if they are not placed appropriately or protected from their main introduced predators. For birds in Australian city gardens, these are principally dogs, foxes, cats and rats. It is fairly easy to put nestboxes out of reach of dogs, but to make sites inaccessible to cats and rats may require the use of tree-guards or exclusion collars on branches. Native predators such as snakes, goannas, kookaburras and currawongs are protected, and should not be harassed.

Nestboxes can be fixed to existing trees and buildings. They must be attached securely so that they do not shift or shake in response to strong winds or being knocked by the movements of, for example, possums. One important consideration is protection from human disturbance. This may not be a serious problem on private property, but elsewhere it may necessitate nestbox concealment, or placement where casual access is impossible. They must, however, be accessible to land managers and researchers for maintenance and monitoring.

Management

If your intention in having a nestbox is to replace lost breeding habitat or shelter for native birds or mammals, you will have to manage it. This means removing the eggs and nestlings of Common Starlings and Common Mynas and destroying the nests of feral Honeybees or European Wasps. Detering Mynas and Starlings from re-nesting is not easy; these pests are very persistent, and constant vigilance is necessary. This also means that you must have convenient regular access to the nestbox, and that you must be aware of what creatures are using it for what purposes.

Monitoring

The birds and other animals that use nestboxes in your garden do so in the context of a strongly human-modified environment. By thoughtful nestbox design, construction and placement, you can enrich this environment for native fauna that might otherwise be unable to continue living there. However, it is not easy to keep track of the changes that occur without some recording of what takes place in your garden from day to day.

Just by keeping regular notes of what birds are present, in what numbers and what they are doing, you become environmentally aware. The notes for any one day may not seem particularly significant, but over the months and years they build a valuable record of seasonal changes, responses to droughts or bushfires elsewhere, and long-term declines or increases that reflect major environmental change. By contributing your information to one of the Birds Australia community environmental surveys you will be helping to sound the alarm on damaging trends so that we can do something to halt or reverse them.

Further Reading

The Nestbox Book. (A Gould League publication, available from The Birding Shop).

For information about Australia's wild birds and how you can enrich your life by watching them, studying their behaviour and movements, and helping to protect our natural environment, please call Birds Australia, including The Birding Shop, on: (03) 9882 2622, or fax: (03) 9882 2677. Write to us at 415 Riversdale Road, Hawthorn East 3123, Australia. Email: mail@birdsaustralia.com.au Website: <http://www.birdsaustralia.com.au>

Birds Australia works to facilitate research, conservation and enjoyment of native birds and their habitats in the Australasian region. Birds Australia is the Australian Partner of BirdLife International.

RECOMMENDED NESTBOX DIMENSIONS FOR AUSTRALIAN BIRDS AND MAMMALS

(Provisional information only, subject to revision)

There is a growing shortage of tree hollows in the forests and woodlands of southern Australia suitable for the nesting and shelter needs of many Australian native animals. Availability of nest hollows may now be one of the main factors limiting the distribution and density of some species, with the destruction of the old hollow-bearing trees constituting the principal process threatening their viability.

In order to facilitate the conservation management of such species, it may be possible in some cases to supplement the existing depleted number of suitable hollows with artificial ones - nestboxes. In order to do so, the requirements of such species with regard to nest hollow dimensions should be known so that suitable nestboxes may be manufactured, installed, maintained and monitored appropriately.

The other side of this sheet is a preliminary summary of recommended dimensions for nestboxes for some Australian native fauna obtained from some available literature. Much of it is based on recommendations for birds in suburban gardens. It is evident that it is far from comprehensive, and that there are considerable gaps and inconsistencies in the animals covered.

It is important that people experimenting with the construction of nestboxes for various species should systematically monitor them, and record usage, breeding success and failure, predation, and problems arising from construction, placement or from any relevant variables such as weather.

Data recorded in the table include the species or genus common name, the recommended internal diameter or width, the depth or length, the diameter of the entrance, the vertical/horizontal orientation, height above ground and the authority for the information presented. Sometimes the information presented was ambiguous or confusing, and it is possible that some data were misinterpreted.

References:

- Adams, George Martin. (1980). **Birdscaping Your Garden**. Rigby: Adelaide.
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Morrison, Rob. (1996). **The Nestbox Project**. Nature Australia 25/5: 56-63.
Pedler, Lynn. (1996). **Artificial nest hollows for black-cockatoos**. Eclectus 1: 13.
RSPCA. (n.d.). **Learn to Live with Possums**. (leaflet).
Trainor, Russell. (1995). **Artificial nest-hollows**. Bird Observer 759: 5-7.

Any comments, corrections, suggestions, and new information should be sent to:

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Recommended Dimensions for Nestboxes

SPECIES	INT DIAM	DEPTH/LENGTH	ENT DIAM	VERT/HOR	HEIGHT	SEASON	REF
Antechinus, Yellow-footed	-	-	20-25 mm	-	-	-	Trainor (1995)
Bat sp.	70-100 x 150-240 mm	200-250 mm	15-20 mm slit	v	-	-	BFNC (n.d.)
Bat, Chocolate Wattled	-	-	10 mm slit	-	-	-	Trainor (1995)
Bat, Gould's Wattled	-	-	10 mm slit	-	-	-	Trainor (1995)
Bat, Lesser Long-eared	-	-	10 mm slit	-	-	-	Trainor (1995)
Black-Cockatoo, Glossy	300 mm	870-1000 mm	160 x 200 mm	v	-	-	Pedler (1996)
Boobook, Southern	-	-	150 mm	h	-	-	Trainor (1995)
Brush-tail-Possum sp.	320 mm	400 mm	120-150 mm	v	4-8 m	Autumn	MZES (n.d.)
Brush-tail-Possum sp.	210 x 240 mm	380 mm	c.120 mm	v	-	-	RSPCA (n.d.)
Brush-tail-Possum sp.	-	-	90 mm	-	-	-	Trainor (1995)
Cockatoo, Sulphur-crested	-	-	150 mm	v	-	-	Trainor (1995)
Corella, Little	-	-	150 mm	-	-	-	Trainor (1995)
Corella, Long-billed	-	-	150 mm	-	-	-	Trainor (1995)
Duck, Australian Wood	200 mm	500 mm	120 mm	v	-	-	Trainor (1995)
Duck, Pacific Black	450 x 300 mm	-	120 mm	-	-	-	Elliot (1994)
Duck, Pacific Black	-	-	120 mm	h	-	-	Trainor (1995)
Duck, Pink-eared	-	-	-	-	-	-	Elliot (1994)
Galah	200 mm	650 mm	120 mm	v	6 m	Aug-Nov	Adams (1980)
Galah	200 mm	650 mm	120 mm	v	6 m	Sep-Jan	MZES (n.d.)
Galah	-	-	150 mm	-	-	-	Trainor (1995)
Glider, Feather-tailed	-	-	20-25 mm	-	-	-	Trainor (1995)
Glider, Squirrel	-	-	60 mm	-	-	-	Trainor (1995)
Glider, Sugar	250 mm	300 mm	50 mm	v	4-8 m	Jun-Dec	MZES (n.d.)
Glider, Sugar	200 mm	450 mm	35-40 mm	v	-	-	BFNC (n.d.)
Glider, Sugar	-	-	25-30 mm	-	-	-	Trainor (1995)
Kestrel, Nankeen	400 mm	750 mm	100 mm	v	5 m	Aug-Nov	Adams (1980)
Kingfisher, Sacred	130 mm	600-900 mm	75 mm	h	5-10 m	Sep-Mar	Adams (1980)
Kookaburra sp.	300 mm	500 mm	>130 mm	h	5-10 m	Sep-Jan	Adams (1980)
Kookaburra sp.	400 mm	-	130 mm	h	5-10 m	Sep-Jan	MZES (n.d.)
Kookaburra sp.	300 x 150-200 mm	600 mm	open	h	-	-	BFNC (n.d.)
Kookaburra, Laughing	150-300 mm	>400 mm	80-120 mm	h	-	-	Elliot (1994)
Kookaburra, Laughing	-	-	120 mm	h	-	-	Trainor (1995)
Lorikeet sp.	120 mm	600 mm	60 mm	h	5 m	Aug-Jan	Adams (1980)
Lorikeet, Little	-	-	25-30 mm	-	-	-	Trainor (1995)
Lorikeet, Musk	-	-	25-30 mm	-	-	-	Trainor (1995)
Lorikeet, Purple-crowned	-	-	25-30 mm	-	-	-	Trainor (1995)
Owl, Barn	400 mm	750 mm	open	h	5 m	Aut-Spr	Adams (1980)
Owl, Barn	-	-	150 mm	h	-	-	Trainor (1995)
Owlet-nightjar, Australian	100-150 mm	300-350 mm	60-80 mm	v	5 m	Sep-Dec	Adams (1980)
Owlet-nightjar, Australian	150 mm	>150 mm	70-120 mm	v	-	-	Elliot (1994)
Owlet-nightjar, Australian	150 mm	400 mm	50 mm	v	-	Sep-Dec	BFNC (n.d.)
Owlet-nightjar, Australian	-	-	40 mm	-	>5 m	-	Trainor (1995)
Owlet-nightjar, Australian	-	-	25-30 mm	-	-	-	Trainor (1995)
Pardalote sp.	120 mm	400-500 mm	30-45 mm	h	5 m	Jul-Jan	Adams (1980)
Pardalote sp.	120 mm	450 mm	30-45 mm	h	5 m	Jul-Jan	MZES (n.d.)
Pardalote, Striated	200 x 120-150 mm	-	25-35 mm	v/h	-	-	Elliot (1994)
Pardalote, Striated	90 x 120-140 mm	200 mm	30 mm	h	-	Aug-Feb	BFNC (n.d.)
Parrot, Red-rumped	100 mm	600 mm	75 mm	v/h	5 m	Aug-Jan	Adams (1980)
Parrot, Red-rumped	100-150 mm	400 mm	70-120 mm	h	-	-	Elliot (1994)
Parrot, Red-rumped	200-240 mm	400 mm	60-70 mm	v	-	-	BFNC (n.d.)
Parrot, Red-rumped	-	-	25-30 mm	-	-	-	Trainor (1995)
Phascogale, Brush-tailed	-	-	25-30 mm	-	-	-	Trainor (1995)
Ringtail-Possum sp.	250 mm	350 mm	80 mm	v	4-8 m	Apr-Nov	MZES (n.d.)
Ringtail-Possum sp.	250 mm	400 mm	60-80 mm	v	-	Mar-Nov	BFNC (n.d.)
Ringtail-Possum sp.	-	-	90 mm	-	-	-	Trainor (1995)
Rosella sp.	120-150 mm	>400 mm	70-120 mm	-	-	-	Elliot (1994)
Rosella sp.	150-200 mm	350-800 mm	75-100 mm	v/h	5 m	Aug-Jan	MZES (n.d.)
Rosella sp.	c.130 x 180 mm	c.400 mm	80 mm	v	-	-	Morrison (1996)
Rosella, Crimson	150-200 mm	350-800 mm	75-100 mm	v/h	5-6 m	Sep-Jan	Adams (1980)
Rosella, Eastern	135-150 mm	350-800 mm	75-100 mm	v/h	5-6 m	Aug-Jan	Adams (1980)
Rosella, Eastern	240 mm	400 mm	70 mm	v	-	-	BFNC (n.d.)
Rosella, Eastern	-	>500 mm	60 mm	-	>5 m	-	Trainor (1995)
Shrike-thrush, Grey	150-200 mm	200-300 mm	150 mm	-	-	-	Elliot (1994)
Shrike-thrush, Grey	150-200 x 200-300 mm	150-200 mm	open	h	-	-	BFNC (n.d.)
Swallow, Welcome	130 mm	-	open	h	3 m	Aug-Dec	Adams (1980)
Teal, Chestnut	200-400 mm	450-750 mm	100-120 mm	v	1.5 m	Sep-Dec	Adams (1980)
Teal, Chestnut	450 x 300 mm	-	80-100 mm	-	-	-	Elliot (1994)
Teal, Grey	200-400 mm	450-750 mm	100-120 mm	v	1.5 m	All year	Adams (1980)
Teal, Grey	450 x 300 mm	-	80-100 mm	-	-	-	Elliot (1994)
Teal, Grey	-	-	90 mm	-	-	-	Trainor (1995)
Treecreeper sp.	90-150 mm	100-150 mm	50-80 mm	v	-	-	Elliot (1994)
Treecreeper sp.	150 mm	400 mm	50 mm	v	-	-	BFNC (n.d.)
Treecreeper, White-throated	75-100 mm	300-400 mm	50-70 mm	v	5 m	Aug-Jan	Adams (1980)