

Materials to Use

Or

Not to Use

To Make Nest Boxes for Wildlife

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<https://nestboxtales.com/nest-box-materials/>

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Sharing stories and knowledge about nest boxes for Australian native animals to encourage everyone to improve habitat for wildlife.

Nest Box Materials

Which wood to use?

Your choice of wood materials used to construct a nest box will affect the insulating properties (thermal mass) of a nest box, and also durability out in the elements.

Wood is a fantastic insulator and for nest box occupants. During cold winter months, a nest box made from thick wood panels will retain the body heat of an occupant and protect against the outside cold temperatures. During hot summer days, a thick-walled nest box will provide some protection against the hottest periods of the day, if installed out of direct sunlight.



A winter snuggle of sugar gliders, staying warm in their thick walled nest box.

A well-constructed hardwood or thick marine ply nest box, if painted with a good quality exterior grade paint – at least two coats, will potentially provide animals with a home for 20-30 years or more. By comparison, a pine, or thin plywood nest box may only last a few years.

- While (untreated) **hardwood** timber (15mm or more thick) is best (sawmill off cuts are an option). However this is a relatively scarce and expensive resource, so is not likely to be an option for most people to use.

- The second best option is thick **marine ply**, of at least 17mm thickness.
- The third best option is **exterior ply**, which should also be at least 17mm thick.
- The final option is **untreated pine** which is often readily available – from pallets etc (use HT = heat treated only). However just be aware that nest boxes made from pine may not last long in the environment. Painting of pine nest boxes is pretty much essential for them to last more than 2-3 years.

I would not recommend pine as a nest box making material for areas with high rainfall and humidity, and where termites are rampant. It won't stand a chance against these! For my location near Canberra that has low rainfall, very low humidity, and few termites, pine nest boxes often last many years if painted well (outside only).

What about other wood products, like form ply, chipboard, MDF, treated pine?

If **MDF** is exposed to rain or water, it will rapidly turn to mush. This material is not designed for outdoor use. MDF will also absorb and retain urine and droppings even if kept out of the weather – such as in a garage or under your eaves. **MDF is not an appropriate material to make nest boxes from.**

Form ply may, or may not be made using toxic glues that also let off fumes. The glues may, or may not be able to withstand being wet. **Form ply is not recommended as a material to make nest boxes from.**

Chipboard is not designed for outdoor, rain, hail shine use. It will rapidly break down, and may be bonded using glues that are toxic to eat. **Chipboard is not recommended as a material to make nest boxes from.**

Treated pine is not something that you'd want your child munch on, and so isn't appropriate for use to make nest boxes. While your nest box may have a ringtail possum label on it, this size is also preferred by Crimson Rosellas, potentially Galahs and other parrot species that enjoy munching on things, especially if they are bored while sitting on eggs. You really don't want to poison any nest box occupants! **Treated pine is not an appropriate material to make nest boxes from.**

Increasing the durability of nest boxes – to paint or oil?

The key question here is:

Would you like your nest box to last 1-10 years, or 20+ years?

It is very important that any coating put on your nest box is not toxic. **Please do not varnish nest boxes, or paint them with oil based paints**, or use other treatments that **you would not want to eat**.

No treatment should be applied to the interior of nest boxes. Occupants are more likely to consume, or be exposed to the fumes of any internal treatments. Treating the inside of a nest box is also unnecessary, as it is protected from the weather and will stay in a relatively pristine condition, depending on how messy the occupants are!



Third year of use by my resident kookaburra family. Note the good condition of the inside of the nest box, despite the gross kooka-chick poop layer at the bottom. Don't worry, maggots are the nest box vacuum cleaners by consuming this goop, growing wings and flying away!

Paint

Painting the exterior of your nest box with a water-based under coat, and a good quality water-based exterior paint (2 + coats), such as Dulux Weathershield will extend the life of your nest box by a couple of decades at least.

Do ensure that the cut edges of your plywood and timber nest boxes are thoroughly coated, so you can't see the wood beneath.

Please use pale colours, as this will prevent the nest box from absorbing heat from the sun during warm weather. Dark coloured, hot nest boxes can be deadly for creatures that cannot escape, such as chicks and unhatched eggs.



A nest box painted to match the colours of the scribbly gum trees on my property.

Also please choose colour/s that blend into the habitat where the nest box will be installed. This will reduce the risk that the nest box will be discovered by a predator of the occupants. Birds prefer to nest in discrete, secret locations, so the colours of your nest box should emulate this. Sugar gliders and small possums also are at risk of being snacks for bigger daytime and night time predators, and so will benefit from a nest box that is invisible from hungry eyes. For bushfire zones, some imagination will be required – imagine what the vegetation will look like once it regrows – pale ash grey is an option, it blends in with the sky too. Black is not a suitable choice of colour to paint a nest box, given the ability to absorb heat during hot summer days and potentially cook occupants.



Feel free to have some fun with painting your nest boxes in bushland colours! I had some fun with this larger parrot nest box.

Oil

A second treatment option for nest boxes, is a non-toxic oil such as linseed oil. However in the elements, the protective benefits of the oil for the wood will only last for 1-3 years, after which a new coat will need to be applied, or the nest box rapidly begin to degrade.

Unless you are installing your nest box at home and are willing to reapply the oil treatment every couple of years, I would recommend painting over oiling a nest box.



A Wood Duck checking out one of my for-Wood Duck nest boxes coated in linseed oil.

Nest boxes are a valuable resource for native animals that use them, have used expensive wood and metal materials, and someone's time to construct. Increasing the length of time that a nest box will survive in an ecosystem I believe, is an important task for the nest box maker, or the nest box installer to complete.

Nest box bits and pieces

Nails, screws or staples?

Galvanised or stainless steel screws are recommended over nails or staples, however I've seen nest boxes made from all three of these options.

Of the greatest importance, is to use materials that will not rust in time. There may be salt in the air in coastal locations, or high rainfall. You really don't want the rusting of a nail or staple to cause the failure of an otherwise structurally sound nest box.

Drainage holes over creative "weather proofing"

Natural tree hollows often don't keep occupants 100% dry during big storms. However the much loved, and successful hollow homes will enable any moisture entering to drain and so not causing flooding or fouling of bedding. A death trap of a hollow would be one that doesn't permit water to drain, flooding any occupants that cannot escape such as chicks, during very wet conditions.

Just assume that your nest box may let some moisture in during a crazy big storm. That's quite OK! However to effectively drain this water out, a nest box needs to have drainage holes at each of the four corners. This is so that water can escape, no matter if the nest box is installed leaning forwards, backwards, angled to the left or to the right.

The lid needs a hinge (nice to have, not essential)

Stainless steel or brass hinges are recommended, as these will last for many years outdoors. As for the size, if you aren't sure, just show your local hardware store the timber you are intending to use, and they will happily advise you on what size hinge to use.

However if you can't afford to purchase hinges, then attach the lid of the nest box to the body with good quality galvanised or stainless steel screws, so that these can be (relatively) easily removed if someone needs to gain access to the nest box.

Please don't use materials as substitute hinges, such as leather, bike tyres, or other materials, as these are unlikely to survive intact for 15-30 years in UV, rain, or withstand a curious parrot's chomping. The weakest part of the nest box is usually the lid/hinge. If the nest box lid comes ajar or falls off, the nest box will fail in it's ability to provide shelter to wildlife.



A stainless steel hinge purchased from a hardware store.

Why is it nice to have a lid that can open?

It's pretty much impossible to clean out a grotty nest box with a small entrance – that one can't fit their hand into, or remove feral species such as European honey bees. I've scraped two inch-deep Crimson Rosella chick poop out of my small for-rosella nest boxes, which would have been pretty difficult to do if the lid did not open. A lid that won't open also severely limits the ability to monitor a nest box – which occupants are there, are there any egg shell fragments, what types of bedding is inside?

A latch to keep larger predators out (nice to have)

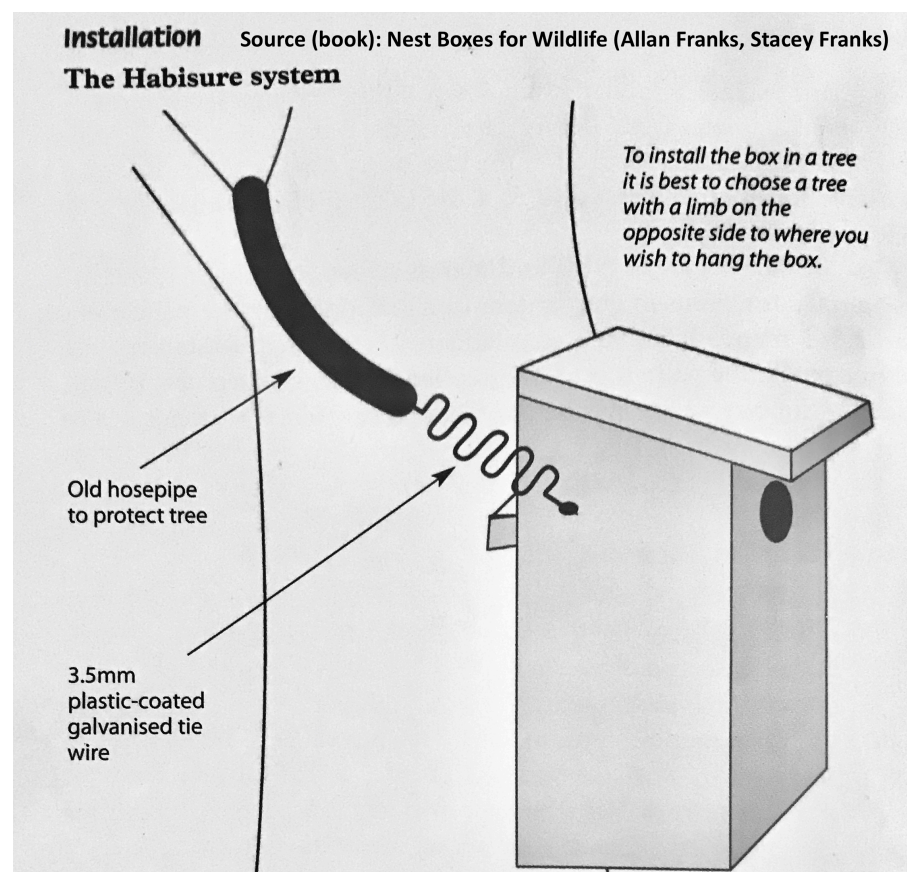
Predators such as brush tail possums (eat eggs, chicks, kill small-large birds) and free ranging cats are quite able to push open nest box lids to gain access to a tasty nest box snack. Most predator individuals won't discover that they can open nest box lids, however this can be a problem. Adding a simple latch that prevents the nest box lid from being lifted up, is a good solution. Screwing in an eyelet on the front left or right side of the lid, and below on the side wall, and adding a small loop of twisted wire is one option, or adding a small screw in latch is another.

Tree installation materials

Now, there are a few different options for attaching a nest box to a tree. My preferred option is the Habisure system (and variations) by Hollow Log Homes, as this does no harm to the tree, is very durable, and makes installation a cinch. However the materials for this and similar variations are more expensive than alternatives, and so may be not an option for some seeking to install nest boxes. That's understandable!

Option 1

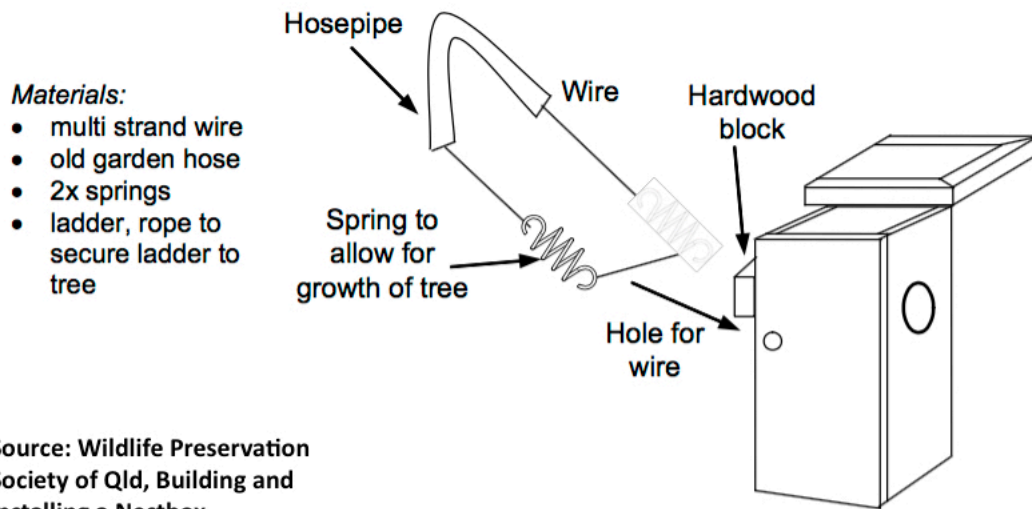
The Habisure system is a single piece of plastic coated 3.15-3.5mm galvanised wire, that goes through holes right at the back of the two side panels of the nest box. The wire is bent to a zigzag shape for the first 20-30cm, and then runs straight after. One end has a loop, the other is longer with a straight end that goes around the tree and through the loop. One variation has a piece of garden hose on the part that hangs off the tree – this would be a good option if plain fencing wire (not plastic coated) were to be used.



Option 2

The second option has a piece of wire running through holes at the back of the two side panels of the nest box, connecting to a spring on each side, which are then connected to another piece of wire that runs through a piece of garden hose protecting the tree from the wire.

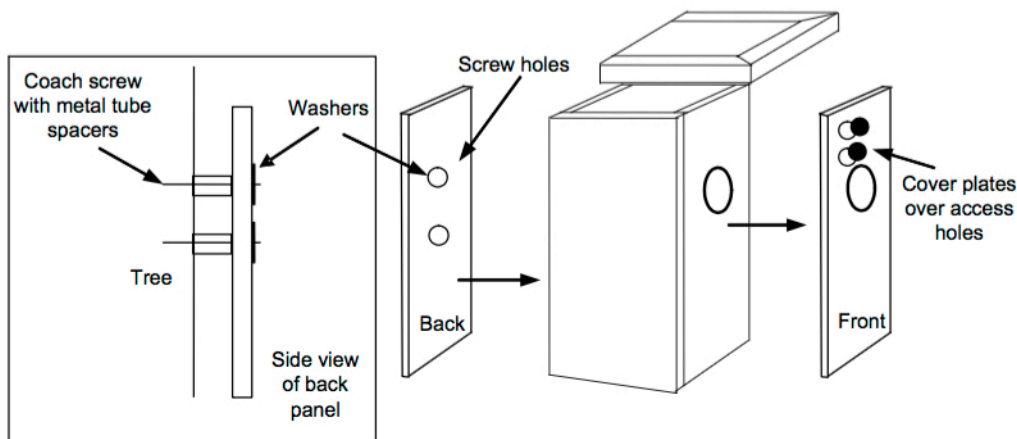
There is a second variation of this design, with a spring on just one side which has been found to be very effective.



Option 3: Bolting a nest box to a tree – First variation

Not permitted for public land such as National Parks and Conservation Reserves

Leave the lid unattached and drill two small holes at the front of the nest box to allow for access to the screws with a spanner. Drill two 8.5mm holes through the back of the nest box, one above the other. Place a washer and screw through the top hole of the box and then place the metal spacer over the back end of the screw. Fasten the screw into the tree so that it is supporting the weight of the box. Repeat to secure the bottom screw, ensuring that the metal spacer is firmly against the tree. Cover the front holes with metal 'cover plates' using small screws and attach the lid. (*Words from the "Building and Installing a Nestbox" by the Wildlife Preservation Society of Qld*)



Materials:

- coach screws and washers
- metal spacers
- ladder, rope to secure ladder to tree
- tabs of metal (cover plates)

Source: Wildlife Preservation Society of Qld, Building and Installing a Nestbox

Option 4: Bolting a nest box to a tree – Second variation

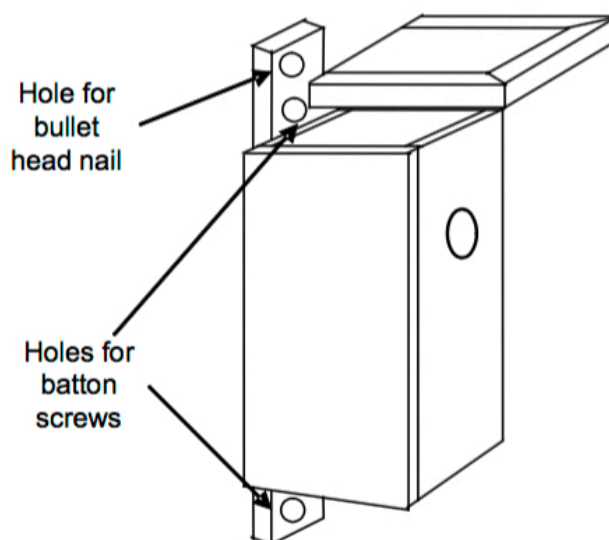
Not permitted for public land such as National Parks and Conservation Reserves

Screw a hardwood batten to the back of the nest box so that it extends above and below the height of the box. Drill and countersink holes on the top and bottom of the hardwood batten for the batten screws. Drill another hole above the top hole large enough for the bullet head nail. Hammer the 150mm bullet head nail into the tree half way and hang the nest box by the top hole on the nail. Fix batten screws to the other top and bottom holes. *(Words from the "Building and Installing a Nestbox" by the Wildlife Preservation Society of Qld)*

Materials:

- bullet head nails
- batten screws
- ladder, rope to secure ladder to tree

Source: Wildlife Preservation Society of Qld, Building and Installing a Nestbox



Bedding (nesting material)

Although you may be making a nest box for a ringtail possum – according to the label on your design sheet, you are also making a nest box for different Rosella species (parrots), Dollarbirds, Australian Owlet-nightjars, and also perhaps a number of smaller bird species willing to brave the risk of these larger competitors chasing them out mid-nesting season. The same is the case for most nest box designs. Native animals won't read your label on the outside!



One of my resident ringtail possums enjoying this deep layer of pine bark.

Because of the high chance of multiple species using a single nest box, I strongly recommend adding bedding. While animals such as ringtail possums (curled bark pieces), sugar gliders (eucalypt leaf nests), galahs (eucalypt leaves), tree creepers (woven bark nests) will add their own bedding, many animals do not, and may refuse to use a hard wooden floored nest box with no bedding. Birds that don't bring bedding and lay their eggs on a bare, hard wooden floor risk their eggs being broken while they are being laid, or when mother bird is sitting on them. Although Wood ducks add a thick layer of down to a nest once all eggs are laid, the eggs risk being broken each day while mother duck lays her collection of eggs.



Crimson Rosella chicks on their bedding of shredded (by mum) wood shavings.

Natural tree hollows generally have a nice, cushioned layer of decomposing wood, which parrots will add to by shredding the wood inside hollows to make their bedding. Nesting boxes however provide no such benefits, and have a very hard, wooden floor. Bedding of sawdust, wood shavings (e.g. for pets), untreated fine wood chip or pine bark make fantastic bedding for nest boxes. For depth, about 5 cm, or two inches is appreciated by some species, and will be reduced to suit preferences if too deep by other species.

Please don't use bedding such as straw or sugar cane mulch, as these provide very good homes for parasites such as lice, mites and various blood sucking critters – as poultry breeders such as myself well know. Sugar cane mulch and straw become mouldy and fowl if exposed to moisture, including from precipitation, or accumulation of chick droppings. Chemical free wood products such as wood shavings, fine pine bark or wood chip do not have these issues.



Wood Duck eggs on a bedding of wood shavings, mother duck has not yet begun to sit.

Nest box access

A smooth-surfaced nest box can be very difficult for animals to access, or exit from the inside without adding some kind grip-able ladder. Older nest box designs and a couple of current designs suggest using wire mesh. Wire mesh can be problematic, with small feet of chicks and birds particularly at risk of being trapped, damaged and at worst, unable to be freed, causing a slow and quite horrible death.



A selection of grip-able access options for nest boxes. Note the nest box with the stick also has the parallel cuts in the wood also, in case the stick breaks off or is chomped off by a parrot.

Two very durable options exist, which include making shallow parallel cuts in the front panel of the nest box below the entrance hole, both on the inside and outside face. This can be done with a power saw, a hand saw, or even a chisel. Don't stress about these being neat and symmetrical!

The second option, is to add strong parallel thin cut pieces of wood to the outside and inside of nest boxes below the access hole.



Note the internal climbing ladder for this sugar glider family to exit their nest box.

Adding a good-sized stick to below the entrance hole is advised for brushtail possum nest boxes, which I would recommend adding in addition to the above two options. This is because a stick may be chewed off by a curious parrot, leaving the nest box with no grip-able access to the entrance hollow. For bird nest boxes, I would recommend not adding the stick, as this will make access easier for possums, which are predators (e.g. brushtails, sugar gliders), or competitors for nesting hollows (e.g. ringtails, brushtails).

Feral pest exclusion methods

European bee exclusion

Urban and peri urban locations are at a greater risk of nest boxes being invaded by feral bees than within areas of native habitat. If you are worried about bees, or there are stories circulating about feral bees invading nest boxes installed in the area, the following method may be worth applying to nest boxes before they are installed.

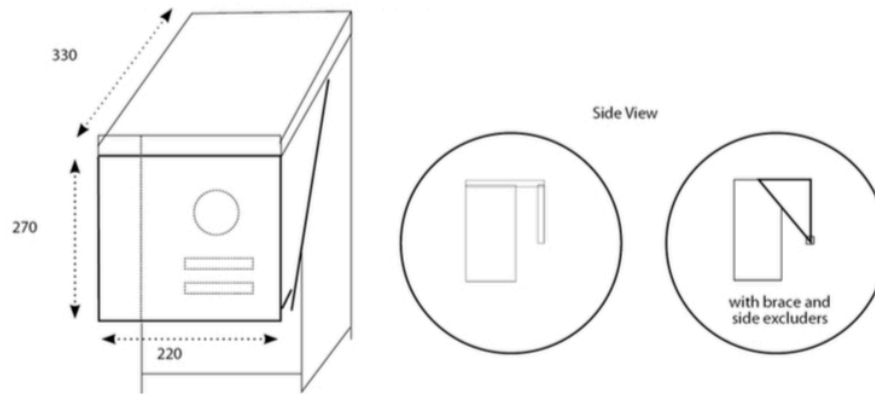


Image by Sharon Gwynne – added to a nest box after a nearby nest box was invaded by bees. Two weeks later, a Crimson Rosella family moved in!

Cut and attach a piece of carpet to the inside of the nest box lid – so that the lid still closes completely. The carpet needs to have unlooped pile, and not be marine grade. Bees can't attach their wax to the carpet, and so won't bother to invade the nest box. Simple!

Anti-myna baffle

Indian mynas are a pest bird species that lives in urban and peri urban environments. If you are aware of there being a large Indian myna population in the area where nest boxes are to be installed, you may wish to add an anti-myna baffle to prevent them from using the nest box. Alternatively, you could monitor the nest box, and install the anti-myna baffle if the nest box is invaded by mynas.



The distance that the baffle is placed in front of the nest box should be the same as the diameter of the entrance hole. This design is by BirdLife Australia.

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