> **This is the Hollowhog**
>
> And what effectively it is, is a high speed cutting head that's got tungsten carbide teeth. And it spins at about 11,000 rpm – which is based on the speed of the grinder.
>
> It's got a long spindle, which means that I can then put that whole length inside the tree.
>
> It's got a dust extraction coupling, so all the wood dust gets sucked up the tube and then spat out as I'm carving.
>
> *Matt Stephens*

IDEAS FROM PLCM EVENTS

An information sheet for conservation-minded landholders and others interested in conservation land management

Theme Supplementary habitat

Source event *Hollowhog VS Nestboxes* – field day at Brunkerville 10/08/24

Landcare host Hunter Region Landcare Network

Traditonal Country Dharawal

Habitat hollows and Hollowhog

Presenter Matt Stephens, conservation biologist and inventor of Hollowhog.

Topic Specific native fauna habitat requirements, and how to create them, particularly using the Hollowhog system.

Key points

Hollow loss over the last 200 years has been catastrophic.

Lack of hollows is a critical limiting factor for a range of Australian fauna species – many will go locally, or completely, extinct if we don't fix this quickly.

We still have much to learn about how native animals use hollows.

Natural hollows are best and should be protected as a priority.

The Hollowhog process can fast-track hollow creation.

Hollowhog attempts to emulate natural hollows.

There are many different options to improve hollow availability.

Habitat value, even in younger or smaller trees, can be improved.

Dead trees are a valuable resource.

Hollow entrance size is the critical factor for many species.

There is a role for everyone – many tasks are fairly easy, and small-scale works can make a big difference.

> **One of the most critical things for a range of Australian fauna is the presence of hollows in the landscape**

We've spent the last 200 or so years, effectively wiping out many of the hollows that would naturally have occurred – and the species that would have been in those spaces.

By providing these spaces back in the landscape for fauna, we can let them start to re-inhabit these lands where they really should be, and provide the services that they do.

Through my process – the Hollowhog and Hollowhog tools – we are trying to put hollows directly back into trees

– they've got the highest chance of lasting long into the future. We then may also consider doing salvage log and other, nest box style hollows.

What I wanted was to make a little entrance hole, and then a big cavity inside the tree

I carve through the entrance of the hollow, which is five centimeters, I can then start going down and up and sideways, and just keep going round and round and whatever I can reach.

So in this instance that's about 45cm. That's almost a powerful owl-sized hollow, all carved through a single entrance hole.

PRIVATE LAND CONSERVATION MATTERS

Landcare NSW and the NSW Biodiversity Conservation Trust are working together to raise awareness, and support private land conservation efforts across the state.

An 'apple cored' entrance piece with a carved rebate at one end.

A dish is cut in a living tree where the 'apple cored' section will fit. (Matt used a salvaged log for the demo.)

This slit-style side entrance would be great for microbats.

Matt designed a separate entrance piece to prevent the tree growing over the hollow

A living tree can 'heal the wound' and grow over a hollow entrance.

If I cut that slot and carved the chamber inside for the microbats (and I probably would make that slot a bit longer), and it was a living tree – so one of the blue gums around here

– within eight months, that would almost definitely be closed over.

The tree grows new tissue from the sides that will creep out across and eventually seal that space off. So I've already lost my hollow.

In the first trials that I was doing, I was watching that process happen.

So if I'm doing a small hole into a tree – and there's no fauna maintaining that hollow entrance – that's going to close over really rapidly, and will never be available for fauna to use.

So eventually I came up with this concept, which I call 'apple coring'. It's effectively putting a little dish there [in the tree]. When I carve that living tissue off, and this gets inserted into the tree, I line up this little rebate where the new tissue growth is going to occur.

And so once that new tissue growth grows in to that rebate, it's biologically anchored. And it's effectively like a branch stem from the perspective of a bird, or anything else that's going to use that hollow.

I've been doing that now for about two and a half years, and it's worked perfectly in every situation where the tree just locks it into place and that's it.

That slit is still going to be the final entrance –

not the one on the outside – that's a landing site – its a tube.

An 'apple cored' entrance.

Matt gave a carving demonstration, and showed pre-carved examples of various hollows and hollow entrance styles, which he encourages landcarers to make.

you can make all these entrance pieces

you get a climbing arborist in for a day

you help them out as they install all these beautiful entrances you've made

Hollow entrance size is one of the most critical factors for a lot of species

The really tiny microbats – they love sneaking away into something that's nice and narrow and safe, where no big predators can get in

Gliders like entrances they can only just fit through

… originally I carved the entrance five centimeters and slightly longer, and I got no usage at all by the gliders in the first year and a half.

Then the tree started to slightly grow over the sides of the entrance, which narrowed it up. The gliders preferred the narrower entry, and now keep it maintained so they can just get in.

So I've got this classic footage of a squirrel glider. It's able to squeeze it's head in and its front limbs in. I don't know what it does – whether it dislocates a limb or something – but it pops in and eventually gets into that hollow. But from its perspective, it's ideal because the lace monitor that also investigates that hollow can't get into to eat it – or one of the larger pythons that live in that space.

Lace monitors can be a threat

I think it's underestimated what they're doing. Because they're a native species, people automatically think, '*oh well that's just natural*'. But we seem to have changed the dynamic somehow, and they seem to me to be one of the major limiting factors for a whole range of species.

Cats will look inside a hollow. But you'll probably find the lace monitor has a greater ability to get inside to take out some of the fauna that we're trying to provide homes for.

A lace monitor has a big, long body. So if I can make a entrance that will come out this way and then have quite a sharp bend, they won't necessarily be able to turn and get their body around it. So I've been trialling things like that.

A wider opening helps the target animal see the hollow – but a narrow section further in can exclude predators

If we look at what happens in lots of natural hollows, you'll see that they're kind of tapering, and they'll get to a point, which is the squeeze point, that the animal goes through.

That wide opening is something obvious to investigate

Some projects that we've been working on, we found that, for example, microbats, will happily fly

past a very narrow space that doesn't present itself as '*oh, I'm going to investigate that*'.

Whereas if it's like that, its like, '*I'll have a look at this*' so they'll climb inside, and check if its the right size.

The chamber size does matter to a degree

Squirrel and sugar gliders will hang out in little family groups, and they'll cuddle up together at certain times of year to keep nice and warm. You might have three or four or five gliders that will build themselves a little nest out of leaf litter in the base of a hollow.

So the cavity itself needs to be big enough to accommodate that many gliders.

In one of the forests near Braidwood, the average hollow that a greater glider will use is two meters deep.

But they'll happily use anything from 40 cm through to ten meters deep.

A brushtail possum will happily sit on the fork of a tree all day long if it has to,

so there's a range of what's suitable.

There's now about 200 to 250 people with the tools, using them around Australia

That's everywhere from Tassie to WA, Queensland, all throughout Vic, in New South Wales. Yeah, loads of hollows going in which is fantastic.

We've got people doing fish habitat

So there's two species, the Murray River pygmy perch, which is a tiny, tiny little fish. And they take a log like that, and pop it full of hollows – lots of little pockets and cavities all through it.

And then they'll take it, drop it into a creek, and anchor it into the creek bed. And that thing gets used by the pygmy perch.

And the Mary River in Queensland – they've just started to do it. Three weeks ago I got a call from a very excited arborist. He said, guess what I've just done? So, yeah – super exciting!

You can create ground habitat

We certainly do a lot of ground hollows, and that's viable.

The absolute preferred option is to protect existing hollows

That's our number one goal. And in instances where we can't do that – or where there's been an event like a big bushfire that's come through and wiped out hollows – then we try the best way we possibly can to reintroduce hollows.

Q and A

Who can use it?

I've geared it really for arborists and others and commercial kind of groups, but definitely Landcare groups – Landcare groups have all the tools.

Live or dead trees?

Both live and dead. For some people, they don't want to touch live trees, and that's fine. But we recognize that there are lots of species that will only want to nest in a live tree. Live trees will, if we carve correctly, last for a lot longer than a dead standing tree.

Does it damage the tree?

It could – but this can be avoided or minimised with proper advice and planning – find out which trees are suitable, what size, type, location and number of hollows you can safely install.

It's that balance between thinking about an individual tree's health perspective, and the whole forest community health perspective – except where there's potential for failure on people and structures. You might ensure that a fauna population remains on site, or can re-established itself on site.

Is there any point in using a dead tree?

Yep – 100 percent. You could do all sorts of things, from carving with the chainsaw little narrow slits that become home for microbats, through to carving small chambers into bigger ones.

What height?

If you read a lot of things about nest boxes, it'll say '*nest boxes work from three to six metres*'.

Why is that? Well, that is the maximum height you can stretch up with a pole to have a look and monitor your site. It doesn't mean that fauna won't use things that are higher or lower. They'll use whatever the best available is.

When people talk about '*we've got whatever species using a hollow or a nest box at three metres'*, that might be an appropriate height in a forest that's a nine meters tall, out in the woodlands on the other side of the ranges. But coming to a forest with 60 metre tall blue gums – from the species perspective, three metres might actually feels like it's on the ground.

So I think of it more of a proportion of that tree's height. I'd be saying aim at putting your hollows as high as you can if you can. And if you can get them in the top third – unreal!.

But its not the same for all species. For example, *Antechinis* or something like that probably wants to be down close to the ground, and will happily use a hollow on or closer to the ground.

We've done a whole lot of replanting in the last 20, 30 years. Is this sort of nest boxing possible in those newly planted areas?

Absolutely. It would depend on the size of the stem if you're going to carve directly into trees.

If they're not big enough, go to the next best thing. You carve salvage logs and install them, and they provide spaces for fauna to come in. The other process you could think of doing is small hollows.

So you will probably struggle to provide habitat for the biggest of species, but you might be able to do little entrances – have little cavities where the entrances remain open – that provides space for things like, possibly, feathertail gliders. Pardalotes will use very small sites like that.

By providing that, there all the ecosystem services that those species are providing – like pest control and fertilizing forests – coming to your planted area.

And over time that cavity will grow and develop. So you've effectively brought forward the time that hollows are forming in that forest by 70 years. And it becomes a really good option.

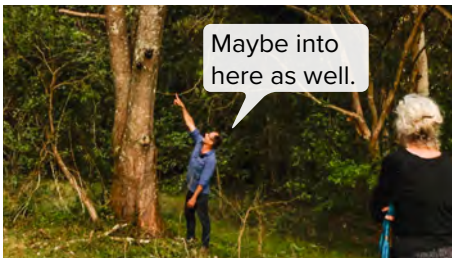
Some of the hollows, they'll be 'webbed up', but you come back in a week's time and the webbing's gone

And the spider that used to inhabit that space has gone too, and probably ended up as dinner for something very pleased to have it - so '*thank you very much*'.

What about wattles?

So wattle species, it's probably got a 20, 30, 40 year lifespan.

Perfect spot here. Tree's already starting to close that off. You could put a hollow somewhere into that.



You know that tree itself is not going to last forever. It's already got some dead sections in the top of it. Microbats! – get a chainsaw and just carve big long slots through that section. And then you've already got a space made.

Is there value in smaller hollows?

There's lots of options for smaller fauna. It might be that you're creating spaces for antechinis – feathertail gliders, tree frogs, spiders or whatever else that all form part of that system – and then they all get eaten.

There is a hog and a piglet?

Hogging is a term from woodworking. I didn't think of that piglet name – someone else did – but it's quite appropriate.

What a cracker of a tree!

It's big enough to put substantial hollows in.

If I knew we had 10 or 15 of those on your property, I would say, let's use this as your habitat tree.

We'll have one tree that we're going to carve multiple hollows, with different entrances and different chamber sizes on different locations.

Landowner, Ruth McKay asked Matt to assess this blue gum for "Hollowhogging".

Hollowhog can be used in nest box creation, or to add cavities to timber on the ground

The salvage log method uses off cuts, fallen timber, felled trees etc

... so they'll go to an arborist who's knocked down a tree – that's otherwise going in the chipper. And they'll then take that log, carve a hollow leaving a nice big, thick wall, hoist it up in the tree, hang it, and use that as a nest box – with that interwoven fibre and durability that a stem will bring, as opposed to a piece of ply.

With a chainsaw, I've taken out this wedge shaped piece of timber. I can now put it back in place and It's never going to get pushed in.

Assessing hollow provision opportunities in a group of younger trees planted by the landholder.

those trees are 28 years old

Ruth McKay
Landholder and field day host

If that was what I had to work with,

I'd be getting salvage log

You could easily put hollows back up for fauna in that way

I'd be finding spaces and installing them

Landowners play a key role in returning the missing hollows to our landscapes, and halting extinction of hollow dependant fauna

If we lose those hollows in our landscape – especially on private land tenure – we lose the opportunity to have those species inhabiting those forests, and we lose ecosystem services that fauna provide.

So the landowner provides the space and then protects their land. And there's so many people out there that are really keen to protect their land through conservation agreements, and in other ways.

So by being able to reintroduce hollows, we're providing those spaces for fauna to persist into the future. And it's a critical thing at this time when we realize that we're having changes from climate impacts, as well as lots of deforestation that's occurred in the past, and where forests are in the repairing state.

Fauna are major pollinators, major seed disperses, and they'll also fertilize forests – just through moving through the forest and doing what they do. As well as pest control – a lot of species will eat the invertebrates that inhabit the forest, and or surrounding lands.

That remnant forest may also provide space for fauna to breed and live, and then radiate out into surrounding lands.

So it's not only just that small portion of land – we might be affecting hectares and hectares around as well.

And landowners effectively are custodians of their land, they're going to be able to help, not only the vegetation, but also the animals that should occur in that forest to be there for many years to come.

And look, just by providing that opportunity for the trees to continue to grow, and space for understory to develop – and other habitat elements – that's a really effective way to do it.

There's nothing more exciting than putting a hollow into a landscape, and coming back after a few months and finding that you've got a glider living in it, or a parrot nesting in it,

and knowing there's potential for the hollow to be there in another 120 to 200 to 300 years time, still providing habitat for fauna. ”

Many landholders left the field day keen to put ideas into action on their own properties.

Mary and Robert Whitelaw
Landowners

“I'm really interested in the tree hollows, because when we moved to our block it was a very sterile block – even now we have fenced off areas, there's not a lot of hollows happening yet – even though any dead trees that were there, we have actually left.

So a way of increasing the biodiversity on our block, I guess.

We put some hollows up trees, but this is a better method, because ours fall out – or they get disjointed – but this really works. ”

Further information

Landcare NSW Partnering in Private Land Conservation

NSW Biodiversity Conservation Tust

Study conservation land management online. Includes a range of conservation land management e-learning courses.

Thanks to the organisers, presenters, participants and agency staff, who allowed us to record this event, and assisted in developing this resource.

The main text is derived from speakers quotes. Captions and green headings are additions.

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Created for Landcare NSW, 18/03/25.

Ideas for Action

- **Protect what's already there** Natural hollows are irreplaceable, so preserving mature trees and deadwood should be the first priority.
- **Fast-track habitat creation** A tree can take over 120 years to form a large hollow naturally. The Hollowhog system can create them in minutes.
- **Think small for a big impact** even young trees can support wildlife with the right modifications. Small-scale efforts add up!
- **Customise hollows for different species** Entrance size is critical! Tight spaces protect small animals from predators like lace monitors.
- **Use fallen timber wisely** Don't just clear logs and stumps – they can become habitat for microbats, frogs and small mammals.
- **Repurpose removed trees** Salvaged logs can be carved into hollows and mounted, or placed on the ground, as natural nest boxes.
- **Engage with your community** Landowners, arborists and Landcare groups can work together to create, monitor and maintain new hollows.
- **Contact Matt** for a list of Hollowhog arborists in your area info@hollowhog.com.au
- **Apply for a small grant** to support installation.