



CLARENCE NATIVE BEES LANDCARE

About Us

“Essentially, we are lifting the profile of solitary native bees and social native stingless bees in the community and to attending to wild native bees rescues ”.

The native stingless bee is such a small and unassuming insect and no-one could really be blamed for not knowing or caring about it. But hey, these great little insects are quiet achievers and the greatest little “Aussie pollinators”. That is why Clarence Native Bees Landcare has made it their mission to educate the community on the value and benefits of native stingless bees in our environment and why we should take more care in that environment to protect them.

One of our native bee members said he was out in the bush one day hanging around a tree, when suddenly, what he thought, was a swarm of mosquitoes, came flying out of nowhere started buzzing around his head. So, waving his arms madly trying to swat them - he regaled the story to us and said, “if he had any Aerogard he would have used it!”. It wasn't until months later that he learned that on that occasion he had met a swarm of native stingless bees and not mosquitoes.

These are just some of the interesting stories you hear from people in the Clarence Native Bees Landcare group and, just like swarms of bees, our group is buzzing along quite nicely with a great bunch of people attending the Clarence Native Bee meetings. These are lively, full of discussion and everyone gets to talk about different aspects of bees, bee keeping and science. Anyone is welcome at our meetings to learn about native bees.

The Groups main objective is “To formulate actions to lift the profile and value of native bees in the community; attend to rescue of wild native bee hives during storm activity, tree lopping, or general rescue; and to educate the wider community on the value of native bees for biodiversity and to provide workshops on bee hive construction, hive extraction and native bee hive rescues.”

The following Care Fact Sheets have been developed as a Community Education Kit for the Clarence Catchment, and are designed as an educational starting point for the community to learn about native bees, which include both the social bees and the solitary bees. This literature is designed to target the key areas of identifying, understanding and protecting a natural resource that has high biodiversity value for agriculture. We have aimed to include the basic but important facts. For any information you have missed, we have steered you in other directions - please look on the back of this Fact Sheet at “Further Resources”. Happy bee reading and if you have finished reading these fact sheets and no longer need them, PLEASE RECYCLE and share with a friend who does!



CLARENCE NATIVE BEES LANDCARE

Acknowledgement



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This document should be attributed as: *The Clarence Native Stingless Bees Community Education Resource Guide for Native Bees in the Clarence Valley.*

Acknowledgements are made towards the compilation, photographs and editorials from Susan Moore & Laura Noble and contributing information from Rosalie Franklin & Carole Faulkner. For the photographs provided by Neville Anderson, Ian McPhee (Clarence Native Bees), John Klumpp, Bob Lutterell (Bob the Bee Man) & Andrew Donnelly (Australian Museum).

Further Resources

While there are many resources available on native stingless bees we have endeavoured to include the resources that most Clarence Native Bee Members read first and these will serve you well in our need for obtaining the facts and finding out more about Australian Native Bees.

Books		Websites	
Australian Beekeeping Manual	ISBN 978921966880	Australian Native Bees Research Centre	www.aussiebees.com.au
Australian Stingless Bees (John Klumpp)	ISBN 9780975713815	Bee Aware	www.beeaware.org.au
Australian Native Bees for Schools (Steve McGinnity)	ISBN 9780646595252	Bob Lutterell the Bee Man	www.bobthebeeman.com.au
Anne Dollin – Bee Booklets –via website (see below)		Clarence Native Bees Landcare	www.clarencenativebees.org.au
DPI Ag guide : A Practical Handbook, Australian Native Bees	ISBN 9781742569657	Russell & Janine Zabel	www.zabel.com.au
Michael Gleeson – Miniatures - Identifying Insects in your home garden	ISBN 9781486301379 or (Pdf) ISBN 9781486301386	Steves Bees	www.tanbc.com.au
The Australian Native Bee Book (Tim Heard)	ISBN 9780646939971	Sugarbag	www.sugarbag.net
The Bee Friendly Garden (Doug Purdie)	ISBN 9780646939971	Valley Bees	www.mrccc.org.au

THE QUICK FACTS ON NATIVE BEES

In Australia 2,000 species of native bees have been identified. On the North Coast we have about 12 species which include both the social and solitary bees which include both the social and solitary bees. Of these, there are three genera of social native bees - *Tetragonula carbonaria*, *Austroplebia australis* and *Tetragonula hockingsii*. These native bees are very hard to tell apart by any observer. The only easy way to identify them is through their differing nest architecture as shown in the photos below.

All three species produce honey, however there are some significant differences in their nesting and foraging behaviour. A hive of *Tetragonula carbonaria* can contain between 1,000 to 10,000 native bees and these can be readily observed flying about.

Austroplebia nests are much more fragile and they spread unevenly in loose piles. Unlike the intact tight spiral formation of the *Tetragonula carbonaria* hive. *Austroplebia australis* are also known to have relatively small hives of around 50 to 100 bees. These bees are probably the most vulnerable as their nests are usually located in dead trees and situated at a high level where they are not readily observed.

Tetragonula hockingsii are most commonly found throughout the east coast of Queensland to the border of NSW where the climatic conditions are more suitable to their breeding. This species is not discussed in much detail here.



(Left to Right) : Hive structures - *Tetragonula carbonaria*, *Austroplebia Australis* and *Tetragonula hockingsii*

(Photos : John Klumpp)

CLARENCE NATIVE BEES – CARE FACT 1

Native social stingless bees are honey producers and in most cases, one hive can produce a small amount of honey each year (sometimes up to 1kg). Dependent upon food resources the bees have been foraging on, the honey will have a range of flavours. The honey is also reported to be of medicinal benefit. In addition to honey, the bees also make a wax, which they use in their hives. This product can be harvested and used to make ointments and balms.

“So what is inside a native stingless bee hive?” There are three main components that form the architecture of the hive. These include:

The involucreum - the main structure that holds the brood cells together.

The brood cells - the internal cells where the queen bee lays her eggs and where the worker bees regurgitate their food for the larvae to feed off during the development phase. As the eggs develop into larvae inside the cell (6-14 days), they eat the food then form a cocoon and pupate (30 days) into adult bees, this entire process takes about 50 days. The bees will live as adults for 100 days.

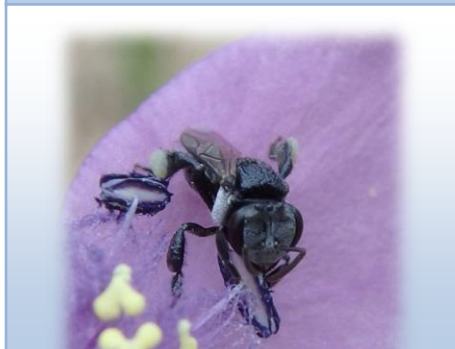
The cerumen structure - the main support mechanism (scaffolding) that supports the brood cells, honey pots and pollen pots. This well constructed scaffolding is built from collected resin and wax that the bees produce. Honey pots and sugarbags are where the native bees store their honey. They are usually yellow, roundly formed, enclosed, and meshed between the hive structure.



A look inside the hive (Left to Right) The hive brood with the cerumen structure surrounding it; the hive brood with pollen pots and batumen; and a stingless bee doing some housekeeping. (Photos : Rosalie Franklin & Laura Noble)

CLARENCE NATIVE BEES – CARE FACT 2

STINGLESS BEE (*Tetragonula carbonaria*)



The social native stingless bee *Tetragonula carbonaria* is a popular native honey producer and pollinator of crops.

This species is not easily distinguished as individuals. However, each species has a hive nest architecture that is unique. Hollow bearing trees are generally preferred habitat where the social stingless bees will construct their hive nests in the trunk or branches.

Tetragonula carbonaria is the preferred species when having a hive box as this species is more common and they have good reproduction capacity.

Photo : Laura Noble

REED BEE (*Exoneura*)



The semi-social Reed Bees are 5-8mm in length. They like to live in small colonies within the cavities of dried plant stems. There may be several females and a small number of males within the colony at any one time.

They rear their brood in a single brood chamber where they progressively feed the developing larvae. Reproductive females share the tasks of egg laying, brood rearing, nest guarding and foraging. One of the favoured nesting places for Reed Bees is the woody weed *Lantana camara*. They will also nest in hollow stems and pre-drilled holes.

Photo : Bob Lutterell

LEAFCUTTER BEE (*Megachile*)



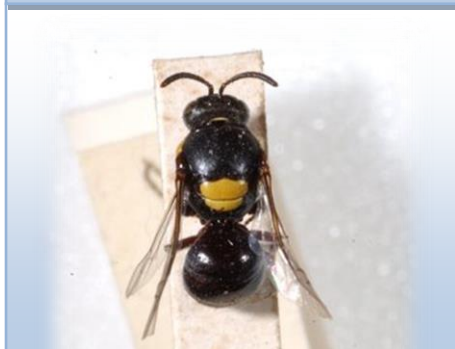
Leafcutter bees are 6-15mm in length, they are solitary but are also known to nest in aggregations.

Females usually nest in pre-existing cavities such as old wood borer holes, rock crevices or dried plant stems.

The females are specialist bees and cut discs of plant leaves and weave them together to construct their brood cells. They build multiple cells and deposit an egg, together with saliva, nectar, and pollen into each cell to help the larvae develop.

Photo : Rosalie Franklin

MASKED BEE (*Hyaleine*)



These bees are 3 to 11 mm in length and are mostly black with a little yellow banded segment across the thorax. Slight patches of yellow are also observed on their head.

This species carries pollen by swallowing it (Dollin, A), probably because it has very little hair. This species spends a lot of time in eucalyptus and angophoras when they are in flower (Australian Museum).

They like to nest in cavities, holes in timber or soft fleshy stems

Photo : Andrew Donnelly

TETRAGONULA (*Austroplebia australis*)



This fascinating species is reported to be found widely throughout Australia, however, they are in fact very difficult to find in the Clarence.

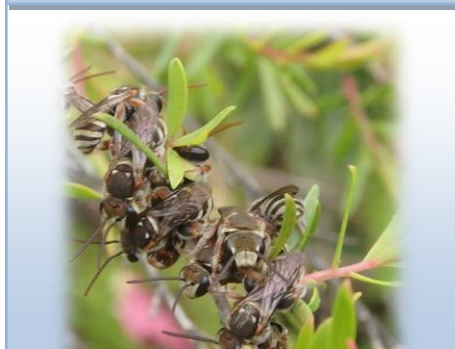
About the same size as *Tetragonula carbonaria* these little bees have white markings on their abdomens. They are quite shy in their nests. They are known to reduce their nests size to coincide with available food resources. When food is low, the bees numbers are too and this could create problems if they incur any nest issues.

At the front of their nest entrances these bees have a tunnel-like entrance and make a fragile lace curtain which they close at night.

It is this, and their nest architecture, that helps tell them apart from *Tetragonula carbonaria*.

Photo : Neville Anderson

HALICTIDAE (Subfamily Nomiinae)



These are a very well represented bee family and widespread, with a large number of species known to exist. Sometimes they are referred to as Sweat-bees. These bees have large brown compound eyes and long antenna.

Males are less hairy than females as they do not need to carry pollen for the young. Even though they are solitary bees, males cluster together on grass stems for the night. Females nest in ground burrows or in tunnels that they construct in the soil, or less often, in rotting wood, and each have their own tunnel. They can nest in grass tree spikes, tree fern fronds, bamboo and other hollow stems.

Photo : Laura Noble

CLARENCE NATIVE BEES – CARE FACT 2

BLUE-BANDED BEE (Amegilla cingulata)



Blue-banded bees measure 10-12mm and have pale metallic blue stripes across their bodies. Males have five stripes and females have four. They are important BUZZ pollinators and vibrate the flower's anthers in order to release the pollen.

These bees are also ground-dwelling insects and dig burrows into the banks of rivers and dams. They will also nest in soft mortar and mud bricks. Preferring the company of others, they nest in aggregations.

It is reported that this bee has great potential as a valuable greenhouse pollinator.

Photo : Laura Noble

GREAT CARPENTER BEE (Xylocopa)



Great Carpenter bees are 24mm and the largest bees in Australia. They are also another 'buzz' pollinator. Their nests are cut into burrows of soft pithy timber, such as dead limbs of the mango trees or stalks of the grass tree (Xanthorrhoea). The females have glossy black abdomens and bright yellow waistcoats.

The males are quite different - they are covered with soft golden fur. They will nest in all types of dead branches, as long as they are not too hard, and will build in stacks of old timber. Males can emit a chemical pheromone to attract females. This scent smells like flowers or pollen, which lures young female bees.

Photo : Laura Noble

METALLIC CARPENTER BEE (Xylocopa lestis)



This female metallic green carpenter bee is measured at 17mm long but they can be found up to 20mm. Also a 'Buzz' pollinator.

These bees are a large metallic and hairy bee. They have a black abdomen and thorax and their wings are light brown. They prefer to live and nest in tunnels of wood.

This bee is foraging on the Australian Native Grasstree (Xanthorrhoea) at Minnie Water NSW.

Photo : Ian McPhee

TEDDY BEAR BEE (Amegilla)



The Teddy Bear Bee is another "Buzz pollinator". However, it can often be mistaken for a bumble bee. Bumble Bees, in fact, do not exist in mainland Australia, but were introduced into Tasmania.

The Teddy Bear Bee is measured at around 7-15mm long. The females dig their burrows into soil in creek banks and lay their eggs into several cells, while the male generally hangs out on branches at night.

These bees are a threat to our native bees.

Photo : Bob Lutterell

RESIN BEE (Megachile)



Resin bees are solitary, however, they do nest in aggregations. These bees come in many colours and sizes. From large black 14mm bees with white tufts of hair to small 8mm black bees with bright orange abdomens. They are called resin bees because they collect resin and gums to build partitions between their brood cells and to seal their nests. Sometimes resin bees are noticed hanging around social stingless bee hives trying to get a little resin for their nests. The female uses resin and chewed leaf to construct her brood cells and sometimes incorporates pebbles. Females usually nest in pre-existing cavities, such as timber crevices, old wood borer holes, rock crevices or dried plant stems.

Photo : Laura Noble

CUCKOO BEE (Thyreus spp)



The Neon cuckoo bees are 1-14mm in length and are noted for their brilliant metallic blue and black banded colours. These bees are usually up to no good! They lay their eggs in the nests of other bees, particularly the blue-banded bees. They have characteristics very similar to that of the cuckoo bird, where they get others to raise their young.

When the eggs of the cuckoo bee hatch, the cuckoo baby bees will eat all the food of the other bees and then leave them to starve to death. It is a bit of a trickster and can sometimes be mistaken for a blue-banded bee.

Photo : Bob Lutterell

Bees Love Plants

Bees need somewhere to live, including a place to eat and live well. They also need materials, and that is where native plants work well with native bees. Large native trees provide shelter and habitat, just like the smaller groundcovers and shrubs. Trees provide pollen, nectar and/or resin, which act as food sources for food and for materials used in construction of their nests.

There are a large range of native plants that can be planted to attract native bees into your garden and these can also attract other pollinators too, including butterfly, dragon flies, honey bees and native birds.

Even if you don't have a garden to plant in, you could still use pots or tubs and these can be planted with small native herbs such as Pigface, Pennywort, Pastel Flower, *Xanthosia*, Yellow buttons, Billy Buttons, Ground Daisy, Christmas Bells, Blue Bells, *Hibbertia* or Native Mint - just to name a few.

Choose a number of plants that will flower together along with those that flower consecutively so that your garden has a continual variety of flowering and food sources for native bees. These could include a mixture of native plants that will create diverse food sources and wellbeing for your native bees.

Plan well ahead for continual flowering in Summer, Autumn, Winter and Spring and also for the climatic conditions that can occur. This planning could include a selection of drought tolerant species (for those long dry spells) and frost tolerant species for times when frost occurs.

Site aspect is important for bees as they do love the sunshine, but not the extreme heat. Therefore, shade is valuable to them during Summer. If you think you have room, think about planting large shrubs. These shrubs can also be manicured during the non-flowering seasons to keep them low. *Syzygium* (Lilly Pilly) is a great native plant for this purpose as it can be easily pruned and the native bees go crazy over it during flowering periods. In fact, all bees go crazy over it during flowering! Native bees do not like to forage in the wind, so if you can, choose a sheltered site for your plants.

Consider your soil condition as some native plants will establish better on sandy loam than they would on clay loam. Most plants also establish better on soil with a pH range between 6.0 and 7.5, however, native plants have shown their suitability in areas where the pH is outside of this range. Some natives are also able to adapt in areas where they would not normally be found, but generally, soil conditions are an important factor for their survival.

Establishing plants where acid sulphate soils exist can be challenging, so consider inclusion of more salt tolerant species in your plant selection.

Some plants can become invasive! Choosing the right plants ensures we don't create environmental problems in the future.



Clearing and Native Bee Habitat

Land clearing for agriculture is probably the single most important cause of environmental degradation and loss of flora and fauna species in Australia (CSIRO). This loss of species also includes social and solitary native bees. Significantly, loss of nesting habitat strongly contributes to their demise.

Native bees utilise various habitat types, including trees; logs; timbers; plant stems; leaves; soil; and creek banks. By day most bees will forage and go about their work. However, when night falls, many of the solitary bees will use the branchlets on trees to hang out and rest.

Native bees also use small to medium sized hollows or pipes in trees and branches, or cracks and crevices of trees, to make their nests. Shrubs can also provide useful habitat including leaf matter that is used by a number of bee species for their nesting materials.

“Help preserve and encourage native bees, these pollinators are an essential part of the food web”.

What do Bees Need

Native bees need a safe nesting area; shelter from wind, rain and extreme temperatures; food and water sources; and protection from pesticides, predators and diseases. They also need water, soil, bare ground, ground-covers, grasses, lillies, shrubs and trees, and a continual flowering cycle to collect their resources.

Reduce the Risk to Native Bees



- Undertake pre-clearing inspections, search for darkened spots near holes or crevices, search for signs in the timber where beetle holes or tree cankers may exist. Check trees lying on ground even dead trees are habitat.

- Survey all ground areas and see if there are holes anywhere from 5mm to 25mm and or signs of bees flying. Survey area late afternoon or evening to search for solitary bees hanging about or in a cluster on branchlets.

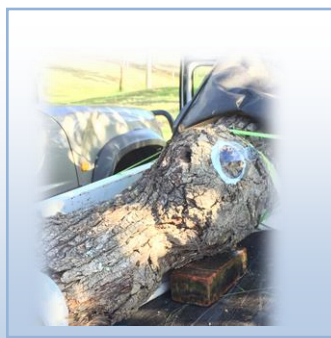
- If you find a nest and the bees can be rescued and relocated see our rescue care fact for more info. Retain areas of vegetation to enable neighbouring bees to forage and utilise for habitat. Build Habitat points for the solitary bees prior to clearing, these can include pvc pipes, besa blocks or mini bee hotels.

CLARENCE NATIVE BEES – CARE FACT 4

Storm Damage

Wind storms, electrical storms and heavy rain events can wreak havoc on homes and property. They also cause damage to native trees, particularly larger species because as trees age they become heavier and are not as easily supported by their roots, which predisposes them to falling down. Branches in tree tops can be snapped off in the wind, struck by lightning or during heavy rainfall can become heavily weighted with water, snap and fall down. Some native trees are famous for their habit of de-limbing including many of the Eucalyptus species which also happen to be favoured habitat for native bees.

When vegetation appears on the ground after storm damage, we often just go about clearing up the mess either by piling and burning, cutting the timber for firewood, or mulching. However, to keep bees safe, please inspect the branches or trees first to identify if native bees are living in that habitat and need to be rescued prior to any clearing, burning or mulching.



Native Stingless Bees rescued from trees that were felled (Photos : Susan Moore)

Reduce the Risk to Native Bees



- If you intend to burn a pile of logs or cut the timber for firewood, check for native bees and other animals before you do so.

- Are you cutting firewood...check the tree, does it have bees, can you choose another tree in the area. If you can't and need to cut the tree, cut the hive out, it can still be saved. Refer to our Rescue Care Fact on how to cut the hive.

- If you find bees – check out our Rescue Care Fact for information on how to rescue & relocate the bees. If unsure please contact the Native Bee Rescue Coordinator.

Bee Alert

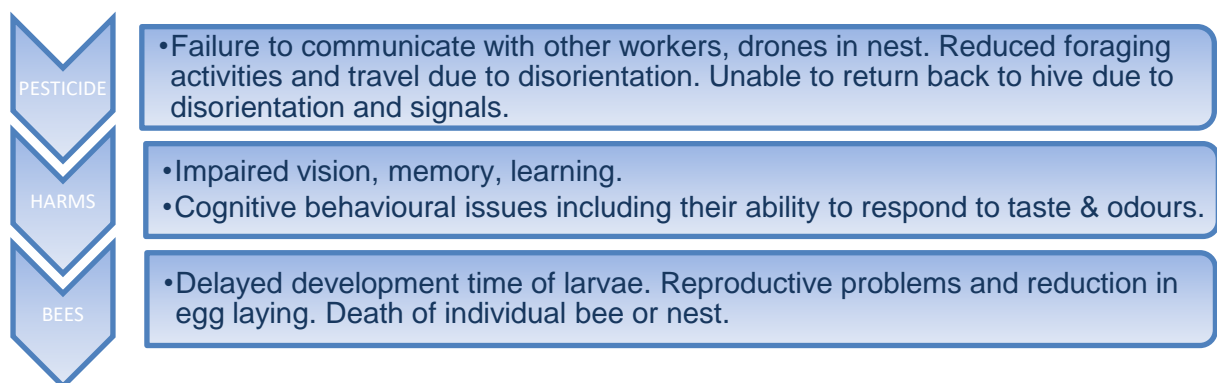
Pesticides and Spraying

The two types of pesticides that can be most harmful to native bees are SYSTEMIC and CONTACT insecticides. Systemic insecticides are designed to be taken up by plant tissue and are widely used in seed crops. As the plants develop and grow, the insecticide plays its role and spreads throughout all parts of the plants, so the plant will become toxic to any insects that land on, gnaw, chew, suck, touch or ingest it. Systemic insecticides can directly affect the central nervous system of native bees.

Among the chemicals that are dangerous to native bees are those brands with neonicotinoids. These are nicotine-derived pesticides and, although banned in states of America, they are still widely used in Australia. The chemical constituents (Imidacloprid, Clothianidin, Thiamethoxam) all have the ability to attack the central nervous system of insects and have also been reported to cause Colony Collapse Disorder (CCD) in honey bees.

With contact insecticides, native bees are vulnerable to plants that have treated surfaces. This can occur through direct spraying, spray drift and also from ingestion of poison from pollen or nectar sources. It is important in any situation where spraying pesticides is involved, to give some thought to what pesticide you use, how toxic is it to yourself and how toxic is it to native bees.

Poisoning what happens to the bees?



Reducing the Risk to Native Bees

Native stingless bees will fly in a peripheral zone of up to 500sqm if nectar or pollen sources are unavailable in their immediate area. Prior to spraying it is essential that you know exactly what is going on around your environment and within this range. Poison is toxic to bees and symptoms of poisoning can show up early in a hive. Even just one poisoned bee can contaminate an entire hive through transfer.

If spraying is unavoidable, then the best times to spray are prior to any flowering of plants or following flowering. While this may not always be possible, the next best time to spray chemicals is early in the morning, or late evening and on a cloudy day prior to any bee activity or foraging commencing. This will also be dependent upon the season and temperature. Spraying should occur when the stomates on the leaves of the plant are fully open and the plant can absorb all of the chemicals, and the leaves can dry before native bee foraging commences, although it should be noted that chemical absorption by bees can still occur after 2 days.

For contractors, development of an "Integrated Pest Management" program (IPM) will ensure the bees get the best chance of survival. This can include a seasonal spraying calendar for the particular crops, weeds or pastures you will be spraying. Only spray the weeds in bushland when plants are not actively flowering. Developing an IPM will help you discover what the safety precautions and constituents are in the chemicals of choice for your particular program. It will also ensure that chemical cocktails and the variable surfactants that are used will be identified as bee safe or bee dangerous. Understand the risk posed to bees by chemicals, read the label and instructions, and consider how toxic the chemical is to bees.

Bee Safe Practices



- Use bee safe chemicals....check the weather....use an anemometer to measure the wind speed and direction. Spray in appropriate conditions to avoid spray drift. Prior to spraying check to ensure property owners are "Spray Aware".

- Tell your neighbours that you have bee hives, ask them to let you know when they are spraying so you can move your hives into a buffer zone or lock them up and provide protective covering.

- Inspect area for bee activity prior to spraying - are bees present.
- DO NOT SPRAY plants that have bees foraging on pollen & nectar sources.

Location and Real Estate

Home Sweet Home

Native stingless bees need real estate and this usually comes in the way of trees that develop hollows, pipes or tubes in their trunks and branches. Ridges of sandstone formations where dry shrubby sclerophyll woodland exists and grasslands or heathland are favoured habitat. Native bees can also be found in other vegetation types as well, including dead trees.

The native bees need to be well resourced in terms of pollen, nectar, resin, and materials within their location, as their flight range is limited to 500 metres. *Tetragonula carbonaria* build their hives in a spiral formation whereas *Austroplebia australis* build their hive with a long entrance and in a scattered manner within the hollow. At night these bees cover their entrance with a fine curtain of wax.

It is very difficult for the untrained eye to find the entrances of native bee hive nests. Using a pair of binoculars will definitely help your search. The entrance will have a northerly to north east aspect and, in most cases, this will be a darkened spot that looks like an oil splatter surrounding a small split, knot, hole or crack. There may be small insect movement around this hole which will only be evident on warm days. Standing behind the tree you may also be able to see the bees flying around the tree in the sunlight. A cement like seam running up a side of a branch or tree could indicate patching by bees to seal the nest so do not disregard these features, look a little closer. Native stingless bees generally do not swarm and move to other locations. They can spend >30 years in the one hive. **Remember, if they don't need to be moved, then please leave them BEE!** This care sheet is to be used with Care Facts “Clearing and Native Bee Habitat”



•Real Estate how many suitable trees have structures with the necessary hollows.

- Time of day for survey - Little activity from native bees at dawn or dusk.
- Temperature - it must be >18°C or more for native bees to forage.

•Rain or strong wind will inhibit the bees from foraging.

CLARENCE NATIVE BEES – CARE FACT 6



Native stingless bee hive entrances and exposed native bee nest showing length of hive from entrance
(Photos : Neville Anderson)

Clarence Valley Hive Box

Design

The Clarence Valley Hive Box design was developed by Clarence Native Bee member Neville Anderson. Neville has an extensive background in keeping native stingless bees and during this time he has constructed many different native bee boxes finally perfecting the design to better manage native stingless bees on the North Coast of NSW.

Many members of Clarence Native Bees Landcare group agree with this as they have been able to put Neville's design to the test. The Clarence Valley Hive Box design works best for keeping bees on the North Coast because the box is built with thicker walls which provides better insulation during the winter months but also during hot weather events. The protective entrance is also designed to shield bees from rain and wind and lends itself well for a landing and take-off platform. The measurements of the hive are beneficial in producing a larger colony of bees which can lead to increased hive growth and also honey production.

The hive box design is also easy to construct from the diagram illustrated on the back of this page.



Native Stingless Bee Hives designed by Neville Anderson

(Photo : Susan Moore)

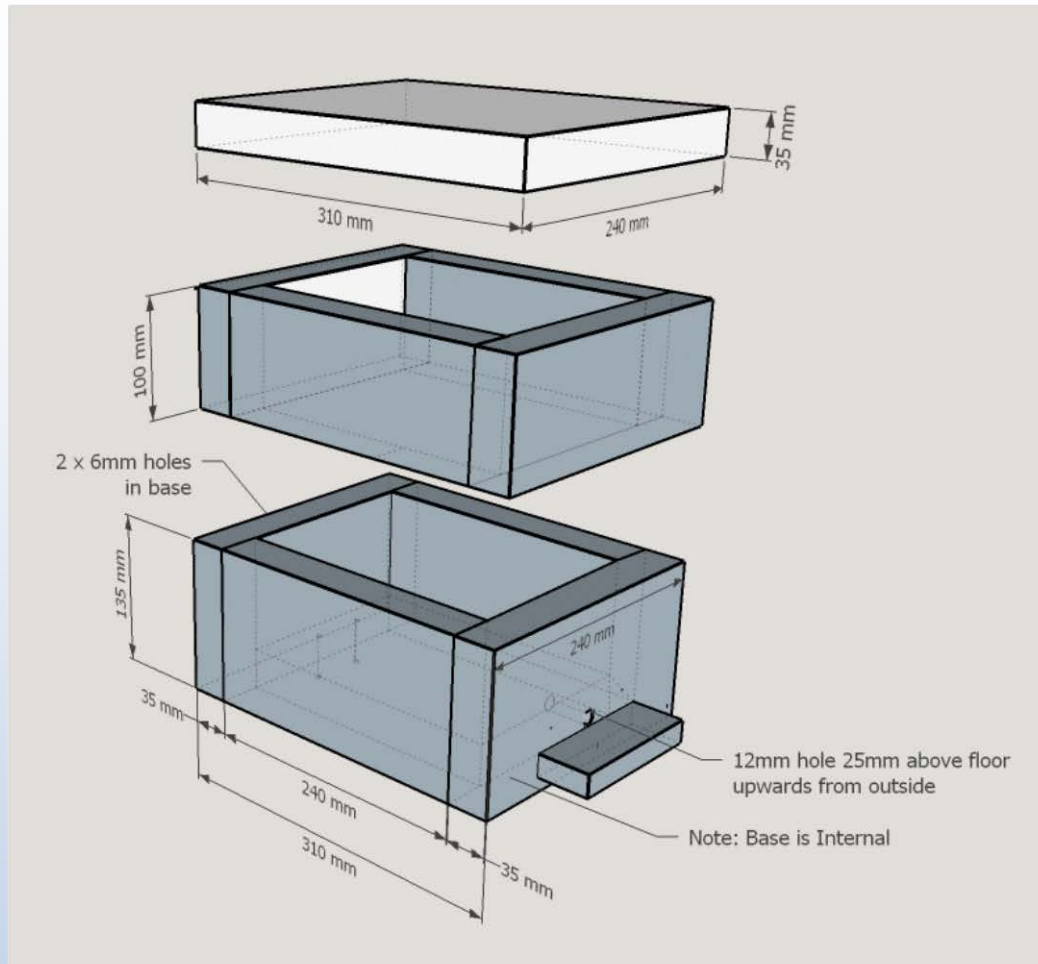
CLARENCE NATIVE BEES – CARE FACT 7



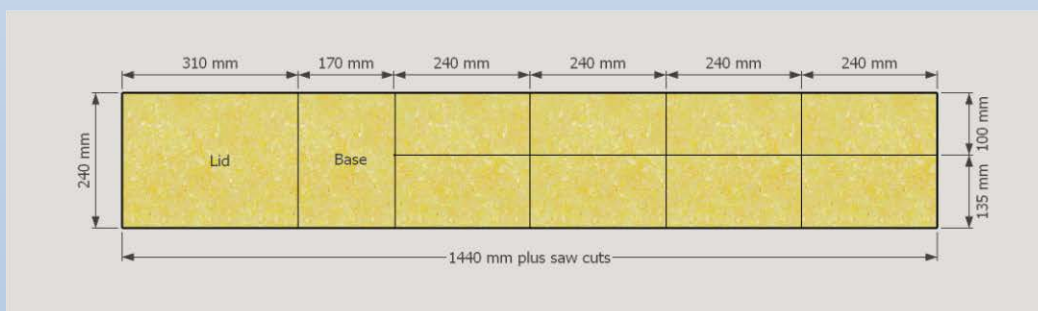
AUSTRALIAN NATIVE BEE BOX

Design : Neville Anderson

Graphics : Kevin Noble



CUTTING PLAN



Native Bee Rescues

Bees in Trees

Clarence Native Bee Landcare recommends only recovering native stingless bees when the branches in trees, or the trees, become damaged. This could be through storms, lightning, wind, fire, timber cutting for firewood or fence posts, or land clearing. All native stingless bee hives must otherwise remain in the habitat in which you find them. Removal of dead wood or trees is listed as a key threatening process under the *Environmental Protection and Biodiversity Conservation Act, 1999 (EPBC Act)*.

Where a tree cannot be saved, the log can be cut and capped. If the log piece with the nest can fit directly into a container for transport, then this is sufficient, providing the log nest is correctly orientated, and stable and secure inside the sealed container. One ventilation hole with taped flyscreen covering must be provided.

If the log is not badly damaged, then the nest should remain inside the log and the damage repaired. However, if a nest needs to be removed from the log due to damage/breakage or capping is not possible, then the nest will need to be removed and transferred temporarily. Place it into a 10L bucket with 2 x 6mm holes drilled in the bottom, fit a gauze layer (gutter guard or similar) on the bottom. Another hole with a taped flyscreen cover must be provided for ventilation on the side of this bucket. The 10L bucket can be sealed with a lid and then placed inside a 20L bucket for transport. These buckets must be of a food grade quality. Transfer of a nest is best done in shade. If necessary, at least; protect the brood by providing shade with a hat or umbrella.

To successfully re-stabilise and relocate the bees, the entire nest must be captured, along with as many bees as possible. It is important that all material associated with the nest is placed in the bucket or box you are using and that the queen bee also goes with the nest.

Bees not in trees

Sometimes bees like to nest in other areas, including the home, water meter box, electricity meter box, roofs, walls of sheds, and even old cars sitting in the paddock. Some of our members have performed rescues such as these. There is no tried or true method for bee rescues in these situations other than to follow the general procedure outlined above and below.



Transfer a native stingless bee nest from a damaged log

Transfer of a native stingless bee nest from a damaged log to a hive box is to be undertaken as follows:

- ❖ Gently lever open the log. Using a sharp knife and a hand spade, gently cut and separate the nest from the log and place the brood together with intact sugarbag honey and pollen pots, in the bucket include a little of the resin associated with the nest so that the bees will be drawn back to it. The brood should be placed in exactly the same position as it appeared in the log.
- ❖ Excess hive material (resin, propolis) is to be kept in a separate container (2 litre bucket with lid), clearly marked with which hive it belongs to, and then be transported with the hive.
- ❖ Physically shake the log cavity and gently brush the bees out of any crevices. Sometimes the queen may be found hiding in a crevice in the log cavity, so be gentle.
- ❖ Stand the log up to drain out any spilt honey which may cause bees to drown.
- ❖ If native stingless bees persist in the log, place the log in direct sunlight or place a cloth soaked in tea tree oil inside the log cavity until bees take flight.
- ❖ Collect all excess nest by placing in a separate sealed container and remove log debris from the immediate area. This will encourage the bees not to cluster on this material. They will remain or return to the bucket with the brood. Place the bucket as close to the original hive position for as long as you can, as the bees will want to return to the nest. Do not take too long, as predators are very quick to enter damaged nests.
- ❖ Ensure hives and excess hive material buckets are placed in a safe shady position. Check for ant activity prior to placing containers on the ground. If ants are in the area, stand the buckets on top of bricks placed in a dish of water. When you are ready to transport the hive, you will need to be prepared for transfer of the hive to a hive box (see Care Sheet on Clarence Valley Hive Box Design).
- ❖ Place the brood in first, and materials (including their food sources) around the brood. Seal the top, close the lid and tape the two boxes together. Place in a sheltered and suitable position in the garden.

Native Stingless Bee Rescues: Intact Log

All intact logs rescued from damaged trees will need to be cut from the tree and then transported to a new location. Intact logs may also require the ends of the logs to be re-sealed.

Look for the orientation of the hive

Find the hive entrance then, using a chainsaw, cuts are to be made at minimum of 1m above and below the hive entrance to separate it from the tree. If a cut is made into the hive's structure, stop, fill/cover the cut and make a fresh cut further along the branch or trunk. This could range from 15 cm to 1m.

Orientation

The separated hive in the log is to be orientated as if it were still in the tree. If the hive is not orientated as it was in the tree the bee brood will drown.

Does the hive log need sealing?

The ends of the separated trunk or branch are to be inspected to ensure that the hive is sealed by intact timber material. To prevent invasion of the hive by Native stingless bee predators, it is important to ensure any breaks, cuts, splits are sealed.

Temporary sealing for transport

This is about making the log secure for transport. Builders plastic, timber, thick cardboard or other suitable material can be taped temporarily in place until permanent sealing occurs. If the log is not too large it can also be temporarily wrapped in plastic. Note - if this method is required, do not leave the log in the sun for any length of time.

Permanent sealing

If the ends are not sealed, then the ends need to be permanently sealed by nailing/screwing on a plate. Materials could include timber, fibreglass or rubber. Any material that can be recycled, is non-toxic, and has longevity, can be used. **DO NOT use materials which are turps based as they can be toxic to the Native Stingless Bees.**



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All breaks or cuts in the timber surrounding the nest (other than the entrance hole) must be filled or covered using permanent non-toxic materials (e.g., water-based wood filler, No More Gaps, or other permanent sealing material).



Photo (L): Branches of a eucalypt damaged after a storm can often hide native stingless bee nests.
Photo (R) Intact log that requires re-sealing at both ends.



Photo (L) : An intact log located, cut from the tree and repaired using No More Gaps/conveyor belting.
Photo (R) : A different intact log sealed on the bottom and top with timber and a nice protective cover.

(Photos : Greg Field, Laura Noble, Susan Moore)

Creating habitat for bees

Bees Motels

Bee hotels are becoming fashionably popular with backyard gardeners who want to create bee habitat, but you must also ensure that you don't attract unwanted predators too. Ensure that your hotels are spaced well apart and near a reliable water source. Keep a regular check on pest insects including spider webs, syrphid fly, hive beetle, mimic wasp and cuckoo bee. Artificial homes can be used by solitary bees including the Resin, Blue-Banded, Leaf-cutter, Reed and Carpenter Bees. Different materials, sizes, depths and diameters will determine the species of bee you will attract to your garden. Materials to use can include bamboo, round branches, blocks of timber, pvc pipes, clay, and/or lantana stems cut and tied together.



Bee motels (above) & ground burrows (below) in a rock garden (Photos : Laura Noble)