Barossa Bushgardens

Place Plants People

NATIVE BEES

NATIVE VS. INTRODUCED

Just like this Blue Banded Bee in the picture, some native bee species look spectacular. They don't just look good, they are a very important part of our ecosystem. Native bees, just like their introduced cousins (European honey bees), pollinate plants by carrying pollen between flowers, which helps the plants to reproduce and even prevents inbreeding.

Differences between native bees and honey bees:

- Native bees don't generally store nectar or produce a lot of honey
- Generally, native bees tend to live solitary. Some of them build their own nest burrow, but many bees can nest together in one place. Only 11 of the over 1700 native bee species are 'social bees', that live together in colonies of 5000-10.000. They usually have their nest in hollow trees.
- Some native plants can only be pollinated by native bees, through means of specialized mechanisms like 'buzz pollination' (vibration)
- Worldwide, there are about 20.000 known species of native bees. In Australia, there is about 1700 known species, of which at least 200 reside in the Adelaide Hills and Mt. Lofty Ranges.
- They come in a huge array of colours and range in size from 2mm to 26mm. Some native bees have a thick furry coat, like the Teddy Bear Bee, while others are smooth and shiny like the metallic green Carpenter Bee.
- Native bees tend to be less aggressive as European honey bees, as they don't have to protect their colony and honey. The 11 native species that do build hives are stingless.
- As native bee habitat is shrinking year after year through deforestation and land clearing, it is very welcome to help them out by planting more native plants in our gardens and building a bee hotel.
- It is also worth knowing that many Australian bees live underground, so leaving some spaces mulch free will help them find room to live.

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NATIVE BEES IN SOUTH AUSTRALIA

Each of the following native bee families can be found in South Australia and there are several species in each of those families.

Photo: Green Carpenter Bee, Source: Aussie Bee

Green Carpenter Bees

Xylocopa (Lestis), formerly in genus *Lestis*

(Two Australian species)

These spectacular bees (up to 17 mm long) are glossy metallic green with tints of yellow or blue. They cut 7 to 10 mm wide nest burrows in the flower stalks of the grass tree (Xanthorrhoea) or in other soft pithy dead timber. They are mainly found in QLD and NSW. Land clearing has caused the loss of these stunning bees from VIC and mainland areas of SA although they can still be found on Kangaroo Island in SA. Green Carpenter Bees are glossy metallic green, with furry black hind legs for carrying pollen.

Reed Bees

Exoneura and *Braunsapis*

(Over 80 Australian species)

Reed Bees are slender black bees less than 8 mm long. Some species have a red abdomen. They nest inside dry pithy twigs in plants such as raspberries and blackberries or in the dead fronds of tree ferns. Today many nests can also be found in dead canes of the weed Lantana.

Many of the slender Reed Bees have a yellow patch on their face.

Photo: Native Reed Bee, Source: Aussie Bee

Photo: Resin Bee, Source: Aussie Bee

Resin Bees

Megachile, formerly in genus *Chalicodoma*

(About 100 Australian species)

Resin Bees come in many colours and sizes. For example there are large black 14 mm bees with white tufts of hair, and small 8 mm black bees with bright orange abdomens. They nest in pre-existing holes or gaps in timber or stonework. They are called Resin Bees because they collect resins and gums to build partitions between their brood cells and to seal their nest holes. Beekeepers sometimes notice Resin Bees hanging around Stingless Bee hives, trying to 'borrow' a little resin for their nests. They are common residents in Bee Hotels.

Photo: Blue banded bee, Source: Mark Berkery

Blue Banded Bees

Amegilla (15 Australian species)

These bees (mostly 8-13 mm long), with glittering stripes of blue or whitish hair across their black abdomens, are often seen darting around the flowers of lavenders and abelias. The females build nests in shallow burrows in the ground, but they may also nest in mudbrick houses or in soft mortar. Each female builds her own nest burrow, but many bees often nest together in the one place. Research has shown that Blue Banded Bees could be valuable pollinators of greenhouse tomatoes.

Teddy Bear Bees

Amegilla (Asaropoda) (About 25 Australian species)

Most species of these rotund furry brown bees are 7 to 15 mm long. They build shallow nest burrows in soft soil and sometimes nest underneath houses. Each female builds her own nest burrow but many bees may nest together in the one location.

In WA there is a very large related species (nearly 20 mm long) called the Dawson's Burrowing Bee (*Amegilla dawsoni*). It nests in groups of up to 10,000 in arid clay pans and mud flats.

Photo: Teddy Bear Bee, Source: Aussie Bee

Photo: Leafcutter Bee, Source: Erica Siegel

Leafcutter Bees

Megachile (About 40 Australian species)

Bee watchers often first discover these amazing 6 to 15 mm long bees when they notice rows of neat circular cuts on the edges of some leaves in their garden. Leafcutters use the disks of leaf as a nest building material. They particularly like the soft leaves of roses, Bauhinia and Buddleja.

Homalictus Bees

Homalictus (Over 40 Australian species)

Although very small (most less than 8 mm long), the glittering Homalictus Bees come in a dazzling array of colours. ‘Golden blue’, ‘coppery red’ and ‘green tinged with purple, red or gold’ are just a few of the colours listed by scientists. Homalictus Bees dig intricate branching nests in the ground. Many females may live together in each nest, taking turns to guard the narrow nest entrance. One nest was found to be occupied by over 160 females!

Photo: Homalictus Bee, Source: Erica Siegel

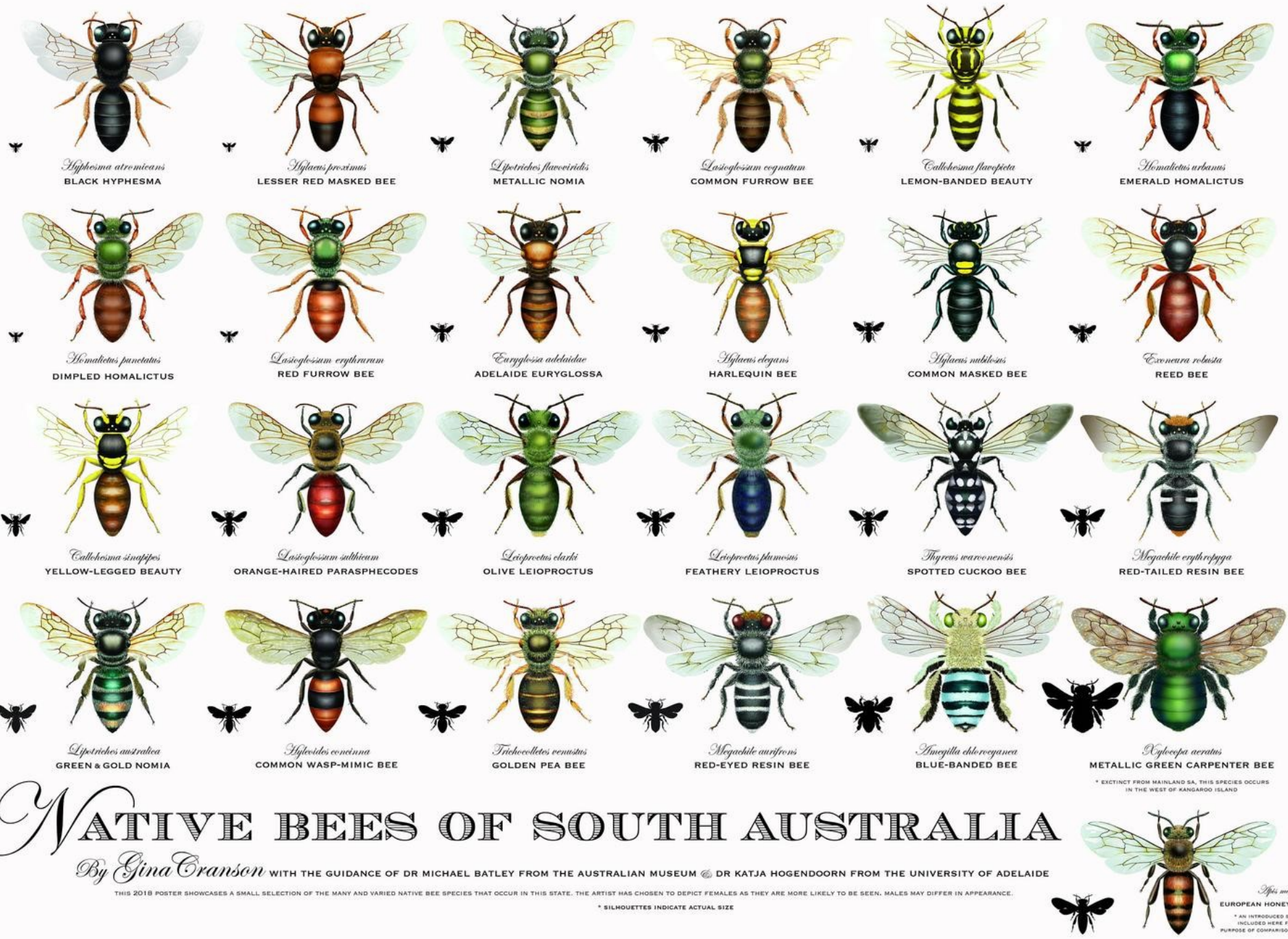
Photo: Masked Bee, Source: Erika Siegel

Masked Bees

Amphylaeus, *Hylaeus* and *Meroglossa*

(Over 150 Australian species)

These slender black bees (most less than 10 mm long) are called ‘Masked Bees’ because they have pale markings on their faces. Many species also have a distinctive yellow spot on the thorax. Masked Bees have very little hair and carry pollen to their nests by swallowing it. The nests are usually in pithy stems or pre-existing holes in wood. Masked Bees weave their brood cells from an amazing cellophane-like secretion. Masked Bees are shiny and nearly hairless, and many have a bright yellow spot on their back.


Hyphesma atromicans
BLACK HYPHESMA
Hylaeus proximus
LESSER RED MASKED BEE
Lipotriches flaviviridis
METALLIC NOMIA
Lasioglossum cognatum
COMMON FURROW BEE
Callohesma flavopicta
LEMON-BANDED BEAUTY
Homalictus urbanus
EMERALD HOMALICTUS
Homalictus punctatus
DIMPLED HOMALICTUS
Lasioglossum erythrurum
RED FURROW BEE
Euryglossa adelaidae
ADELAIDE EURYGLOSSA
Hylaeus elegans
HARLEQUIN BEE
Hylaeus nubilosus
COMMON MASKED BEE
Exoneura robusta
REED BEE
Callohesma sinuatipes
YELLOW-LEGGED BEAUTY
Lasioglossum sulthicum
ORANGE-HAIRED PARASPHECODES
Leioproctus clarki
OLIVE LEIOPROCTUS
Leioproctus plumosus
FEATHERY LEIOPROCTUS
Thyreus waroonensis
SPOTTED CUCKOO BEE
Megachile erythropyga
RED-TAILED RESIN BEE
Lipotriches australica
GREEN & GOLD NOMIA
Hyleoides concinna
COMMON WASP-MIMIC BEE
Trichocolletes venustus
GOLDEN PEA BEE
Megachile aurifrons
RED-EYED RESIN BEE
Amegilla chlorocyanea
BLUE-BANDED BEE
Xylocopa aeratus
METALLIC GREEN CARPENTER BEE
* EXCTINCT FROM MAINLAND SA, THIS SPECIES OCCURS IN THE WEST OF KANGAROO ISLAND
NATIVE BEES OF SOUTH AUSTRALIA
By Gina Cranson WITH THE GUIDANCE OF DR MICHAEL BATLEY FROM THE AUSTRALIAN MUSEUM & DR KATJA HOGENDOORN FROM THE UNIVERSITY OF ADELAIDE
THIS 2018 POSTER SHOWCASES A SMALL SELECTION OF THE MANY AND VARIED NATIVE BEE SPECIES THAT OCCUR IN THIS STATE. THE ARTIST HAS CHOSEN TO DEPICT FEMALES AS THEY ARE MORE LIKELY TO BE SEEN. MALES MAY DIFFER IN APPEARANCE.
* SILHOUETTES INDICATE ACTUAL SIZE
Apis mellifera
EUROPEAN HONEY BEE
* AN INTRODUCED SPECIES INCLUDED HERE FOR THE PURPOSE OF COMPARISON ONLY

GARDENING FOR NATIVE BEES

It is not actually that hard to attract native bees to a garden. All they need is food, water and a place to live. Even a small garden bed will help the bees forage for pollen and nectar. It is important to provide food (flowering plants) all year around, but especially from late winter to late autumn. The more variety the better and the more colours, the better as well. Bees can see fairly well and most prefer blue or purple flowers, followed by mauve, pink, yellow and white. Around half of native bee species will only feed on native plants, but the rest are quite happy to look for other plants, as long as they provide a food source.

Katja Hogendoorn, from the University of Adelaide, has a few tips for native bee gardens:

1. Cut back on the mulch and weed barriers.

Mulch has large benefits, but half of our native bees dig nests in the soil and a layer of mulch or plastic weed barriers will discourage them from taking up residence in your garden. Leave a few suitable areas (see under 4) free of mulch for the bees.

2. Plant a range of native plants that flower from early spring to late autumn.

Most native bees only live for a few weeks. They need pollen and nectar to reproduce. If they can't find food in your garden, they won't settle in. Plant a variety of locally native plants that provide flowers from early spring to late autumn and you'll keep different species of native bees happy all year. Eucalyptus, Hakeas, Banksia, peas and Eremophila are very attractive.

3. Plant buzz pollinated plants.

Honeybees cannot use buzz pollinated plants, so by providing them, you provide an edge for native bees. Senna, Fringe-, Flax- and Chocolate-lilies, Hibbertia, Solanums and Lasiopetalum, are all buzz pollinated. Make sure there are nectar producing plants close by (Scaevola, Goodenia, Eucalyptus, Christmas bush and Bottle brush are all good).

4. Leave some areas of your garden free of vegetation.

Many native bees nest in the ground. These bees usually seek out slightly compacted soils, not too dry, not too wet, with at most light traffic, that are free of vegetation, often on a bit of a slope. Yes, they are picky! Look for existing nests, and leave or make a few patches of bare soil, so they can burrow, and they won't have to travel so far to pollinate your flowers.

5. Plant plants with pithy vines or canes.

When pruning dead branches with pithy centres, leaving a stretch of 10 cm or more above the node can allow reed, masked and resin bees to construct a nest.

6. Limit pesticide use.

Chemical pesticides, particularly broad spectrum and systemic insecticides, can negatively impact native bee populations. Use pesticides conservatively, or better yet, not at all. That way, you'll also encourage beneficial predators to stick around and control insect pests.

7. Leave dead wood for wood nesting bees.

Resin bees often use old beetle bores in dead wood. Leaving dead trunks or branches will help them.

8. Don't mow your lawn so often.

When you don't have many native plants yet, weeds can provide nectar and pollen when nothing else is flowering. Mowing trims these flowers. Try to let your lawn grow a little longer before you mow.

9. Install some artificial nests for resin, masked and leafcutter bees.

Resin, masked and leafcutter bees make tube-shaped burrows, in which they lay their eggs. Having a small bee hotel will allow you to observe them provisioning their nest.

A PLACE TO CALL HOME

According to Katja Hogendoorn from the University of Adelaide, nests for native bees in the garden allow people to observe them and help with pollination of fruit and vegetables.

A native bee hotel can attract blue-banded bees, masked bees, leafcutter bees and resin bees and they are fun to watch. Native bees are not aggressive and only sting if people try to grab them.

Photo: Native bee hotel, Source: www.pollinator.com

Different substrates are:

- wooden **bee blocks** with pre-drilled holes
- **bundles** of bamboo, hollow twigs or with pithy stems
- **mudbrick** blocks with holes

A bee block

The wood

Dry, dense the wood (hardwood) is the best choice as the holes tend to be smoother which bees will prefer. Bees won't use wood with deep cracks as it allows parasites easy access. The piece of wood should be at least 13 cm deep.

The holes

Holes should have a diameter of 3 - 8 mm and a length of 80-150 mm in the wood, across the grain and not be drilled all the way through, leaving 10-15mm from the back. A variety of diameters will accommodate different bee species.

The finishing touches

Attaching a roof to provide protection from the midday sun and rain, or placing it in a sheltered position, in full shade or morning sun is prefered. Outside surfaces may be painted or stained, but no wood preservatives should be used.

Placing or hanging the nesting blocks so that bees have open flight access and fixing it firmly, so that the block doesn't sway in the wind.

Photo: Native bee nesting block,
Source: www.cleanairgardening.com

Bee bundles

Bamboo

Use small iron saws to saw off stretches of bamboo of different inner diameters (5- 8 mm) at the node. Make sure the open stretch is at least 10 cm. Clean them out with a skewer and bundle them with 10 – 15 using rope or zip-ties. Hang in a sheltered position for example under an eve or a branch.

Photo: Bamboo bundle, Source: little-vegiepatch.co.com.au

Twigs with pithy stems

Photo: Pithy stems, Source: F. Hecker

Some bees, such as small carpenter bees, like to dig their own nest. Prune shrubs leaving a length of branch with pithy centres on the plant. Alternatively, stand pruned twigs with pithy stems in existing shrubbery in the shade. Most bees prefer that to the sun.

Mudbrick

Some bees, such as blue-banded bees dig their own nest in clay rich soils. You can make small blocks by using 10 cm stretches of 90 mm square PVC storm water pipe as casings.

Photo: Mud bricks, Source: www.pollinatorlink.org

Mix red Adelaide clay soil (without stones or coarse sand grains) with water to a thick paste. Fill the pipe pieces with the clay. After some drying, use a pencil to poke holes (6-7 mm in diameter, 6- 10 cm long). The clay should still be wet, but firm enough so that after withdrawing the pencil from the tunnel, it should keep its inner diameter. Drying time depends on the temperature and the thickness of the clay paste. Then slide the block out of the casing. These bocks can be placed in existing stone walls, but should be protected from rain.

Nesting wall

To make a nesting wall, fill large or small besser blocks with clay. Make sure the clay fills the space, remove air bubbles. After some drying, poke holes of various diameters in the blocks. Use the filled besser blocks to build your wall.

Nesting boxes

Make a nesting box with various substrates.

Maintenance

Find out what the bees like to use and supply more of that type in the next year. Every three years, remove some of the old substrate. Now and then, remove cobwebs.

LOCAL PLANTS TO ATTRACT NATIVE BEES

Common Name	Scientific Name	Spring	Summer	Autumn	Winter
Trees					
* Blackwood	Acacia melanoxylon	Pollen only			Pollen only
Drooping She-oak	Allocasuarina verticillata	Pollen only			Pollen only
* Silver Banksia	Banksia marginata			Pollen only	Pollen only
* River Red Gum	Eucalyptus camaldulensis		Pollen + nectar		
* Pink Gum	Eucalyptus fasciculosa		Pollen + nectar		
* SA Blue Gum	Eucalyptus leucoxylon			Pollen + nectar	Pollen + nectar
* Grey Box	Eucalyptus microcarpa		Pollen + nectar		Pollen + nectar
Eucalyptus	Eucalyptus spp.		Pollen + nectar		Pollen + nectar
Short-leaf Honeymyrtle	Melaleuca brevifolia	Pollen + nectar	Pollen + nectar		
Dryland Tea-tree	Melaleuca lanceolate	Pollen + nectar	Pollen + nectar		
Small Trees					
Wattle	Acacia spp.	Pollen only		Pollen only	Pollen only
Quandong	Santalum acuminatum		Pollen + nectar		

Common Name	Scientific Name	Spring	Summer	Autumn	Winter
Large Shrubs					
* Sweet Bursaria (Christmas Bush)	Bursaria spinose		Pollen + nectar		
* Bottlebrush	Callistemon spp.	Pollen + nectar	Pollen + nectar		
Common Fringe-myrtle	Calytrix tetragona	Pollen + nectar			
* Tall Scurf-pea	Cullen australa-sicum	Pollen + nectar	Pollen + nectar	Pollen + nectar	Pollen + nectar
Tar bush	Eremophila glabra	Pollen + nectar	Pollen + nectar	Pollen + nectar	Pollen + nectar
Holly-leaf Grevillea	Grevillea illicifolia	Pollen + nectar	Pollen + nectar	Pollen + nectar	Pollen + nectar
* Hakea	Hakea spp.	Pollen + nectar			Pollen + nectar
Heath Tea-tree	Leptospermum myrsinoides	Pollen + nectar			
* Sticky Boobialla	Myoporum petiola-tum	Pollen + nectar	Pollen + nectar	Pollen + nectar	
Twiggy Bush-pea	Pultenaea larg-iflorens	Pollen + nectar			Pollen + nectar
# Senna	Senna artemisi-oides	Pollen only			
Small Shrubs					
* Common Ever-lasting	Chrysocephalum apiculatum	Pollen + nectar		Pollen + nectar	Pollen + nectar
Correa	Correa spp.	Pollen only			Pollen only

Common Name	Scientific Name	Spring	Summer	Autumn	Winter
Shrubs					
Billy Buttons	Craspedia glauca	Pollen + nectar			
* Bitter-pea	Daviesia spp.	Pollen + nectar			
* Common Eutaxia	Eutaxia microphylla	Pollen + nectar			
* White Goodenia	Goodenia albiflora	Pollen + nectar	Pollen + nectar	Pollen + nectar	Pollen + nectar
Lavender Grevillea	Grevillea lavendu-lacea	Pollen + nectar	Pollen + nectar		Pollen + nectar
Button Everlasting	Helichrysum scorpi-oides	Pollen + nectar		Pollen + nectar	Pollen + nectar
# Guinea-flowers	Hibbertia spp.	Pollen only	Pollen only		Pollen only
Olearia	Olearia spp.				
Monocots					
# Common Vanilla-lily	Arthropodium strictum	Pollen only			
# Flax-lily	Dianella spp.	Pollen only			
# Twining Fringe-lily	Thysanotus pater-sonii	Pollen only			
Yacca/Grass-tree	Xanthorrhoea spp.				Pollen + nectar
Bulbine Lily	Bulbine bulbosa	Pollen only			

Common Name	Scientific Name	Spring	Summer	Autumn	Winter
Ground Cover and small shrubs					
* Pigface	Carpobrotus rossi	Pollen + nectar	Pollen + nectar	Pollen + nectar	
Rough Halgania	Halgania cyanea		Pollen only		
* Muntries	Kunzea pomifera	Pollen + nectar	Pollen + nectar		
Yam Daisy	Microseris lanceolate	Pollen + nectar	Pollen + nectar	Pollen + nectar	
* Creeping Boobialla	Myoporum parvifolium		Pollen + nectar	Pollen + nectar	
* Pale Fanflower	Scaevola albida	Pollen + nectar	Pollen + nectar	Pollen + nectar	Pollen + nectar
Groundsel	Senecio spp.	Pollen + nectar			Pollen + nectar
New Holland Daisy	Vittadinia spp.	Pollen + nectar			Pollen + nectar
* Native Bluebell	Wahlenbergia stricta	Pollen only	Pollen only	Pollen only	Pollen only
Native Buttercup	Ranunculus lappaceous	Pollen + nectar			Pollen + nectar
Climber					
Native Lilac	Hardenbergia violaceae	Pollen + nectar			Pollen + nectar

* Fantastic bee plant

Buzz pollinated plant - Many native bees can get pollen out of buzz pollinated plants, but introduced honey bees cannot handle the flowers. Planting these plants will provide pollen exclusively for native bees.

It is recommended to plant an abundance of flowers, including at least three sources of pollen and three sources of nectar at any time. Bees need nectar for energy and pollen for protein. They need both to be able to reproduce.

Please note that not all plants on this list might be available any time of the year. We advise you to just come and have a look at the display table in the Community Nursery.

Further reading:

Aussie Bee
https://www.aussiebee.com.au

South Australian Native Bees
https://southaustraliannativebees.webs.com/

References:

Aussie Bee
https://www.aussiebee.com.au

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Mary River Catchment Coordinating Committee, *Bee walls, habitat and nesting blocks*
https://mrccc.org.au/wp-content/uploads/2014/02/BEE%20WALL%20and%20HABITAT%20-%205%20page.pdf

Barossa Bushgardens
653 Research Road
Nuriootpa SA 5355
(08) 8563 8330
bushgardens@barossa.sa.gov.au
www.barossabushgardens.com.au

Opening hours:
Monday and Friday by appointment
Tuesday & Thursday
9 am - 4 pm
Wednesday
9 am - 12.30 pm
Saturday and Sunday closed

Government of South Australia
Northern and Yorke Landscape Board

The Barossa Council