

BACKYARDS FOR BEES, BUTTERFLIES, BUGS AND BEETLES



NEON CUCKOO-BEE
[JENNY THYNNE]

“NOT A SINGLE BEE HAS EVER SENT YOU AN INVOICE. AND THAT IS PART OF THE PROBLEM - BECAUSE MOST OF WHAT COMES TO US FROM NATURE IS FREE. BECAUSE IT IS NOT INVOICED, BECAUSE IT IS NOT PRICED, BECAUSE IT IS NOT TRADED IN MARKETS, WE TEND TO IGNORE IT.”

-PAVAN SUKHDEV. UNITED NATIONS REPORT, THE ECONOMICS OF ECOSYSTEMS AND BIODIVERSITY.

Ideally you have established a garden rich in a variety of native plants producing a beautiful variety of seed, fruit, and flower.

What next?

Extra encouragement can be given to our pollinators – the insects that have evolved to seek nectar and thus spread pollen between individuals of flowering plants.

The most beautiful and conspicuous of these are bees, especially native bees, and butterflies. Other insects are involved in pollination as well, including moths, beetles, and flies. Every wildlife gardener needs to consider themselves, not a primary producer, but an insect producer.



The best-known bee in Australia is the European Honeybee, obviously an exotic. In Australia there are some 2000 different native species of bee with the vast majority of them solitary. Australia also has eleven species of social Stingless Native Bees, and they can be encouraged to live in hives.

Stingless Bees can be identified from other native bees by their small size [all of them are under 4.5 mm long] and their pollen baskets. In Australia we have 11 species of Stingless Bee, shared between two genera: *Austroplebeia* and *Tetragonula*. None of our Stingless Bee species have accepted common names so are recognised by their scientific names. In south-east Queensland we have five species occurring; *Austroplebeia australis*, *A. cassiae* [whose estimated distribution just enters south-east Queensland], *Tetragonula davenport* [a cryptic difficult to identify species which is endemic to a small area within south-east Queensland], *T. hockingsi*, and *T. carbonaria*. The latter two species being the two most commonly kept species in hives.

Stingless Bees are well known and important pollinators but they attracted the attention of Australian Aboriginal people because they produce honey. And honey, in Australia, like everywhere else in the world, is a highly desired product. For Aborigines, honey was a prized food and was used for medicinal purposes. Propolis [referred to as wax] was used in making spears and axes, in addition to coating the mouthpieces of didgeridoos.

Stingless Bees generally do well in urban environments, in fact they do better in urban areas than agricultural settings. The reason? On many farms they have monocultures of crops; thus there is good numbers of flowering plants available for only part of the year. In many urban areas there is a greater range of flowering plants offering nectar throughout all of the year and the bees are not fussy, taking nectar from natives and exotics alike.

left - Blue-banded Bees *Amegilla* sp. [J. Thyne]



Solitary Bees. Clockwise from top left - *Hylaeine* Bee, *Megachile serricauda*, *Amegilla cingulata* [Blue-banded Bee], *Meroglossa itamuca*, and again,, *Braunsapis* sp [photos by Jenny Thynne]

If you are considering getting a hive of Stingless Bees, you need to examine what flowering plants are available in your yard and what options are available a little further afield as the bees will forage for a few hundred metres at least.

To position a hive in your yard, consider a location that is outside but covered such that it does not cook. Similarly avoid sites that could bake in the western sun. A position that gets early sun in the winter months would be ideal. The hive should have some elevation so you can easily see the bee's comings and goings. Lastly do not position your hive near a pool as this can have the effect of disorientating the bees.

In the wild, in forest habitat, bees can reach densities of about one hive per hectare, however, in established suburbs in urban areas greater densities can be supported. On a normal house block in such a suburb, you could have two or three hives, all doing well.

Solitary Bees, as stated previously, make up the bulk of Australia's bee fauna. They show an astonishing diversity of size, shape, nesting biology, and behaviour. Some of the better known bees include Blue-banded Bees,

Carpenter Bees [so named because they drill their nests in soft woods], Resin Bees [so named as they line their nests with resin gained from a variety of plants], Leaf-cutter Bees [who line their nests with pieces of leaf that have been neatly cut], Cuckoo Bees [these bees dispense with the slogan, 'as busy as a bee' and are cleptoparasitic bees, meaning they infiltrate the nests of other species such that their larvae can develop on the provisions already there], and the Teddy Bear Bee [a stocky bee, vaguely resembling a bumble bee, with orange brown 'fur' to name a few.

Native bees of many types can be attracted into your garden by planting some of the better known Australian tree genera; *Eucalyptus*, *Corymbia*, *Melaleucas* [now including *Callistemons* or Bottlebrushes], *Banksias*, *Westringia* [Coastal Rosemary], *Leptospermums*, *Grevilleas*, *Hakeas*, *Syzygium* [Lilly-pillies], to name a few. Eucalypt blossom will attract a great range of bees and other insects and Resin Bees will also be attracted to the trees. *Acacias* are a good source of pollen. *Xanthorrhoea* species, grass-trees, attract seemingly every native bee when flowering.

Especially they attract Carpenter Bees, who nest in their stems. Low growing plants like native ginger and *Dianella* species [Flax Lilies], *Hibbertia* species [Guinea Flowers], *Scaevola* species [Fan flowers] all attract solitary bees, especially leaf cutters.

Shrubs and small trees from the *Senna* genus attract Blue-banded Bees and Teddy Bear Bees who 'buzz' their flowers. A large number of flowering plants need 'buzz' pollination. Some solitary bees vibrate their entire body while holding tightly to a flower, releasing pollen from the flower's anthers. This provides the bees with food and the plant with pollination. Any attractive native shrub or flower from around our country can be planted to help these pollinators. The variety of Australian natives from south-west Western Australia, for example, are rightly famous for their flowers and one could be forgiven for succumbing to the temptation of planting some of these 'exotic' plants [although if you do you should never mention it to Eric Anderson].

Some exotics may be worth considering for both their beauty and their ability to attract pollinators. Lavender, and its cousin Rosemary, will attract Blue-banded Bees. While Australian flowers such as Everlastings, Brachyscomes, and Scaevolas are preferred, any of the commercially available exotic flowers will attract some bees. Flower colours that particularly attract bees are blue/violet, mauve/pink, white, and yellow. The **Butterfly Bush** [*Buddleia davidii*] is an exotic that has turned into an invasive pest in some parts of the world, however, it may be worth considering some of the Australian developed cultivar of this plant, which, as its name suggests is very good at attracting beneficial insects into your garden.

Clockwise from top left - Fire-tailed Resin Bee - *Megachile (Callomegachile) mystaceana*, Great Carpenter Bee *Xylocopa* sp, Leafcutter Bee, [three photos by Jenny Thynne] Stingless Bee [Niel Wark]





HOMES FOR BEES



A tip: walk through the outside garden section of the bigger stores and see which flowers are bringing in the bees. When I have done this, South African flowers seemed to be attracting more than European or Asian species.

Of course, your fruit trees, herbs and vegetables left to flower will attract a variety of pollinators, too.

To attract native solitary bees into your backyard, in addition to planting a variety of flowering plants, you can introduce some bee hotels. These are artificial nesting sites designed to attract some of the solitary bee species.

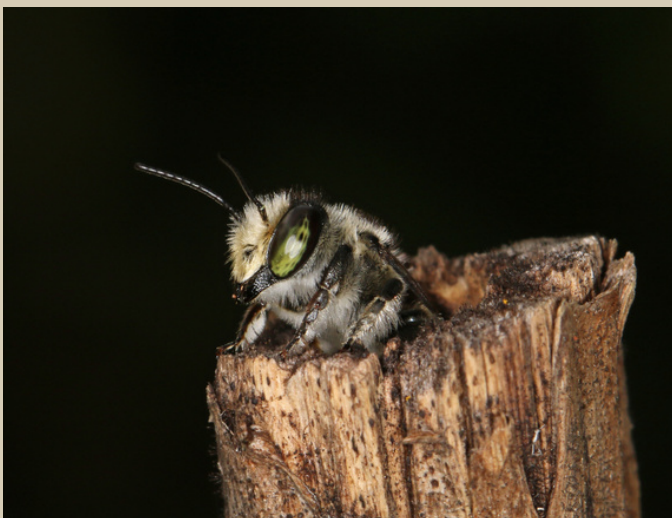


Blocks of wood (both hardwood and softwood) can be used with various sized holes drilled. The holes should be blind, in other words they should not go the whole way through the timber. The most successful dimensions are a 6mm wide hole, approximately 10cm deep plus an 8mm wide hole, approximately 15cm deep. These dimensions should make up the majority of the holes drilled. Some smaller 3mm holes, about 7cm deep plus a larger hole, 9.5mm wide and about 15cm deep could also be drilled. Untreated fence posts, untreated sleeper garden edges, fallen thick branches or logs plus tree stumps could also be drilled and suitably positioned.

Bundles of bamboo, like centre picture left, cut to about 20cm lengths are a common feature of commercial bee hotels. Again, the bamboo should be cut such that the tunnel is blind. They are often packed tightly into a PVC pipe or a wooden frame. A variety of similar material could be used such as lantana stems or larger reeds. Some bees like the hollows of bamboo while others like to chew their own holes. Place in a tree but fix firmly so they do not swing in the wind.

Other species prefer mud bricks of various textures. You can make your own clay-based mud, place it into a PVC or Besser Block surround or a wooden frame. Before the mud dries, push blind tunnels, in a random pattern, into the mud. Or you can drill into some solid mud bricks to establish places to nest.

If you have read the above carefully you would realise that many of the commercially available bee or insect hotels are not made properly. They are often not wide



Photos above by Jenny Thynne

enough, have holes which go all the way through a block of wood and are often not made well enough to endure the elements. So, avoid buying them.

Build your own instead. Sourcing your own materials gives you peace of mind that your insect hotel is made of natural, untreated wood and without chemicals such as varnish, paint and wood protectant that will repel or perhaps poison insects. To promote sustainability, consider using recycled or natural materials from your shed or garden. If tubes are drilled into blocks, tubes should be sanded smooth, so without splinters. Good insect hotels should be built sturdy with solid back and roof/shelter to protect from rain both for protection and to reduce mould.

Many small hotels are considered preferable to one large one. One large one makes it easier for predators or parasites to take out many native bees and / or their nests. This is perhaps not ideal...

Position your bee hotel at least one metre off the ground with a clear entrance to the holes, facing north or north-east in a sunny spot, although it could have some shade in summer. The bee hotel should be fixed on a pole or against a wall. It should not swing from a tree. It would be wise to position flowering plants nearby.

Clean thoroughly or replace every two years. Insect hotels can degrade naturally after two or more years because the material used is untreated. Cleaning or changing the nesting blocks or parts every two years to avoid build-up of mould, mites, and parasites overtime.

Some solitary bee species like to burrow so leave a clear patch of bare ground or create a sand pit or a sand pile in a sunny spot.

Australian native **Resin Bees, Leafcutters, Masked Bees** and **Wasp Mimic Bees** can be encouraged to nest in small timber blocks with drilled holes. **Australian Blue-banded Bees** can be encouraged to nest in small portable clay nest blocks in your Bee Hotel. Other insects may also occupy these nests, including wasps and parasites of the bees.

For more information about Australian Bees, including information about establishing hives for Stingless Bees, consult the following:

The book, **The Australian Native Bee Book** by Tim Heard [Sugar Bag Bees, 2016, Queensland], in particular, is recommended. As is the [Aussie bee web site](#):

The Aussie bee website has good resources to make nest blocks for solitary bees.

[How to Make Nest Blocks for Resin Bees](#) by Les Dollin, ANBRC
[How to make nest blocks for Blue Banded Bees.](#) by Les Dollin, ANBRC



[Valley Bees](#), based in Gympie, have a great amount of quality information including the following pdf; There is an [Australian Native Bee Association \[ANBA\]](#) that some may consider joining. There is a Brisbane branch. The ANBA promotes the conservation and sustainable use of all Australian native bees. ANBA achieves that by providing resources, disseminating information, supporting members, and communicating with stakeholders.



10 Recommended Locally Native Flowering Plants for Pots

These 10 suggestions come from [Native Plants Qld](#). They are in no particular order. These suggestions will benefit those with a very small amount of space, veranda gardens that get some direct sun and / or those renting.

1. *Artanema fimbriatum* - **Koala Bells**
2. *Pimelea linifolia* **Rice Flower**
3. *Phebalium woombye* **Wallum Phebalium**
4. *Tripladenia cunninghamii* **Bush Lily**
5. *Scaevola albida* **"Mauve Clusters" Fan Flower**
6. *Hoya australis* **Wax Flower**
7. *Hibbertia scandens* **Twining Guinea Flower**
8. *Graptophyllum ilicifolium* **Holly Fuchsia**
9. *Brachyscome multifida* **Cutleaf Daisy**
10. *Xerochrysum bracteatum* **Paper Daisy**

Photo above - [Fire-tailed Resin Bee \[J Thynne\]](#)



THERE ARE A RANGE OF BENEFICIAL INSECTS IN YOUR GARDEN OTHER THAN LADYBIRDS.

Ladybird Beetles are small and easily identified by their domed appearance and their colourful patterns, usually orange and black. Most Ladybird Beetles are avid predators of Aphids so have been long recognised as the gardener's friend. Both the adult beetles and their larvae eat aphids.

Check out the range of Ladybird Beetles in the greater Brisbane area at the following web page;
http://www.brisbaneinsects.com/brisbane_ladybirds/LadybirdFieldGuide.html

Hoverflies are small insects, that, as their name suggests hover. They are often confused with small bees or wasps. They are a very beneficial insect for the garden. First the Adults feed on aphid honeydew, nectar and pollen, and therefore can be a useful pollinator. Second Hoverfly larvae are active predators of aphids.

https://www.brisbaneinsects.com/brisbane_hoverflies/index.html

The existence of these beneficial insects reminds us again of the importance of NOT using chemical defences for your plants. Attract natural insect predators and rely on nature's controls!

- Pictures - clockwise from top left**
Hoverfly - genus *Mesembrius* [*T.Eales*] **Orange-banded Slender Hoverfly - genus - *Sphaerophoria***
Variable Ladybird - *Coelophora inaequalis*
Striped Ladybird Beetle - *Micraspis frenata*
Orange-spotted Ladybird - *Orcus australasiae*
Red Chilocorus - *Chilocorus circumdatus*
- All pictures by Peter Chew unless noted.

GARDEN FOR INSECTS



We would like you to consider getting piles! Piles of rocks. Piles of Logs. Piles of decaying vegetation. Each of these elements in a garden create shelter for a range of small animals especially invertebrates.

To encourage the breeding of some insects there is a recommendation of digging a hole, about the size of a bucket, lining the bottom with one layer of small rocks, before filling with pieces of rotten wood and mulch. The top should be covered with a few centimetres of soil. This is called a beetle bucket. Some actually call for a bucket to be buried with holes drilled into it so beetles can enter and exit, although I cannot understand the need for a bucket unless there is a particular need to keep it extra humid.

Bug hotels are another innovation being trialled to improve opportunities for invertebrates within garden areas. The idea builds upon piles of logs and decaying vegetation, so the idea is about providing extra shelter for invertebrates. Position your hotel on the edges of your property, perhaps shaded and sheltered. The basic design involves bricks, pallets, straw or cane mulch, pinecones or similar, bundles of sticks and/or canes and/or lantana sticks, reeds etc. The base story of the hotel is straw with a brick in each corner. Then place a pallet on the bricks. Insert bunches of sticks, pinecones within the pallet before placing another four bricks, one in each corner on the pallet. Establish a second layer of good thick leaf litter. Layer your bug hotel upwards for three or four stories. You may find lizards and frogs using these covered spaces as well.

Beetle banks are yet another idea. These were developed initially for agricultural settings. Farmers would establish slightly elevated strips [about 40 - 50 cm higher than the surrounding fields] of natural vegetation about two metres wide between ploughed fields. These strips would act as refuges for insects and arachnids so the crops could be repopulated with beneficial insects from these refuges after planting. In other words, rather than using pesticides, the farmer would create small sanctuaries for predatory insects adjacent to their fields. Studies in farmlands in Victoria concluded that, "These results illustrate that beneficial arthropods use revegetated strips as refugia and that revegetated strips clearly enhanced biological conservation of arthropods in pasturelands".

Picture: <https://farmwildlife.info/>



SEQ BEETLES

On our planet there have been 350 000 species of beetles already described. This accounts for 40% of all insect species. The beetle fauna in Australia is impressive; an estimated 30 000, with 20 000 scientifically described. For a naturalist they offer [obviously] an incredible variety of colour and patterns, and shapes and forms. No wonder they have their own [Facebook Page!](#)

Clockwise from top left - Celtis Leaf Beetle, Fiddler Beetle, Long-nosed Lycid Beetle, Flower Longicorn Beetle, Brown Flower Beetle, Acacia Golden-leaf Beetle,. Pictures by Jenny Thynne.



Build a beetle bank

You will need

- Stones or garden hose
- Topsoil
- Wheelbarrow
- Spade
- Grass seed or wildflower meadow seed (with 80% grass) or turf

Beetle banks are used in farmland to boost insect diversity and natural pest control – but you can build one in your own garden! Adding both shady and sunny habitat, they're valuable to flat gardens, providing a home for lots of invertebrates.

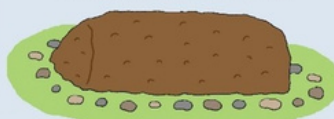
1 Pick a sunny spot for your beetle bank (ideally around 1m long) and mark it out with straight or curved lines using stones or a garden hose.



2 Spread the topsoil evenly inside the markings, treading it down after each 10-15cm deep layer to compact the soil.



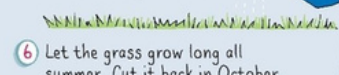
3 Keep building a mound until it is at least 30cm high and wide. The top can be flat or rounded.



4 Once you have created your mound, sow your seed and firm it down with the back of a rake. If using turf, lay this over the mound and firm down.



5 Keep your bank watered in dry weather. On seeded banks, use a fine spray to avoid eroding the soil.



6 Let the grass grow long all summer. Cut it back in October to approx. 5cm high.



Look out for minibeasts – from busy ants to scurrying beetles, grasshoppers and even small solitary bees!

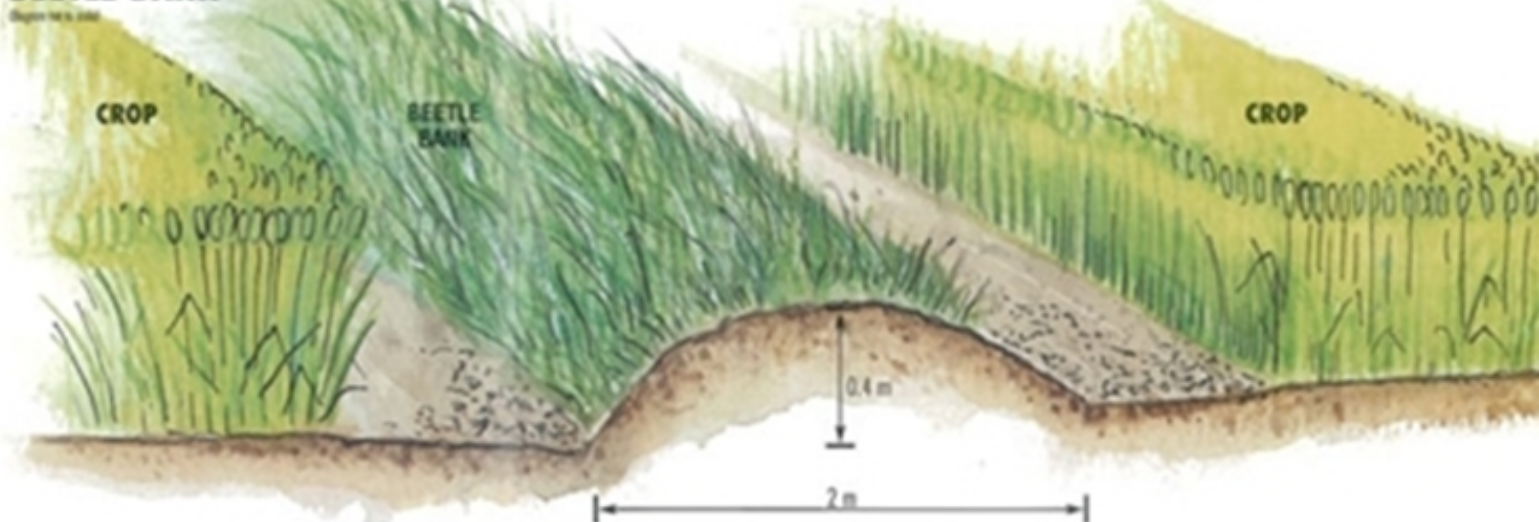
Illustration: Corinne Welsh © Copyright Royal Society of Wildlife Trusts 2011

www.wildaboutgardens.org.uk

The beetle banks in farmlands would be planted with a variety of tufted grasses plus occasional long stemmed flowering plants to better attract a variety of insects.

These ideas are being adapted for garden spaces. Some suggest a Beetle mound – a load of soil c. 2 metres by 2 metres and about 40 cm high, similarly seeded with native grasses and wildflowers. This area would not be mown, or whipper snipped anywhere near the frequency of the lawned areas. Some suggest the process, designed for the UK and detailed in the diagram that follows, may have application here: Perhaps a beetle mound could also be adapted as a garden edge surrounding areas of shrubs? Or as a border to your vegetable garden area or to surround fruit trees?

CROSS SECTION OF BEETLE BANK



“BUTTERFLIES ARE SELF-
PROPELLED FLOWERS.”
— ROBERT A. HEINLEIN
SCIENCE FICTION AUTHOR



Once you have created a beetle mound you can then relax and check out the amazing variety of beetles recorded in and around the Brisbane area:

https://www.brisbaneinsects.com/brisbane_beetles/index.html

The Chew Family started this web site in the year 2001 to document the insects and invertebrates of Brisbane. Over the years it has grown and is now an impressive illustrated on-line database that anyone in south-east Queensland can access to learn more about our insect fauna. While it does look its age a little it remains very informative and easy to navigate. Please consider, donating to the Chew family for their excellent efforts. The link to the home page of the site follows:

https://www.brisbaneinsects.com/pchew_brisbane/index.htm

Imagine what an amazing place SE QLD would be if every resident decided to establish themselves as a butterfly farmer! Imagine your back yard with colourful swirls of a myriad butterflies busily flying from flower to flower.

To become a butterfly gardener you need many flowering plants and preferably, such a good range of species such that there are flowers every month of the year. The other element needed are good numbers of a range of Butterfly Food Plants. Most butterflies are pretty picky about where they lay their eggs, their caterpillars having evolved with certain plants such that plant's chemical defences no longer are effective towards them. The plant though may be poisonous for other butterfly caterpillars.

In the following pages are listed some of south east Queensland's butterflies and some of their food plants. For butterflies, and a range of insects it is worth having a puddling area. This is a drinking area specially formatted for insects. The simplest design is a terra cotta shallow pan or a plastic equivalent. The pan is filled with a mix of sand and river rocks and is then filled with water. The idea is that small puddles of water will appear between the rocks so that insects will be able to land and drink without risk of drowning. Bees, beetles and other insects will use this resource, too.



**Left - Fuscous Swallowtail Butterfly -
Maggie Overend.**

"THE CATERPILLAR DOES ALL THE WORK. BUT
THE BUTTERFLY GETS ALL THE PUBLICITY."

— GEORGE CARLIN —
COMEDIAN

Selected Butterflies of SE QLD and their Food Plants.

Australian Painted Lady - Paper Daisy

Blue Tiger - Corky Milk Vine

Blue Triangle - Native Laurels [Large Trees] and introduced Camphor Laurels

Caper Gull - Scrambling Caper

Caper White - North Queensland Caper [*Capperis lucida*] - a thornless caper from NQ.

Chequered Swallowtail - Emu Foot

Chocolate Argus - Karamat - a good plant to grow in or adjacent to your frog pond.

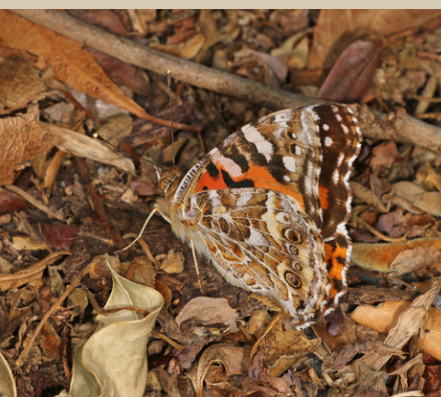
Common Crow - Monkey Rope Vine, Hoya australis, Figs [*Ficus* spp]

Common Imperial Blue - numerous Acacia spp

Common Pencilled-blue - Tuckeroo + Flame Tree + Black Bean + Queensland Macadamia



Photos from top to bottom [plus left to right] Top row - Chequered Swallowtail,[K.Turnbull], Chocolate Argus [K.Turnbull], Common Imperial Blue [K.Cross] Middle row- Blue Triangle [J. Thynne], Blue Tiger [M. Dawson], Caper White [J. Thynne], Bottom row - Australian Painted Lady [J. Thynne], Common Crow [T. Eales], Common Pencilled Blue [J. Thynne].





Photos above clockwise from top left - Evening Brown [J. Thynne], Black Jezabel [M.Dawson], Meadow Argus [J. Thynne], Varied Eggfly [G.Molson], Leafwing [G. Molson], Common Grass Yellow [T. Eales]

Dainty Swallowtail - Finger Lime [Bush Tucker Plant]

Evening Brown - Kangaroo Grass

Four- barred Swordtail - Zig Zag Vine

Fuscous Swallowtail - Lime Berry

Glasswing - Blunt leaved Passion Vine

Indigo Flash - Millaa Millaa vine

Jezabel Nymph - Native Mulberry

Leafwing - Love Flower

Lemon Migrant - Native Cassia

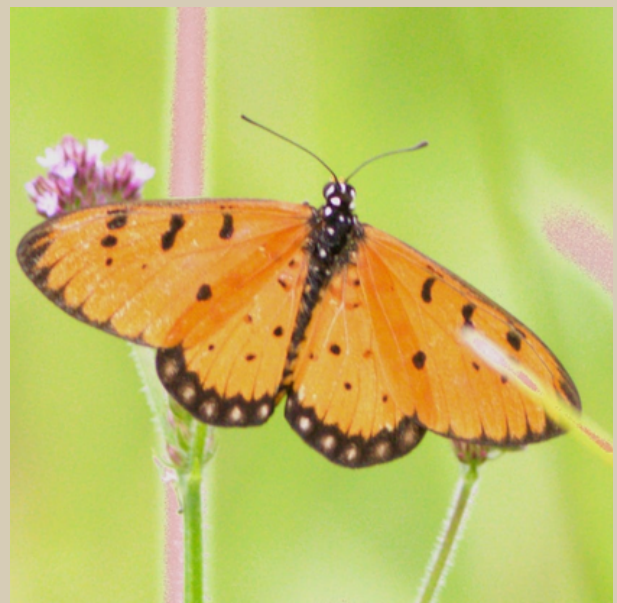
Lesser Wanderer - Mangrove Wax flower [also feeds on introduced milkweeds]

Macleay's Swallowtail - Murrogun

Meadow Argus - Scaevola flowers

One confusing thing about learning about butterflies is the lack of standardised common names. The names differ between many of the standard books and often differ again on iNaturalist. iNaturalist has some excuse as it is a global platform expecting people from every nation to contribute. In addition many of Australia's species have ranges that extend outside our border thus encouraging a range of common names. For simplicity iNaturalist has to choose one.

A New Butterfly for SE Queensland! *Acraea terpsicore*, the **Tawny Coster** butterfly was first observed on the east coast of Australia in Cairns on the 27th March, 2017. Since then it has spread within Australia and is now being observed in se Queensland. The species is found from India through to south east Asia and now Oz! It is a species of open areas and stays close to the ground. Its food plants are from the genus *Passiflora* - Passion Flowers or Passion Fruits. **[G. Roberts]**





Photos above clockwise from top left - Small Green banded Blue, Scarlet Jezebel [M.Dawson], Monarchs [M.Dawson], White banded Plane [N.Eales], Splendid Ochre [N.Eales], Orchard Swallowtail

Monarch [Wanderer] - introduced species from North America - Milkweeds

Orchard Swallowtail - Native and introduced citrus

Pale Triangle - Zig Zag Vine

Plumbago Blue Butterfly - Native Plumbago [or African Plumbago to grow in pots]

Richmond Birdwing - *Pararistolochia praevenosa* [Coastal Birdwing vine]

Scarlet Jezebel - Mistletoe plants

Small Green Banded Blue - Soap Tree

Splendid Ochre - *Lomandra* spp

Tailed Emperor - Flame Trees

Varied Eggfly - Love flower and Karamat

White banded Plane - Koda



The Richmond birdwing butterfly is the largest subtropical Australian butterfly. It was once abundant from Maryborough in southern Queensland to Grafton in northern New South Wales, breeding in rainforest habitat wherever the food plants were plentiful. Much of this land was eagerly sought after for grazing and subtropical agriculture due to its rich soils. In 1870 the butterfly was reported in newspapers as occurring in the thousands on the streets of Brisbane, but by 1926 natural history enthusiasts noticed a massive decline in the south, west and east of the city. Since 1990 active conservation projects involving members of the community, particularly schoolchildren, were initiated to address the threatening processes that had led to the decline in numbers and distribution of the birdwing. In 2008, the Department of Environment and Science, along with the RBCN and David Fleay Wildlife Park, began a joint project to help conserve the Richmond birdwing butterfly using a captive breeding and release strategy. Under the breeding program, Richmond birdwings from geographically separate sources have been mated with the aim of producing more genetically diverse offspring. These captive-reared progenies have been reintroduced at selected sites to help restore wild populations. Following the first releases in 2010, evidence of natural breeding by the butterfly and more than a dozen flying adults were seen in the Kin Kin and Cootharaba areas of the Sunshine Coast for the first time in almost two decades. Since the program was initiated, more than 350 Richmond birdwing individuals, mostly larvae and pupae, have been reintroduced across nine sites in south-east Queensland.

MORE ON BUTTERFLIES - RESOURCES & REFERENCES



Helen Schwenke and Earthling Enterprises

Helen has always been interested in invertebrates and nature and has probably done as much as anyone in SE Qld to encourage interest in butterflies, butterfly gardening and other invertebrates. She has co-authored a number of books, most recently, "Inviting Nature to Dinner" and "Creating more Butterflies". She does more than talk the talk however as she has managed a 30+-year-old butterfly host plant garden on a small - 405sq m - block in an inner Brisbane suburb, and raised 50 different species of butterflies from eggs laid on various host plants in her garden!

Her products are impressive and her work is worth supporting. Her website can be found [here](#).

Butterflies Australia

Butterflies Australia is a citizen science project that aims to get everybody looking at butterflies and recording their sightings. They have a free phone app and a website that will record your sightings. The app also includes a free digital field guide. The app is available through Google Play and the App Store.

Brisbane's Big Butterfly Count.

This is another Citizen Science project focussing exclusively in Brisbane and the surrounding area.

The project encourages all citizens to monitor their backyards and learn about and record butterflies as indicator species for general environmental health. They have produced an interesting booklet called 'Butterfly Adventures', available [here](#). They also have produced a colourful count sheet which doubles as a photographed field guide for the common species of butterflies for Brisbane. It is available [here](#).

Field Guides

Michael F. Braby, **The Complete Field Guide to Butterflies of Australia, revised edition**, 2019, CSIRO Publishing.

Garry Sankowsky, **A Field Guide to Butterflies of Australia. Their life histories and larval host plants**, 2020, Reed New Holland Publishers.

Albert Orr & Robert Kitching, **The Butterflies of Australia** 2010, Allen and Unwin.

[A larger format book but excellent!]

Noosa Landcare has produced a PDF download of Butterfly Attracting Plants - [available here](#).



MOTHS

Clockwise from top left - Cucumber Moth *Diaphania indica*, *Endotricha mesenterialis*, *Sauris malaca*, Gardenia Bee Hawk *Cephonodes kingii* - All photos by Tony Eales.

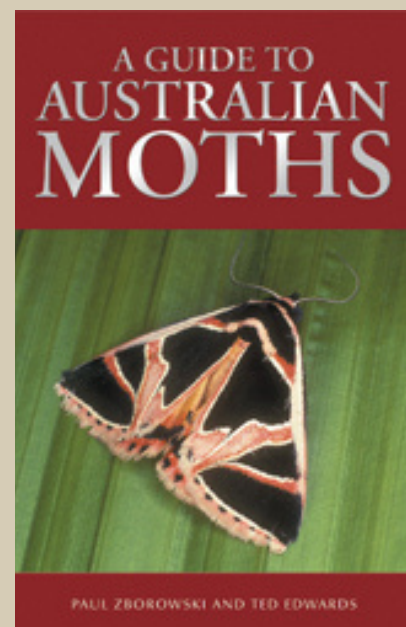
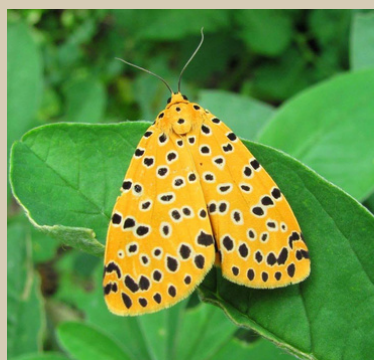
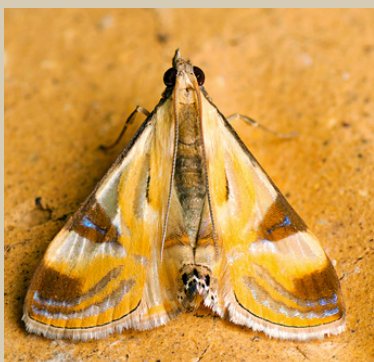


Butterflies are more familiar to most of us as they are [mainly] day flying. Moths, however, are a much more substantial part of our Australian ecosystem. While there are about 400 species of butterfly there are some 22000 species of moth in our country. Less than half of our moths have been scientifically described.

Our invertebrate fauna needs more attention and study. If the species have yet to be categorised and catalogued, one could imagine that there are many unanswered questions about the natural history and ecology of these animals.

Refer to Peter Chew's webpage to begin learning about the moths of south east Queensland. Also check out **A GUIDE TO AUSTRALIAN MOTHS** By: **Paul Zborowski, Ted Edwards.**

Clockwise from top left - Fig Leaf Moth *Talanga toluumnialis*, *Agape chloropyga*, *Argina astraea* [Paul Russell], Veined Emerald *Chlorocoma carenaria* [Leon Crang]. Other pics by Tony Eales.



[Australian Lepidoptera](#) is also an excellent on-line resource.

MORE GREAT SEQ INSECTS

Clockwise from top left:



Researching for this booklet made me aware of how astonishingly ignorant I am - especially on the subject of invertebrates. I have been in awe observing some of the pictures of bees, beetles, moths - you name it - by some amazing se Queensland photographers. It can be an amazingly diverse world in one's backyard and their pictures certainly prove it! All of the above photos by Jenny Thynne were taken in a Brisbane backyard and these pictures represent but the tip of her iceberg.... Check her pictures out on flickr! - Ken Cross



iNaturalist.

This is a great app to learn about every type of plant or animal in your local area while creating worthwhile data for scientists. From my perspective this is the app that the mobile phone was made for. iNaturalist Australia is a member of the iNaturalist Network. Observations submitted here are added to the global iNaturalist database and shared with the Atlas of Living Australia (ALA) and the Global Biodiversity Information Facility to help scientists find and use your data. All you have to do is observe.



Start exploring iNaturalist today. You can download the app from the App Store or Google play or you can visit their website [here](#).

You can record observations with iNaturalist Australia on your desktop or by using the iNaturalist app on your iPhone or Android device.

First, go to iNaturalist Australia and click Sign up to create an account.

- Log in to iNaturalist Australia and click ↑ Upload.
- Drag and drop your image file or choose the file from your device.
- Click in the species name box, then select from the list of suggested species.
- Enter date and location details.
- Click Submit 1 observation.
- Your record will appear on the Your observations page, where you can see all your records in a list or on a map. On this page, you can sort and search your observations by date, taxonomy or location.

All iNaturalist Australia observations are loaded into the ALA regularly.

It is a great way to keep track of the biodiversity in your own backyard!

