

Scientists fear insect populations are shrinking. Here are six ways to help

Are you planning a big garden clean-up this summer, or stocking up on fly spray to keep bugs at bay? Before you do, it's worth considering the damage you might cause to the insects we share the planet with.

Australia's insect populations are under pressure. The problem is better known in the Northern Hemisphere, where over the past few years scientific studies have reported alarming declines in insect numbers.

We don't yet have a true understanding of what is happening in Australia. Earlier this month, scientists gathered in Brisbane at the Australian Entomological Society conference to discuss the extent of the problem. Evidence suggests several species and populations are under threat.

Some might see insects as small and insignificant, but they perform functions crucial to sustaining life on Earth. There are several simple steps you can take to address insect decline in your area, or even help scientists keep tabs on the problem.

We need to know more

In Australia, we know iconic species such as the bogong moth (see left), green carpenter bee and Key's matchstick grasshopper are in decline. There is documented evidence for the extinction of two Australian insect species, but this is probably just the tip of the iceberg.

A research review published this year suggested more than 40% of insect species globally are threatened with extinction over the next few decades. However, this estimate was based on limited studies of a few iconic insect groups in western Europe and the US.

Such findings should be taken with caution. We do not have enough evidence to extrapolate to the whole planet.

Despite this, factors affecting insect populations overseas – such as habitat loss, climate change and insecticide use – most likely also apply in Australia. Bushfires and drought on this continent can also affect insect populations.

There are no published studies documenting insect decline in Australia, but anecdotal reports from entomologists suggest lower than average populations across a number of species. However, very few of our estimated 250,000 insect species are being formally monitored.

Why you should care

Insects pollinate plants, dispose of waste and control pests, among other functions. The planet would cease to support life without the services insects provide. If insect populations are in decline, so are the populations of larger animals such as birds and lizards that feed on them.

In NSW, bogong moths are a staple food for mountain pygmy possums. A collapse in the moth population would lead to possums going hungry, which affects their breeding success.

Australia's threatened species strategy prioritises action to protect 20 bird species – 14 of which feed partially or solely on insects.

Six ways to help insects

Insects are small and can inhabit hidden places, so you may not realise how many exist around you. Here are a few ways to help prevent insect decline in your home and elsewhere:

1. Entice insects to your garden

Lawn is a virtual desert for insects, so if you don't really need it, cultivate insect-friendly native plants instead. Plan to have something flowering most of the year and aim for a variety of plant heights and structures, such as tall trees, thick shrubs and ground cover.

2. Put the fly spray away

Insecticides have become very efficient in recent years. They indiscriminately kill all insects, not just the ones you're trying to get rid of. If you have to use insect spray, do so sparingly. And whenever you can, choose food produced without lots of pesticides. These products are sold with labels such as organic, biodynamic, or chemical-free.



Disappearing insects

(Continued from page 1)

3. Turn off the lights

If you don't need that outdoor light on all night, turn it off: the moths in your area will thank you. Many nocturnal insects can't resist the light, but it disrupts their navigation system. This plays havoc with their ability to feed and reproduce.

4. Build them a home

Think about installing an insect hotel – a small structure of hollows for insects to rest and lay eggs in. Or simply leave dead wood or small areas of bare ground for insects to build nests in. If you don't have a garden, join a local tree-planting group, or convince your council to plant more natives.

5. Resist the urge to clean up

If there is a section of your garden, local park or nature strip that is unkempt, leave it that way. What looks untidy to you is a great place for insects to live.

6. Track insects on your smart phone

Scientists need help to better understand what is happening to our insects. Citizen science apps such as iNaturalist Australia, Wild Pollinator Count, the Atlas of Living Australia and Butterflies Australia help gather valuable information about insect biodiversity, so solutions can be targeted to problem areas.

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Five star insect accommodation. How can you make it?
See 'Air Bee & Bees on page 3 for
all the information you need to get started.

Extinct is forever



It's well established that unsustainable human activity is damaging the health of the planet. The way we use Earth threatens our future and that of many animals and plants. Species extinction is an inevitable end point.

To date, putting an exact figure on the number of extinct species has been challenging. But in the most comprehensive assessment of its kind, research by The Conversation concludes that exactly 100 plant and animal species are validly listed as having become extinct in the 230 years since Europeans colonised Australia. Alarmingly, this tally confirms that the number is much higher than previously thought and includes 38 plants, such as the magnificent spider-orchid, 34 mammals, including the thylacine and pig-footed bandicoot, 10 invertebrates, including a funnel-web spider, beetles and snails and 9 birds, such as the paradise parrot.

The mammal toll represents 10% of the species present in 1788. This loss rate is far higher than for any other continent over this period. And biodiversity loss is more than extinctions alone. Many more Australian species have disappeared from all but a vestige of their former ranges, or persist in populations far smaller than in the past.

We must learn from the past

The 100 recognised extinctions followed the loss of Indigenous land management, its replacement with entirely new land uses and new settlers introducing species with little regard to detrimental impacts.

Introduced cats and foxes are implicated in most mammal extinctions; vegetation clearing and habitat degradation caused most plant extinctions. In the last decade, climate change contributed to the extinction of the Bramble Cay melomys, which lived only on one Queensland island.

Environment laws have demonstrably failed to stem the extinction crisis. The national laws are now under review, and the federal government has indicated protections may be wound back – we are not living well in this land.

You can read the complete article at <http://theconversation.com/scientists-re-counted-australias-extinct-species-and-the-result-is-devastating-127611>.

The authors of the study are Professor John Woinarski Assoc. Prof. Brett Murphy and Professor Stephen Garnett, Charles Darwin University, Assoc. Prof Dale Nimmo, Charles Sturt University, Assoc. Prof Michael F. Braby and Professor Sarah Legge, Australian National University. The study on which this article is based was also co-authored by Andrew Burbidge, David Coates, Rod Fensham and Norm McKenzie.

Air Bee & Bees



Australia is home to over 1500 species of native bees with most of these being solitary bees that nest in the ground or inside small gaps and hollows of timber and stone. Unlike the introduced honeybee *Apis Mellifera*, which has a nasty sting, our solitary bees have tiny stingers that are virtually harmless and rarely used. Solitary bees play an important role in the pollination our native flora and are also increasingly valued as a pollinator for home gardens and agricultural crops.

Insects such as bees provide many benefits to the ecosystem through pollination, the nutrient cycle and as a food source for birds. Our native bee and other beneficial insect populations are under increased threat from pollution, abuse and overuse of pesticides and loss of habitat. Like every other living creature, bees need food, water, fresh air and shelter: a safe place with protection from pesticides, insecticides and disease, and a place to live!

Hotels for frequent flyers

We can attract native bees and beneficial insects to our garden by constructing them a purpose-built B&B. A Bee or Bug Hotel (sometimes called an Insect Hotel) can offer them the sanctuary they require and in return they will reward us with pollination of our flowering plants, fruit and vegetables.

Air B&B's can be made with recycled materials and many designs and instructions are available online. It's a great project to involve the kids over the summer break. You can probably find all the things you need from your own backyard.

The basic idea is to have a shape that can be filled with materials containing holes which the insects can crawl into for shelter and/or reproduction. Females will lay their eggs and then seal off the opening to prevent moisture and predatory insects from entering and the young will emerge in spring when warm weather returns.

There are a number of things you need to consider before you make your B&B related to the insects you want to house - their needs, the size, design and materials to use, location and housekeeping.

Residence or Refuge?

First think about which type of insect you wish to host. Then do a little research to see what they prefer for nesting. Many insects prefer a specific sized hole for their home, often in a specific material. A simple refuge may be a more effective than an actual residence.

Size: You can build your B&B any size you want, but we suggest you start small – around the size of a shoebox – perhaps with a single species in mind. You can always extend or build bigger later.

Design: Your B&B will need a frame to hold the of materials like bamboo, stems, and twigs that will be packed tightly leaving no big gaps. This frame can be made with any scraps of timber you have but they should be dry and free of rot and mould. It's important to use natural, untreated wood without chemicals such as varnish, paint and wood protectant that will repel insects.

The structure should be at least 16cm deep and a good design will be sturdy with a solid back, sloping roof to shed rain overhanging at the front to keep the entrance dry.

Construction: Materials such as clay, timber off-cuts, bamboo, sticks, bark, old pots, house bricks, lengths of terracotta pipe and even reeds can be incorporated into

your B&B. Native bees vary greatly in size, so will need a range of holes from 2mm to 15mm in diameter. Holes larger than 6mm should be about 14cm deep while holes 6mm or smaller should be about 10cm deep.

Drilled tubes should be smooth without splinters and sandpaper after drilling to make the entrance smooth. Bamboo and reeds contain natural holes, but may need extending, while smaller branches and twigs will need individual holes drilled.

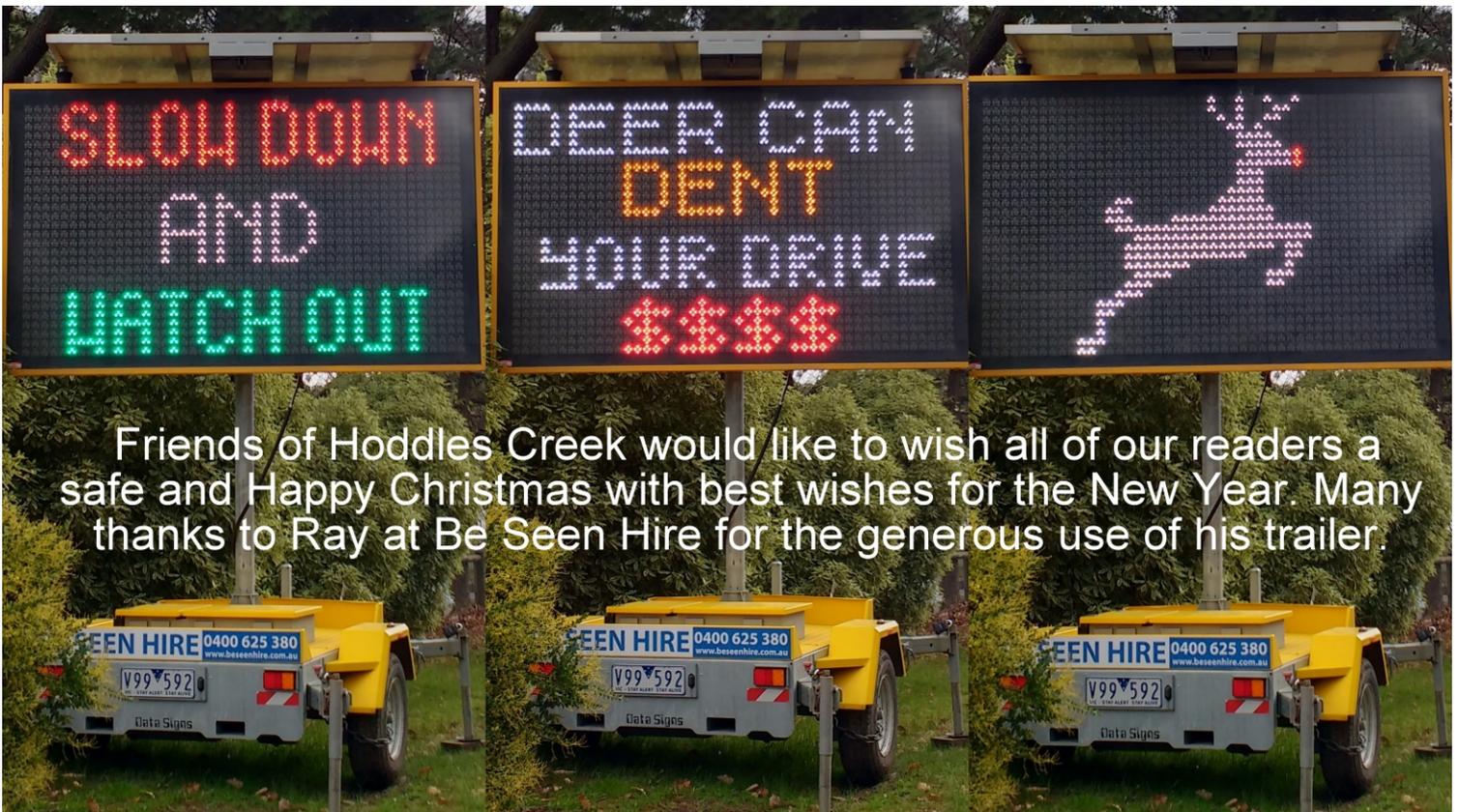
Arrange the different materials in the frame and pack them firmly so nothing moves. Fill any gaps with bundles of stems, straw or bamboo pieces.

Installation: Bee hotels should be positioned in full sun, at least a metre off the ground, with no vegetation obscuring the entrances to the tunnels. You could mount your B&B on a fence post, exterior wall or any other vertical surface about chest height facing north if possible. It should also be fixed securely to prevent shaking and swaying from wind.

Housekeeping: Taking care of a B&B is just as important as building one. Bee hotels should be inspected at the end of summer to remove and clean dead cells. This will prevent mould and mites that may breed on the dead bees or larvae. You could also bring your B&B into a dry area like a garden shed over winter to protect residents from wind and rain.

Regular maintenance will ensure your B&B is fully booked and your residents stay!





Friends of Hoddles Creek would like to wish all of our readers a safe and Happy Christmas with best wishes for the New Year. Many thanks to Ray at Be Seen Hire for the generous use of his trailer.

Spring into Summer

Summer is here and while fire restrictions now prevent you from burning off, there are plenty of things you can do around the house and garden to prepare for what is expected to be a high-risk fire season.

CFA Victoria have an excellent website with interactive models, handy tips and advice for how to be prepared, which are listed below. CFA maintains that reducing vegetation around the home is one of the most important things you can do to keep your home safe in a bushfire. Similarly, the location, type and ongoing maintenance of vegetation on a property can significantly reduce the impact of a bushfire on any house.

Living in a rural area enables us clear trees, branches and scrub from around the home without the need for a permit. Depending on your location, the 10/30 rule or the 10/50 rule might apply.

Twelve tips to prepare your property this summer:

- while mature trees can help shield against radiant heat and embers, they must be strategically situated and well maintained.
- Cut overhanging tree branches close to the house with no branches in 10m space.

- Prune shrubs well away from branches of mature trees.
- Prune lower branches of shrubs to separate from surface fuels underneath.
- Do not have large shrubs next to or under windows, so prune back or remove.
- Keep grass cut to less than 10cm as fire can ignite and travel fast through long grass.
- Remove dry grass, leaves, twigs and loose bark as these create fine fuel for fires.
- Use pebbles and rocks in your garden instead of flammable mulch like wood chips.
- Keep gutters and roof areas clear of leaf litter.
- Keep woodpiles away from the house as stray fire embers can easily ignite these.
- Remove flammable items such as doormats from decks and verandas.
- Store flammable liquids away from the house in flame proof containers.

There are plenty more things you can do at different times of the year such as landscaping for bushfire, planting fire-retardant plants in the garden and home improvements.

Find all this information and more at the following link to the CFA website: <https://www.cfa.vic.gov.au/plan-prepare>.

Like to join FOHC? The Friends of Hoddles Creek are always on the lookout for new members to add new ideas, new helpers and new friends to our group. If you'd like to join, simply contact us with your name, address and phone or email details. You can mail these to FOHC, PO Box 298, Yarra Junction, Vic 3797, or email us at friendsofhoddlescreek@gmail.com.

See more at our website (www.friendsofhoddlescreek.com) or on Facebook – just search 'Friends of Hoddles Creek' or 'FOHC'.

