

## Naturally Native

# AUSSIE BEES

by Dr Anne Dollin

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**A** bold black bee with a brassy yellow waistcoat, legs laden with pollen, disappears into a hole in a tree limb. Two metallic green bees, as glossy as highly polished cars, perform an intricate mating dance above the wildflowers. Ten fat, furry bees, with bright blue stripes across their jet black tails, jostle for positions on a dead stem at dusk. Hundreds of tiny, black, stingless bees fill dainty honey pots with delicious honey inside a hollow tree. These are our naturally native Aussie bees!

Most Australians are only familiar with the golden brown, commercial honey bee (*Apis mellifera*). However, few know that this honey bee is not an Australian native bee. It was brought into Australia from Europe in about 1822 to provide honey for the early pioneers. In Tasmania we now also have another introduced bee. The 15 mm gold and black bumble bee (*Bombus terrestris*) was brought accidentally into Tasmania from New Zealand in 1992. But did you know that we have a rich variety of our very own Australian native bees?



*A Trigona tea party –  
three Australian stingless bees sipping up a drop of honey*

### A MULTITUDE OF NATIVE BEES!

Australia has [over 1,500 species of native bees!](#) Our biggest native bees are the carpenter bees (*Xylocopa*). These 24 mm yellow and black bees look like bumble bees but have entirely different lifestyles and nests. Our tiniest native bees (*Quasihesma*) are recognised as the smallest bees in the world! These 2 mm yellow bees from Cape York, Queensland, are believed to build solitary nests in tiny holes in timber. Our Aussie bees come in a virtual rainbow of colours – red, orange, yellow, green, blue, black and white. Some have dense furry overcoats whilst others are smooth, glossy and hairless.

### TRUE-BLUE AUSSIE HONEY BEES

The best known of our Australian native bees are the social stingless bees – our own Aussie honey bees (genera *Trigona* and *Austroplebeia*). These are tiny black bees, just 3-4 mm long, which live in colonies of up to thousands of bees inside hollow trees or other cavities. Aborigines have prized the tangy honey of these bees for thousands of years and call the honey *sugarbag*. These bees have a queen, workers and drones just like commercial honey bees. However, they build nests which are dark and resinous, and instead of using a honeycomb, these bees store their honey in clusters of little pots which resemble bunches of grapes.

Today some species of the social stingless bees can be kept in specially designed hive boxes. In northern NSW and Queensland, many hives are being kept for their small but delicious harvest

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of native honey. Other beekeepers are exploring the considerable potential of these bees for crop pollination. Because of their tiny body size and their food preferences, stingless bees may pollinate certain crops better than commercial honey bees can. However, much research still needs to be done on pollination with stingless bees. The most promising crops include macadamias, mangos, chokos, coconuts, strawberries, lychees, watermelons, avocados and citrus fruits.

Stingless bees are reluctant to fly further than 100 metres for their food, making them ideal pollinators for crops on small-scale farms or in glasshouses. As these bees are stingless, they are also an ideal choice for the gardener who may be allergic to honey bee stings or who has a backyard vegetable patch close to neighbours.

We have about ten species of the social stingless bees in Australia. As they are tropical bees, they are only found in the eastern and northern areas of NSW, in Queensland and in the northern areas of the Northern Territory and Western Australia. Some [hives are available for sale](#).

## SOLITARY BEES

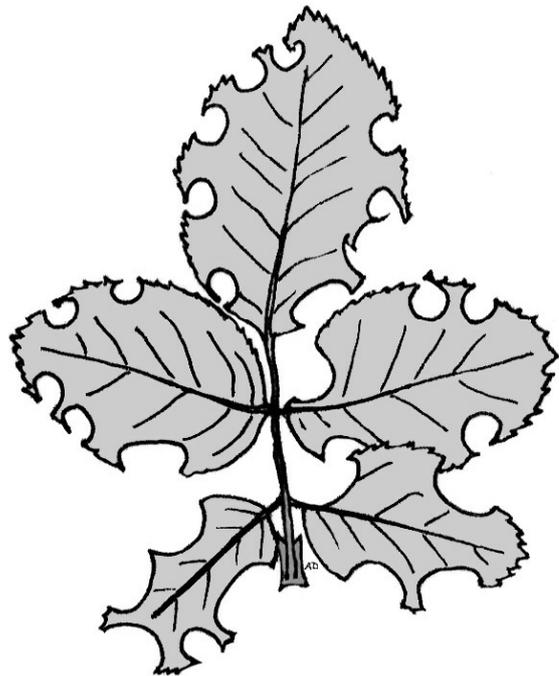
Throughout Australia, however, we have hundreds of other species of native bees which live *solitary* lives. These bees nest in tiny holes in the ground or in wood, and each nest is built by just one female bee. While many nests may be found close together in an arrangement like a village, only one female bee lays eggs in each nest. There are no queens or workers in solitary bee species. All solitary native bees are capable of stinging though most are too small to deliver an effective sting. Our solitary native bees are usually not aggressive and they will normally only sting as a last resort if they are grasped or trodden upon.

Solitary bees collect small amounts of honey and pollen to feed their young but they do not store excess amounts of honey in their nests. Once the nest is finished it is sealed and the mother bee abandons it to begin a new nest. The adult bees usually die at the end of the warmer months, leaving immature bees hibernating in the sealed nests to emerge and start the cycle again next spring. Solitary bees cannot be used for honey production but they are important pollinators of wildflowers and some crops.

## THE INDUSTRIOUS LEAFCUTTERS

One of the most fascinating solitary Aussie bees is the leafcutter (genus *Megachile*). Leafcutter bees range in size from about 6 to 15 mm. Most are black bees with patches of white or orange-gold hair. The presence of a leafcutter bee is often first recognised by the tell-tale cuts she makes in the soft leaves of plants such as the rose, *Buddleja*, *Bauhinia* or *Desmodium*. Very uniform in size and always on the edge of the leaf, these neat cuts are either oval or circular in shape. The leafcutter weaves these leaf pieces into tiny cradles for her young. You may find these cradles tucked into crevices in walls, or in burrows in the ground.

If you are lucky enough to have a plant being visited by a leafcutter bee, watch for her marvellous antics in collecting these leaf pieces. A buzz announces the arrival of a leafcutter bee. Darting from leaf to leaf, she makes her selection. She then grasps the edge of the leaf and in just ten seconds clips out the neat piece of leaf with her jaws. As she cuts, she smoothly gathers the cut piece of leaf between her legs, folding it beneath her. Finally she makes the last cut and tumbles into the air! It's just like sitting on the end of a branch and then cutting it off with a saw! Fortunately, unlike us, the leafcutter's wings catch her and, flying furiously, she laboriously gains height, grasping the unwieldy piece of leaf between her legs and zooms off to her nest.



*The classic handiwork of the leafcutter bee – uniform circular and oval clippings on the edges of some rose leaves*

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## BLUE BANDED BEES BY NIGHT

As night falls, another native bee circus may be taking place in your garden. The males of the solitary blue banded bees (genus *Amegilla*) are not allowed to sleep in the nests at night; so they must camp out under the stars! These males gather in small groups to sleep and so the circus begins. Favoured roosting spots include dried stems of weeds or grasses, or the edges of larger leaves. Once established, a roosting site of blue banded bee males may be used year after year. At dusk the first bees arrive and latch onto the stem. Amazingly they attach themselves by their jaws only, curling their legs up under their bodies. They can even do “push ups” on their powerful jaws! As each newcomer approaches, the bees already settled wag their tails up and down and madly wave their hind legs in unison – perhaps emitting some kind of welcoming scent. It’s an amazing performance.

Ranging in length from about 8 to 18 mm, blue banded bees have fat little bodies with furry red-brown waistcoats. Their tails are jet black with bright stripes of iridescent blue or whitish fur. The males lining up on their grass stems at night resemble a row of liquorice all-sorts! The females burrow nest holes into sandstone, mortar or mud bricks that are soft.

Blue banded bees are capable of performing a special method of pollination. In some flowers the pollen is hidden inside narrow cavities. To pollinate these flowers a large, robust bee must grasp the flower and vigorously vibrate it until the pollen shoots out of the cavities. This process, called *buzz pollination*, is necessary for the pollination of some crops such as tomatoes and eggplants. Native blue banded bees are currently being [developed at Adelaide University for greenhouse tomato pollination](#) as an alternative to importing European bumblebees to Australia.



*A blue banded bee collecting pollen from a tomato blossom by vibrating or “buzzing” it*

## THE SPECTACULAR CARPENTER BEES

Australian carpenter bees are buzz pollination specialists! These spectacular bees include the bold-spirited, 24 mm, black and yellow *Xylocopa* bees, and the glowing, 20 mm, metallic green *Xylocopa* (*Lestis*) bees. Preliminary studies at Flinders University of South Australia demonstrated the value of the metallic green carpenter bees for greenhouse pollination of tomatoes. Carpenter bees are also efficient pollinators of passionfruit flowers. They are able to carry the large, sticky passionfruit pollen grains from flower to flower far better than commercial honey bees or native stingless bees can.

Michael Batley, an entomologist from Beecroft, NSW, recently discovered an elegant zigzag mating dance performed by the beautiful metallic green carpenter bees. This had never been reported before in the field! His full report on the discovery was published in [Issue 11 of Aussie Bee bulletin](#). Amazingly little is known of the behaviour of even our most easily recognised native bees. If you watch carefully *you* could make some totally new observations about the native bees in your garden!

Carpenter bees get their name from the way they cut burrows into soft timber for their nests. The metallic green carpenter bee is currently only known to occur in coastal NSW and Queensland, and in a small area of South Australia. Once much more widespread, its range is being severely reduced by land clearing and loss of nesting habitat. This stunning bee often cuts nest burrows into

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the dried flower stalks of the *Xanthorrhoea* (grass tree), although it can also use the wood of the *Banksia*, *Tristania*, *Acacia* (wattle), *Casuarina* (she oak) and *Leptospermum* (tea tree).

The declining fortunes of the beautiful metallic green carpenter bees highlight a way in which you could help Australian native bees in your own garden. With increasing pressures on native bee populations from land clearing and landscaping activities, these magnificent bees need safe havens. What better place than in a garden where the value of a naturally native Aussie bee is appreciated?

## HOW CAN YOU HELP?

(1) Protect the nesting sites of native bees. Typical nesting sites for native bees include:

- burrows in the ground
- burrows in soft sandstone, mortar or mud bricks
- hollow pithy twigs (including tree fern fronds and even dead canes of lantana)
- old beetle holes in trees or logs
- soft timbers such as dead mango boughs and grass tree flower spikes
- hollows inside large trees

Please look for nesting native bees if clearing away or “cleaning up” materials like these.

(2) Watch out for nests of social stingless bees inside fallen hollow trees. Many nests are burnt in heaps of timber during land clearing. [If you find a nest in a log](#), cut out that section of the log. Securely seal up each end of the log with boards to protect the nest against ant attack. If you wish to move the log to a safer location, move it when the bees are not flying so that foragers are not lost. It is best to move it more than 500 metres so that the foragers do not fly back home to the original location.

(3) Provide some artificial nesting sites in your garden for your solitary bees. Try some bundles of bamboo canes, or blocks of hardwood with holes (4 – 9 mm wide and at least 15 cm deep) drilled in them. Nesting sites are in short supply in many areas and you may be surprised how many native bees there really are in your garden!

(4) Plant nectar-rich flowering plants to support your local native bee species. Popular flowers include *Abelia x grandiflora* (abelia), *Eucalyptus* (gum blossom), *Buddleja davidii* (butterfly bush), *Callistemon* (bottlebrush), *Grevillea* (spider flower), *Melaleuca* (honey myrtle), *Leptospermum* (tea tree), *Westringia* (rosemary), *Lavandula* (lavender), *Xanthorrhoea* (grass tree) and many varieties of daisies.

(5) Of course, avoid the use of insecticides. These chemicals will kill your native bees along with the pests!

The stunning colours and fascinating behaviour of Australian native bees can be a source of endless delight. Let's work together to preserve and encourage these naturally native Aussie bees! 

## FURTHER READING

■ [Native Bees of the Sydney Region - A Field Guide](#)

■ [Booklets in the Native Bees of Australia Series:](#)

- Introduction to Australian Native Bees
- Nests of Australian Stingless Bees
- Behaviour of Australian Stingless Bees
- The Different Types of Australian Stingless Bees
- Keeping Australian Stingless Bees in a Log or Box
- Crop Pollination with Australian Stingless Bees
- Tips on Stingless Beekeeping by Australian Beekeepers
- Boxing and Splitting Hives

■ [Aussie Bee](#), the Bulletin of the Australian Native Bee Research Centre.

These publications are all available from the *Aussie Bee* website:

<http://www.aussiebee.com.au>

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