



A compilation of Bob Millers stories, articles, papers and photographs of lifecycles of butterflies in Australia.

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Introduction

It's funny how it only takes a *lifetime* to know a lot about some things.

Venturing out into the park across the train line, barefoot and armed with a butterfly net as big as he was, little Robert Miller (Bob) would eventually grow up to become the bearded bushwalker we are all familiar with. With only his observations while bushwalking and reading what little there was available on butterflies, he has, over the years, captured all these wonderful photos and authored the enclosed articles within this publication.





Bob completed his apprenticeship as a spray painter and then went prawn fishing with his father on their trawler "Defiance" at Greenwell Point. Afterwards, he continued his love of spray

painting and joined QANTAS at Mascot where he painted

some of the world's largest passenger airliners and RAAF aircraft, a job he thoroughly loved. Afterwards he moved to Queensland where he discovered the beautiful Maleny Hinterland and surrounding bushlands of the Sunshine Coast.



Bob with his love of butterflies, a basic knowledge of their host plants and habitats, and a green thumb found employment at Barung Landcare - pure environmental magic!



Barung Landcare attracts its diverse volunteer base from the greater community, people of all shapes, sizes, colours and beliefs all get together for one reason. To collect native seeds, propagate them and plant thousands of them on farms, roadsides and along creeks. They nurture their creations, weeding and watering, then watch as the birds, animals, invertebrates, butterflies, fish, frogs and all of nature prosper because of the work that they did. Determined

as they are, they do this no matter the conditions, in the summer heat or the freezing winter, sunshine or drizzle, their hands are always in the dirt and compost, they bring their kids, parents and grandparents, year in and year out, they are an absolute unit working as one.

Bob found a home in this community, where people understood him, taught him and challenged him. He met many generous and knowledgeable nature enthusiasts. While sorting and compiling his huge collection of paperwork, I had many questions for Bob and one was concerning the people he had met and shared time with there, he said, each one of you, during that time in his life, taught him something extraordinary.



For instance, he learnt:

A seed;

What it looks like What it needs to go through to be viable When to plant it What it looks like at 2 weeks, 6 months, 1 year and 5 years How high it will grow How much room does it need How long it will live Where to plant it What the trunk looks like What the leaves look like What the flowers look like What the seeds look like on the tree What the Latin name is What the common name is What animals will eat its fruit What animals and invertebrates and birds will snack on its flowers and fruit, eat the leaves and find safe refuge What plants will grow underneath it or on it

Apparently one of the hardest things to learn when you come face to face with the thousands of plants in a rainforest of green leafy stuff, is to distinguish that certain plant you are looking for.

Can you imagine the knowledge he had to have to determine all of this?

He was paid to design, source plants and grow the hard-to-find plants for Jessica Park Butterfly Gardens in Minyama on the Sunshine Coast and to help compile many flora and fauna surveys for Landcare groups, landowners, wildlife conservation groups and local councils. He has been published twice in scientific publications, written stories for nature and Landcare magazines, given talks to both adults and in the schoolroom, and he has been a leader in educational walks.

With all this knowledge and enterprise, and without formal training, he does not have a formal title, but he has earned many names such as ranger, entomologist, butterfly guru, revegetation specialist and nursery assistant.



All this means he knows a lot about butterfly lifecycles, their varied habitats and how to help them from becoming extinct.

He found and sighted the last known Australian Fritillary at Port Macquarie in 2001. The group of entomologists and enthusiasts he guided to this one particular spot were all awed by this sighting, and they followed and chased it with varying degrees of antics and mishaps to where it landed. Eventually it was captured and collected, witnessing this was the turning point that made Bob stop wanting to be a collector and start being an environmental educator. He hung up his butterfly net and now only required a camera to do the rest of the collecting.

In an effort to prevent butterflies such as the Australian Fritillary from becoming extinct, Bob set out to write and publish his articles. He wants everyone to know which plants are needed to help establish safe corridors for the various butterfly habitats. If we all just include a few nectar and butterfly food plants in our gardens, it will enable these delightful invertebrates to establish new colonies and prevent existing colonies from becoming endangered or extinct.

Through word-of-mouth Bob's knowledge about plants and butterflies spread around Australia and the globe. University students, locals and people from around the world called or turned up on our humble doorstep asking Bob to show them places where they could find what they were looking for. He always helped, and it usually meant going on a field trip.

One day a university student turned up and told Bob about his studies in vertebrates and invertebrates in our local area of rivers and tributaries. Of course, Bob went out and bought some waterproof pants and off they went on many weekends doing electrofishing. Bob's name had been spreading through the university systems of Southeast Queensland that he would help any student interested in any sort of way regarding flora and fauna.

What an achievement!

Although filled with scientific facts, this book is a non-scientific tribute to Bob and his personal observations relating to the interesting habits of butterflies.

Ever since Bob was a small child chasing butterflies and wanting to learn all about them, he unfortunately couldn't find much of anything resembling information about them. That is why he started taking photos, writing articles, and why he made his collection freely available to all at www.bobsbutterflies.com.au.

To our family and friends, associates and students, gardeners and butterfly enthusiasts. To anyone wanting to draw or paint beautiful Australian butterflies, please download a copy of this book for free. We hope you enjoy the stories and photos and hope you find fond memories inside.

The Millers



Robert (Bob) Miller

1956 – 2018





WORKING FOR OUR FUTURE

The following articles were printed in the Barung Landcare newsletter and the magazines of the Butterfly & Other Invertebrates Club.



Logo's define which publication they can be found in. The first published article is what is shown.



Butterflies are free

WORKING FOR OUR FUTURE

by Bob Miller



.... And they can be a common sight in your garden just by planting the right things!

Hi everyone. My name is Bob Miller. Some of you may already have met me at Barung Landcare. I have worked in the nursery off and on (as funding permitted) for nearly twelve months now.

As part of their ongoing education programs, Barung has asked me if I would pass on some of the knowledge I have accumulated over the years about butterflies.

I hope to be able to do this in two ways: one is by writing a column in the Barung newsletter and the other is by answering any questions that you may wish to send to me at Barung. If you live close to Barung and would like to know something about butterflies and their associated plants, please don't hesitate to come in any Wednesday and have a talk.

I hope you enjoy reading these articles as much as I have enjoyed writing them.



Common Aeroplane

(Phaedyma shepherdi shepherdi)



I have chosen this butterfly to talk about in this issue, because it is fairly abundant at the moment and quite easy to recognize.

It gets its name because of its habit of flapping its wings three or four times and then holding its wings out horizontal and gliding like an aeroplane for several metres, before having to move its wings again.

It is essentially a rainforest insect, but can be

attracted to your suburban backyards if the larval foodplants are planted. The best of these, that I have found, include;



Lacebark, (*Brachychiton discolor*), Flametree, (*Brachychiton acerifolius*), and Rough leaf Elm, (*Aphananthe philipinensis*), all of which are currently available at Barung.

The butterfly itself is not very impressibly coloured, as butterflies go, being mainly brown with white spots. It is approximately 58mm from wingtip to wingtip, with males and females being similar in size.



I feel the larvae are more impressive. I have heard them described as resembling a scotch terrier dog, and if ever you get the chance to see one up close, you will see what they meant.

They are quite easy to find when you know what to look for, as they have a habit of chewing the ends of the leaf of the foodplant they are resting on, leaving just the center vein.

They will then chew pieces of the leaves off and secure them back on to the center vein with web. These pieces then die, and the larvae can be perfectly camouflaged.

The pupae are a golden brown colour, with the wing margins a darker shade of brown. They

are mainly found hanging upside down on the underside of a leaf of the foodplant, but are sometimes found on a stem, not far from a leaf.



Remember though that if you plant the foodplants and

get the larvae, they will chew up some leaves. The damage is only minor and temporary and you will soon have a new generation of butterflies in your backyard.

Four-barred Swordtail



Boic

(Protographium leosthenes leosthenes)

This is one of my favourite local butterflies and I am sure that after you have seen it for yourselves it will become one of yours. It is a very easily recognized invertebrate, sporting a large tail on each of its hindwings, and four brown bars on its forewings. They are generally high flying, often seen around

the tallest of the rainforest trees carrying the Four-barred's larval foodplant, Zig-Zag Vine, (Rauwenhoffia leichhardtii), but can also be seen at other times flying slowly, almost gliding, at eye level.



It is a reasonably common butterfly on the blackall range at this time of year, becoming even more common as the year progresses.

It can be a regular visitor in your garden, just by planting nectar producing plants that flower at this time of the year.

Another more interesting option is to plant the larval foodplant, (Rauwenhoffia leichhardtii), along with the nectar plants.

The latter will attract the adults into your backyards, where upon they will find the correct plant on which to lay their eggs. Another bonus in planting the Zig-Zag Vine is that it is also the larval foodplant of the Pale Green Triangle (Graphium eurypylus lycaon).

This butterfly is also fairly common in south-east Queensland, and will be the subject I will







write about in the December-January issue when they become more prevalent.

The Four-barred's larvae are reasonably easy to detect when they are on the Zig-Zag Vine, as they have a tendency to rest on the upper surface of the leaves. They are only a small larvae, being approximately 35mms long when fully grown, and are very similarly coloured to the young foliage of the Zig-Zag Vine.

The pupae are always found hanging upside-down, suspended by its tail and a central silken girdle to the underside of a leaf of the foodplant.



Pale Green Triangle



(Graphium eurypylus lycaon)



Anybody who has owned a Custard Apple tree will be very familiar with the larvae of this butterfly, as they are quite commonly found upon it.

They are actually very interesting larvae, varying in colour depending on the stage of its lifecycle. It starts life black, slowly turning brown, then bright red, gradually turning orange, then green and finally blue just before pupation occurs.





The pupae are always light green, and very hard to detect as they hang upside down under a leaf of the foodplant. Even after finding one, the next time you look it seems to have mysteriously disappeared.

The butterfly is of medium size, being approximately 50-60mm from wingtip to wingtip, and as the name implies, the main recognizable feature is a large, pale green triangle on each side of their wings.

There is another similarly marked butterfly in southeast Queensland, but instead of the triangles on the wings being green, they are actually a bright blue and are fairly easy to distinguish apart.

The adults will readily be attracted to any nectar bearing flowers you may have in your garden, their wings continually moving as they drink.

Apart from the previously mentioned Custard Apple, (Annona reticulata), the larvae also feed quite readily on Sour Sop, (Annona muricata). The best of the native foodplants I have found, as mentioned in the last newsletter, is Zig-Zag Vine, (Rauwenhoffia leichhardtii). If you have any of these plants growing, you will certainly get larvae on them at this time of year.



Macleay's Swallowtail





(Graphium macleayanum macleayanum)

Another one of our butterflies which has tails on their hindwings, is the Macleay's Swallowtail.

These are reasonably common on the blackall range and the surrounding hills at the present time and will be mainly noticed as small black dots flying around the tops of trees.

This problem, as with any other high and fast flying butterfly, is easily overcome by planting nectar producing flowers. This will inevitably bring them back to earth, so to speak, where they can then be admired at a closer range. This butterfly is very similarly coloured to the pale green triangle, featured in the last issue, so how is it recognised? Well, as mentioned earlier, they have a tail on each of their hindwings.

I have actually been able to raise the larvae of this butterfly over the last two years, for the first time since

becoming involved with butterflies, way back in 1965.

I now have them actively breeding in my Landsborough backyard, just by planting the right plants.

Which plants should you plant?

The best natives I have found for Southeast Queensland are: Rose Maple, (Cryptocarya erythroxylon), Domatia Tree, (Endiandra discolor) and Three Veined Cryptocarya, (Cryptocarya triplinervis), all of which are available from the nursery at Barung.





The larvae are olive brown at birth, turning lime green in colour as they get older.



The pupae are light green and are found on the underside of a leaf of the foodplant, suspended by their tail and a central silken girdle, they have a small projection on the head end.



Citrus Butterflies

(Papilio aegeus aegeus, Papilio fuscus capaneus, Papilio anactus and Papilio demoleus sthenelus)



Are you one of the millions of people who have seen caterpillars on the citrus trees and wondered what they were? If so, this article should prove to be very interesting.

There are actually three butterflies in South-east Queensland, whose larvae commonly use

citrus trees as their foodplants, the Orchard Swallowtail, the Fuscous Swallowtail, (Formerly Capaneus butterfly) and the Dainty Swallowtail, (Formerly Dingy Swallowtail).





Another Swallowtail, the

Chequered Swallowtail, can sometimes be found feeding on our citrus trees, but not very commonly. I have personally only observed them ovipositing (laying eggs)

on potted orange trees and have found larvae on Pomelos. The preferred food plant for the

Chequered Swallowtail is Emu Foot (*Cullen sp.*)





The Orchard Swallowtails larvae is the one most of us recognize as "the ones that

look like bird droppings". The young larvae are brown with white markings and as they grow older, can be a variety of different colours, varying from yellowish-green with white markings, to very dark green with white and brown markings. Their bodies appear to be spiny.

The larvae of the Fuscous Swallowtail are very similar to those of the Orchard

Swallowtail, especially in the early stages. As they get larger their coloration and markings still remain similar, the main difference is that they have a smooth appearance rather than spiny.





The juvenile larvae of the Dainty Swallowtail appear to have dark brown and orange patches along their bodies. As they get larger, their colour is black with many white spots and a

few orange spots, with

three rows of yellow spots running the length of their bodies. The bodies of the Dainty Swallowtail larvae appear to be spiny.





The juvenile larvae of the Chequered Swallowtail are very similar to those of the Dainty Swallowtail, with the early instars being dark brown with orange patches. As they get larger they are reddish brown with a broken yellow line running from front to back along the side. When fully grown, the larvae are lime-green with brown patches, with each brown patch having a raised orange spot. The early instars appear to be spiny but the final instars appear smooth.

All Swallowtail butterfly larvae have an in-built defense mechanism, called an osmeterium. This is the name given to a pair of fleshy tubes that extend from behind the head of the larvae when they are being attacked. In the case of the Orchard Swallowtail, the tubes are red and emit a fairly strong citrus-like odour. If you find any of these larvae, tap them on their backs, they will think they are being attacked and instinctively raise the osmeterium. Run your finger along the red projections and then smell your finger, if you were a bird, would you keep attacking?





When fully grown, the larvae will search for a suitable place to pupate. This is usually on the underside of a leaf of the food plant, or on one of the branches. Once there, the larvae spins a silken pad, on to which it will attach itself by its abdomen and a central silken girdle. It well then shed its skin

for one final time, to become a pupa.

The pupae vary in colour, usually depending on where they pupate, camouflage is their best

defense once they are attached to the plant. The pupae found on the underside of the leaves are generally limegreen in colour, whilst those found attached to the brown stems, take on that same brown colour.







White Nymph

(Mynes geoffroyi guerini)

If you have the Stinging Trees, (*Dendrocnide moroides*), or (*Dendrocnide photinophylla*), or maybe the Native Mulberry, (*Pipturus argenteus*), you may have noticed a cluster of hairy, dark brown caterpillars under the leaves.



These will almost certainly be the larvae of the White Nymph butterfly.

This is mainly a rainforest insect, but as I have found in my garden in suburban Landsborough, they can be enticed out of the bush by

planting Native Mulberry. The mulberry being the choice of the three for obvious reasons!

They are quite an attractive invertebrate on the underside of the wings, being cryptically marked with scarlet red, yellow and white, on a greenish black background. The upperside of the wings are creamy-white, with a fairly broad black band around the edges. The hindwings are delicately sculpted, almost resembling tails.



It is a fairly slow flyer, always landing on a leaf or branch, with its head facing downwards.



As an added bonus, even their hairy-looking larvae are able to be safely handled by the kids and won't make them itchy.





Cephenes Blue

(Pseudodipsas cephenes)



Photo by Rob Ham

Many of us will never see this butterfly; as it is a very elusive little invertebrate.

It measures approximately only 25mm from wingtip to wingtip and with the light blue colouring on its upper wings, it can remain motionless and out of sight for long periods of time.

Whilst blending in with the sky, its wings act as solar panels, warming the butterfly to "flight temperature" approximately 20 deg. C.

When the wings are closed, they are even more difficult to see, being cryptically marked with camouflage patterns.

As the temperature rises sufficiently to allow flight, a solitary butterfly will move from its resting-place. This will then cause a chain reaction of "dog-fighting" This is the term used to describe the butterflies chasing each other very rapidly, spiraling to great heights and then returning back to the original positions on their trees, to await the next intruder.



Photo by Rob Ham

This act serves to mark a butterfly's territory, allowing less competition when a female finally approaches.

The butterfly is mainly found on the outer edges of rainforest, near its larval foodplants, *Diospyros fasciculosa* or *Smilax australis*.

We all know "smilax," commonly called Barbed-wire Vine because of its habit of wrapping itself around our legs, effectively removing about twenty layers of skin.



The larvae look like small, dry slugs and will be attended by many black ants with greyish coloured abdomens. These ants are actually milking the larvae, in return for the larvae's protection from predators.

When young, the larvae are greenish-brown in colour, becoming more predominantly brown with age.

The pupae can vary from pink to dark brown and will be attached by anal hooks and a central silken girdle.



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Blue Triangle

(Graphium sarpedon choredon)

This was the first of the butterfly larvae I raised all the way from egg to adult. Where we lived in Sydney, we had a Camphor Laurel tree approximately 30 metres tall, (which was already growing there when we moved in.)

I had always admired the butterfly known as "The Blue Triangle," from the first time I had seen one.

Its speed was incredible and even when feeding, it kept its wings in constant motion, ready to move on at the first sign of danger. This constant wing motion is typical of all of our swallowtails.

The adult butterfly has a wingspan of approximately 55mm. Its wings are a bright sky-blue, with a black border approximately 8mm wide around the outer edge, this causes the typical "Blue Triangle" shapes on each side. The lower wings have four blue spots included in their black border.

The underneath of the butterfly is the same as the top, but duller, with some red markings added. The

male and female look identical, with the main identifying feature being feathers that appear on the male, on the inner edge of the lower wing, upperside, when the wings are expanded.

The larvae are smooth, olive-green when young, changing to beautiful lime-green in colour, with one lemon-yellow band running left to right across the upper body.

The pupae are lime-green, with raised ridges running from head to tail, imitating perfectly the venation and colour of the underside of the leaf on which it pupates. The raised projection on its head, does not detract from this camouflage.

Since moving to Queensland, I have discovered that Camphor Laurel is a horrible pest and many natives can be used as substitutes, the best I have found, if you have the room, being "*Cryptocarya erythroxylon* and *Cryptocarya triplinervis*." These alternatives will serve as food sources for both birds and butterflies, losing none of the habitat features offered by the Camphor Laurel.













Leafwing

(Doleschallia bisaltide australis)





As the name implies, when this butterfly is at rest, it is the perfect image of a dead leaf. This enables it to be perfectly camouflaged in its natural rainforest environment.





The underside of the wings are light brown in colour, with a line running down through the center, not unlike the mid - vein on a leaf. The upperside is orange-brown, with a black outer edge.

The larvae of this butterfly would have to be one of the most stunning I have seen. It is black with many branched spines, rising from orange - red and iridescent blue spots, which literally sparkle in the sunlight.



The pupae is just as spectacular, not because of its colouration, as they are usually only light - grey or caramel - brown, but because of its geometrical shapes the pupae is always found hanging upside – down, usually

not on its food plant. This would be because the larvae are very voracious, usually eating all of the food in the immediate area and so if the pupae were on its food plant, it would fall to the ground to most definitely die. The only native food plant I have found the larvae on, is Love-flower "*Pseuderanthemum variabile*" this is a low growing herbaceous plant, with flowers varying in colour from pure white to dark purple, some of the most beautiful are white with a red - speckled throat. The leaves of this plant are also variable in colour, being green, with the underside of some green, some purple - maroon.



Commonly asked questions

What are the differences between moths and butterflies? The simple answer is none.

Some people will say: Moths fly at night and butterflies during the day.

This is true, but we also have day flying moths and some of our butterflies only start to fly at dusk unless they are disturbed during the day.

Some people will say: Moths have what is called a hook and frenulum, joining their forewings to their hindwings effectively forming one large wing to lift their massive body weight off the ground and butterflies do not.

This is not true as one of our butterflies, the Regent Skipper, has this hook and frenulum setup but only in the male.

Some people will say: Moths have antennae which are feathered or branched, and butterflies have antennae which end in a knob or are clubbed.

Not always true, some of our moths have antennae which are very strongly clubbed on the ends.

Some people will say: Butterflies rest with their wings straight above their body and moths rest with their wings out flat or folded close to their bodies.

Wrong again as the Eastern Flat and the Common Red-eye both rest with their wings out flat.

Some people will say: Moths spin a cocoon and butterflies have naked pupae.

Again, this is not true as one family of butterflies, the Hesperiidae, pupate between folded leaves lined in silk.

Some people will say: Moths have bodies covered with scales and butterflies do not.

There is one butterfly as scaly as any moth and is called a "Moth Butterfly" (Liphyra).

How long does a butterfly live? The lifespans of butterflies vary. Some may live only a few weeks while others may live twelve months or more.

Do butterflies grow? No. All the growing is done during the larval stage. The size of a butterfly is determined by factors such as the supply of their foodplant. If the foodplant is decimated by earlier larvae, the next larvae will pupate early and so the resulting adult will be smaller than average.

How many eggs can a butterfly lay? Female butterflies can lay upwards of 200 eggs either singly or in groups.



Australian Rustic

(Cupha prosope prosope)





I think one of the most amazing sights I have seen since studying butterflies, would have to be one I was fortunate enough to have observed back in February this year.

I went to one of the re-vegetation sites that I have been involved in to assess the weed growth, when I noticed movement around one the three Flintwood "Scolopia braunii" saplings which we had previously introduced into the park.

Never having seen the Australian Rustic in this park before, we once again proved that by planting the right plants in the right places, the wildlife associated with those plants, in this case butterflies, will soon follow.

The amazing thing about this butterfly, was not that they appeared in the park, but the way by which the females deposited their eggs.

I crept up as close as I could without disturbing the butterfly, so I could see that she actually oviposited (laid an egg). Every time she put her abdomen under a leaf, the normal place butterflies deposit eggs, I moved in for a closer look, but no eggs. I must have watched her for ten minutes as she walked from one side of the plant to the other touching her abdomen on the leaves and branches as she went. She would walk along the branch, upside-down and then back up the right way again, dragging her abdomen at differing intervals. When she flew to the other side of the plant, I took the advantage and searched very thoroughly where she had been earlier, but to no avail, I couldn't find any eggs. I moved slowly around the tree to once again observe her strange movements, this time I wasn't going to take my eyes off of her. Then it happened, a single, small, greenish coloured egg was glistening in the sunshine on the underside of a leaf. I took note of where it was and continued to observe the adult as she danced around the plant then I seen it again, another egg, an exact replica of the first, but not on the underside of a leaf, as with the first, this time it was in a spiders web!

I moved back a bit to take in the whole plant and there they were, eight, nine, ten separate eggs and all in spiders webs! It turned out that what she was doing, was walking along the branches and leaves until she found a spiders web, she would then swing her abdomen to very quickly touch the web, sticking an egg in it. It was happening so fast, I was actually missing it!

How safe would these eggs be? I am sure that if I was a predatory insect, I wouldn't go near the eggs but what about the caterpillars that emerged from the eggs? Surely the spiders would eat them. No, not at all. As soon as they ate their way free of their eggs, they attached a life-line to the spiders webs and like a group of abseilers, they lowered themselves slowly down until they found a leaf or branch of the food plant.

But how do they know what to eat? There is every possibility that they could have abseiled onto the wrong plant.

After talking it over with a few more "butterfly observers" we deduced that maybe the dance she was performing on the plant, with the dragging of the abdomen, was actually her way of putting the scent of the foodplant onto the eggs. The larvae on emerging would then eat their eggshells, hence getting the taste of the foodplant imprinted in their sensory organs.

I took a couple of the eggs home and placed them on a Flintwood I have in an eight inch pot - I keep a variety of larval foodplants in pots, so that I can observe life cycles of butterflies in the relatively "predator free" environment of my shade-house.



The larvae are a greenish colour and seem to be quite hairy. These hairs are in fact nonirritating almost black spines.



The pupae look like they could be used for Christmas tree decorations. They are green, with ten slender spines of various sizes along the body, these are bent on the ends and seem to be set in silver on the pupa. The spines are brown with black areas on both ends.



The adult butterfly is first noticed as being a fairly small, orange one, which seems to prefer slightly shady areas. The upper wings are dark brown on the outer edges, then there is a band of orange and then finally a dark-caramel colour is closest to the body. The underside of the butterfly is an all over caramel colour. The hindwing has seven black spots enclosed in a scalloped pattern, which possesses a purplish sheen. The forewing has one prominent black spot and approximately

four small black spots toward the leading edge. The overall size of the butterfly is only five centimeters from wingtip to wingtip.

There are three foodplants listed for the larvae of the Australian Rustic to feed on. These are: *Flacourtia jangomas, Scolopia braunii* and *Xylosma ovatum*.





Chequered Swallowtail





One of the more recent additions to my butterfly garden, this is also one of the more active. It always seemed to want to be somewhere else, pausing only momentarily to feed on one of the nectar producing plants that was in flower at the time. I had to find the larval food plant, so that this butterfly could become more permanent.

This was not an easy task; nobody seemed to know anything about the food



plant. What does it look like? Where is it growing? It wasn't until a friend of mine in Brisbane obtained some seeds that any of us seen what the plant looked like. It is a low growing, scrambling plant, which self-seeds very readily, so it can form a nice little clump fairly quickly. It has a five-pointed leaf and hence gained the common name Emu Foot (*Cullen tenax* formerly *Psoralea tenax*) I have now had this plant growing in my garden for several years, and every year I have had this butterfly, and its offspring as permanent residents.

The larvae are very variable in colour, changing from black with orange stripes to yellow or green, with lots of almost metallic, orange spots.





The pupae can be either brown or green and hangs upside down, attached to the underside of a leaf or branch by its tail and a central silken girdle. The pupae actually reminds me of the Dainty Swallowtail (*Papilio anactus*) pupae, that we sometimes find commonly on the citrus trees. The adult butterfly is brown-black, with large areas of yellow. The outer edges of the wings have a series of yellow spots and there is one red spot on the base of the hindwings. The underside of the wings are also brown-black, with the yellow areas being more prominent, especially on the hindwing. The hindwing also has a pale orange band running from top to bottom and a series of dull yellow spots edged in blue and black. One orange spot is located on the bottom of the hindwings.

When in flight, they are usually only about a meter above the ground, and as mentioned earlier are very fast. The first impression on seeing them, is of a medium sized, very fast, yellow spotted butterfly.



Orchard Swallowtail



Boic

(Papilio aegeus aegeus)

Are you one of the millions of people who have seen caterpillars on the citrus trees and wondered what they were? If so, this article should prove to be very interesting.

There are actually three butterflies in South-East Queensland whose larvae use citrus trees as their food plants, the Dainty Swallowtail, (Formerly Dingy Swallowtail), the Fuscous Swallowtail, (Formerly Capaneus Butterfly) and the Orchard Swallowtail.





The latter is the one we are concerned about in this article and most will recognize its larvae as "the ones that look like bird droppings" the young larvae are brown with white markings and as they grow older, can be a variety of different colours, varying from yellowish-green with



white markings, to very dark green with white and brown markings.

All Swallowtail butterfly larvae have an inbuilt defense mechanism, called an osmeterium. This is the name given to a pair of fleshy tubes that extend from behind the head of the larvae when they are being attacked in the case of the Orchard Swallowtail, the tubes are red and emit a fairly strong citrus-like odour. If you find any of these larvae, tap them on their backs, they will think they are being attacked and distinctively raise the osmeterium. Run your finger along the red projections and then smell your finger, if you were a bird, would you keep attacking? When fully grown, about 60mm long, they will search for a suitable place to pupate. This is usually on the underside of a leaf of the food plant, or on one of the branches. Once there, the larvae spins a silken pad, onto which it will attach itself by its abdomen and a central silken girdle. It will then shed its skin for one final time, to become a pupa.



The pupae vary in colour, usually depending on where they

pupate, camouflage is their best defense once they are attached to the plant. The pupae found on



the underside of the leaves are generally lime-green in colour, whilst those found attached to the brown stems, take on that same brown colour.



The adult butterfly is one of the largest found in southeast Queensland, having a wingspan of about 11cm. The male is primarily black on both the upper and undersides. The upperside has a series of yellow markings near the tip of the forewings and a yellow patch with one red spot on the hindwings. The underside of the male is similar on the forewings, but the hindwings only have a narrow band of yellow, blue and red spots on the black background.

The female butterfly looks more whitish-grey and is very similar on the upper and undersides. The forewings have a large brown-black patch near the body and a series of similarly coloured, lines running horizontally. The hindwings have the same coloured patch near the body, then a white patch, followed by a broad, dark band along the outer edge of the wings. Inside this dark band, is a series of red marks, two blue marks, (more on the undersides) and one red spot in the same position as on the male.

Apart from the common Citrus trees, there are also a wide range of native plants, including *Micromelum minutum*, *Clausena brevistyla* and *Flindersia australis*, on which the larvae feed.



Dainty Swallowtail



(Papilio anactus)

Previously Named Dingy Swallowtail



Another of the so called "Citrus butterflies" is the Dainty Swallowtail. As can be seen by the heading, this butterfly has had a name change which more accurately describes it.

There is nothing dingy about it; they actually look very similar to small female orchard swallowtails.

Male and female Dainty Swallowtails are very hard to tell apart from each other, with the main difference being size, males approximately

67mm, females approximately 72mm from wingtip to wingtip.



The larvae are approximately 38mm. long when fully grown.

The larval colour is an over all khaki colour with minute

blue spots, there is also rows of larger yellow-orange spots which run from front to back

along the larval body. They have short, fleshy spines which will not sting or irritate you if they are handled.

The pupae is approximately 31mm long, brown to grey with splashes of green and much narrower and straighter than that of the Orchard Swallowtail. It suspends itself, head upwards, by its tail and a central silken girdle to a branch or the main stem of the food plant. It will take about ten days (in summer) to transform itself from this inanimate looking object, into a dainty little Swallowtail.





Once emergence is complete and the adults wings are spread and dry, it will fly off to mate with another of its kind, eggs will again be laid singly under the new shoots of your citrus trees and the whole cycle begins again.

The best of the native plants I have found for Dainty Swallowtails larvae, is "*Citrus australis*" but "*Citrus australasica*" should be just as productive.

Apart from the native food plants, any of the introduced Citrus trees will prove to be very attractive to this very welcome visitor to everyone's garden.

Flight





Many of our butterflies cannot fly unless temperatures rise above 20 degrees centigrade.

It is noticed quite often that when the temperature is cool, butterflies are active as long as they can absorb radiant heat from the sun, but they will stop flying immediately if clouds move in.

A butterfly can often be seen landed with wings open, this acts like a solar panel.

If the air temperature remains cool, another method of warming the body for flight, is by wing vibration. This is done two ways.

One is a slow vibration, as is commonly seen in the Wanderers, whereby the wings are slowly opened and closed about one beat per second, at an angle of about 40 degrees from the vertical.

The second is a rapid vibration, approximately fifteen beats per second.

Both types of vibration will cause a rapid rise in body temperature, until finally the insect is warm enough to fly. So the colder the day, the longer the wings will have to be vibrated.

Butterflies can also become too hot and die, this means that they must devise ways of thermo regulation. This is done in many ways, some will move into shady areas temporarily, whilst others will sit on the ground with their wings held vertical covering the body parts and shading them from the sun.



Fuscous Swallowtail



(Papilio fuscus capaneus)

The third and final butterfly in the group we have called "Citrus butterflies" (because the larvae commonly use citrus trees as a food plant), is the Fuscous Swallowtail.

This butterfly could only be described as being, "as equally impressive as the Orchard Swallowtail, in size and flight, but sporting a tail on each hindwing". The Fuscous Swallowtail doesn't seem to be as common as the Orchard Swallowtail and both sexes look the same when in flight.



A simple description for those of you who have a bit of butterfly identification skills is, a male Orchard Swallowtail with tails.

The larvae are found in the same situations as those of both the Orchard and the Dainty Swallowtails and are quite often found together.



The coloration of the larvae when in the earlier instars is very similar to that of the Orchard Swallowtail, the typical "birds dropping" then becoming more closely resembling the Dainty Swallowtails larvae as they get older. Towards the third instar they take on a predominantly orange colour with cream markings and look distinctly different to the larvae of the two Swallowtails previously mentioned.

The pupae is also very distinct from the other two Swallowtails found on your citrus tree. They are more streamlined and a beautiful lime-green in colour, they are always found in a

head up position suspended by their tail and a central silken girdle.

Generally during the summer months, the pupae will emerge as a butterfly in about two weeks, but this varies enormously.



An example of this that I have had personal experience with is, one year I chose the Fuscous Swallowtail as a breeding project, to try to enhance the local population in my immediate area.

This went really well until the end of summer grew closer and I noticed a gradual decline in the number of butterflies emerging. I just put this down to the normal "over wintering" tactics of subtropical butterflies, whereby they go



into a hibernation; emerging again as the weather warms up.

Eventually they all emerged, except for one. Two more years went past and it still hadn't graced me with its presence. I knew it wasn't dead as the colour was just as clean as it was on pupation.

It actually wasn't until another six months later, when I went to Kuranda that it actually emerged.

I had taken the pupae with me in case it emerged whilst I was away from home and it wouldn't have been able to get out of the flight cage, as it turned out I did the right thing.

Apparently, Fuscous can withhold emerging during dry times and so because I had taken it to a more humid, warm environment, it triggered the emergence. Two and a half years as a pupa! Hopefully, I added to the genetic diversity of the local Kuranda Fuscous Swallowtail population. The best of the local natives I have found for this butterfly is *Micromelum minutum*.







(Ornithoptera richmondia)





I have purposely not written about this magnificent insect previously, mainly because of the amount of information that has already been published about it, but its beauty is such that to not

include it in any publication would be unthinkable.

It can be found on the wing mainly during the months of September to May, and to see it for the first time is a very memorable experience.

Just the size alone is enough to leave a lot of

people in awe. It is one of the largest butterflies to be found in Southeast Queensland, having a wingspan of up to 115mm.

The wingspan of the male is approximately 105mm. Its colour is iridescent green on the upper wings, with a large patch of black on the forewing and up to four black spots on the hindwing.



The underside is slightly more spectacular. Once again the main colour is iridescent green, but the hindwings have an iridescent gold band which runs around its outer edge. A series of black lines and spots complete the wing patterns, but as if that isn't enough, the body of



this insect is velvety black with a bright red patch on either side, this is then contrasted by a bright yellow abdomen.

The female, although not as spectacular in colour, is just as magnificent in flight. The wingspan is approximately 115mm. The main colour is brown with cream markings and a yellowish band on the outer edge of the hindwings on both the upper and undersides. The body is a dark caramel colour with those distinct red patches on the thorax.



The eggs are laid singly, on the underside of the leaves mostly on the new growth.



The larvae are black on emergence, turning a caramel, maroon later and then either a blackish-brown or brownish-grey toward the final instars. They have rows of non irritating spines, all except four being the same colour as the body, these four are yellow to white.



The pupae, approximately 40mm long is green with yellow patches on its back and is always found suspended by its tail and a central silken girdle in a head up attitude.

The only food plants for this butterfly are *Pararistolochia laheyana* and *Pararistolochia praevenosa*. The latter being the main plant for the Maleny area.


Blue Tiger

(Tirumala hamata hamata)



Everybody must have seen the hundreds of black and blue butterflies that have been passing through lately, well they are called "Blue Tigers" both the male and female have a wingspan of about 72mm, and are predominantly black with blue spots and streaks. The male is distinguished from the female in that it has a small patch of sex scales on the hindwings. These are recognizable as a small raised area on the top, and an inverted area on the underside of the hindwings.

Some of you may have noticed huge numbers of this butterfly congregating around the Monkey Rope Vine (*Parsonsia straminea*), and it was thought for a time that this might be a larval food plant. Well I have climbed a tree containing such congregations and have found that every one of them were males! It is now thought that the male butterflies actually sip nectar from the flowers and scratch the leaf surfaces in order to obtain chemicals which they then use as pheromones to attract the females.

This is still one butterfly whose early stages I have not personally observed, which is very unusual considering how common it is, even the food plants are fairly common.

The egg is said to be pale-yellow in colour, normally laid on the young growth of its food plant. The larvae have been described to me as "looking like a pale, washed out larvae of the Wanderer butterfly" this is the one we all played with on cotton bushes as kids. The

pupae, suspended head down, is also not unlike that of the Wanderer, bright green with golden spots and a row of bright golden spots near the back of the head.



If you wish to grow the larval food plants in your gardens, it is not going to be easy to obtain, with only a few specialist nurseries possibly stocking it. The best of these plants I have found for our area is "*Secamone elliptica*"





Clearwing Swallowtail





The last but definitely not least of the Swallowtail butterflies found in Southeast Queensland, is the Clearwing Swallowtail (*Cressida cressida cressida*). One of the things that makes this such a fascinating invertebrate, is that after the male has mated with the female, he leaves what is called a "Sphragis" attached to her abdomen, this prevents other males from mating with her, effectively ensuring the success of his gene pool.



To look at, the male of this butterfly looks like the Dainty Swallowtail (*Papilio anactus*). The female, although similar in design to the male, appears to have no wing scales, this makes it look "greasy", hence the former name, (Big Greasy).



The male has a wingspan of approximately 80mm. Which makes it slightly larger than the female, which has a wingspan of approximately 70mm.

The male has a transparent grey forewing with a small, black area close to the body and two black spots. The hindwing is black with a broad white band running through the center with five red spots around the outer edge. The body is black with a red tip on the abdomen.

The underside is identical to the upperside with the exception of the red spots, which are brighter on the underside.

The female is a transparent pale brown. It has one black spot on the forewing and a darker brown margin on the hindwing, with five pale brown spots. The underside is very similar to the upperside.





The eggs of this butterfly are orange in

colour and are laid mainly on the underside of the leaves of its food plant. The local foodplant for this butterfly is "Aristolochia pubera", a low growing vine found mainly in the dryer, hilly areas, which have a large amount of small, rocky rubble on the surface.



The larvae are a reddish-brown with creamy markings and have rounded spines. Quite often you will find them nowhere near their food plant. This is because the Aristolochia is generally so small, the larvae devour it in no time and so have to go in search of more food.

The pupae is always suspended by the tail and a silken girdle around its waist, to a nearly vertical object. This can be a branch, or even a blade of grass, metres away from the food plant. It is an overall caramel colour with cream markings



This butterflys flight is usually a slow, gliding habit, fairly close to the ground, this is especially so with the females as they search out the vine on which to lay eggs.



Arrested Development



Now that winter is closing in on us again, I thought that this would be a good time to mention Arrested Development in invertebrates.

I am sure that we have all noticed the complete lack of butterflies in the colder months and thought to ourselves "where have they all gone?" "Do all of the butterflies die at the end of summer?" Well the answer is no. If all of the butterflies died at the end of summer, where do the butterflies come from when summer returns? The simple answer is Arrested Development.

This, as the name suggests, is the ability of the butterflies to stop developing when adverse conditions are present or imminent. Present adverse conditions are things like sudden cold snaps, where the temperature required for continuing development are not present. The temperatures required vary from species to species and development continues again once favourable conditions for development return. Imminent adverse conditions mainly refers to the onset of winter and with this comes the drops in temperature conducive to diapause.

Diapause is the name given to an extended period of Arrested Development, it is said to be brought on by the shortening of the length of daylight, rather than the gradual change in temperature and it is also broken when changes are once again favourable to development.

According to Ian Common, in his book, "Butterflies of Australia" by Common and Waterhouse, 1981, diapause can occur in all stages of development, eggs, larvae and pupae.

He also mentions Arrested Development occurring in at least one of our adult butterflies, the Common Brown, *Heteronympha merope*.

I have personally witnessed this during my time in Sydney.

Males but no females would occur early in the season, then as summer grew closer, females would appear and an overlap of the sexes would occur.

During this time they would mate but no eggs could be seen to be laid.

Gradually the males would disappear and only females could be found.

According to Ian, at the time the butterflies mate (from October to early January), the females ovaries are not fully developed and during the hotter months (between December and February) the females enter into a stage of Arrested Development, to eventually start laying eggs in about March.

The theory behind this Arrested Development is that during the hotter months, the grasses that the larvae need to feed on are too dry and hard to be used as a food source, but this improves in late February, early March, with the return of wetter conditions.



Varied Sword-grass Brown

(Tisiphone abeona rawnsleyi)



Everybody that attended the "Wetland Wander" conducted by Barung Landcare, under the expert guidance of Clayton Stockoe, will already be familiar with this insect. It actually greeted us at the beginning of the track, as Clayton was giving us his introductory talk.

For everybody else, if you want to see one, the wetland areas are the best places to be, this is because here is where the larval food plants, *Gahnia sieberiana*

and Gahnia clarkei grow most abundantly.

There is actually six subspecies of this butterfly recognised, but the one we will come across on the Sunshine Coast, is *Tisiphone abeona rawnsleyi*.

It is a fairly easy butterfly to identify. It is approximately 52-59mm from wingtip to wingtip, dark brown with two, blue centered black eyespots on each forewing, and two, blue centered black eyespots surrounded by orange on each hindwing.

The undersides are very similar, with the addition of a few narrow cream bands.

Its flight is usually a very slow, flopping motion, down low, near the sword grasses, unless disturbed, then it will be just as fast as any other butterfly.

The greenish eggs are laid singly, on the foodplants mentioned earlier, with the preference being *Gahnia clarkei*.



This is generally a softer leafed plant, which makes it easier for the young larvae to eat.

The larvae are found in between leaves of the food-plant, but be careful if searching for them, as Swordgrass is a very appropriate name and some very painful cuts will result from contact with the leaves.

The larvae are green and can be distinguished from other larvae found on Gahnia, in that they have a forked posterior.



The pupae are generally found on the undersides of the lower leaves, hanging upside down. They are green with a yellow stripe around the wing edges.

Caper White



(Belenois java teutonia)

One of the most common questions I am asked around this time of year is "What sort of butterfly are those white ones we are observing flying over in their thousands?" Well the answer is: "The Caper White butterfly, *Belenois java teutonia*". They are actually one of our "migratory" butterflies and can often be seen at this time of year literally in their thousands, all seem to be flying in the same direction. These migrations can actually last for a couple of weeks at a time.



I have observed the white eggs (which later turn yellow or orange) being laid on the young foliage of the food plant in the hundreds. The larvae that emerged from these eggs, are an olive-green to chocolate-brown colour, with yellow spots and sparse white hairs they feed in large groups and if enough are present will easily defoliate the food plant.



When ready to pupate, they will move to the underside of a leaf (if any are still present), or if not, to the trunk of the tree or a branch. Here they will spin a small pad of silk onto which they will attach their abdomen and a silken girdle to support their thorax. They then split their larval skins, slipping it slowly down the body, eventually dropping it down to the ground, exposing the naked pupae.



The pupae can be white, pink or even almost black, with brown mottling. They have a raised projection on their back and a point on their front end. As mentioned earlier, they always hang upside down supported by their tail and a central silken girdle.



The male adult, about 55mm from wingtip to wingtip is mainly white. The upperside has an outer edge of black with white spots. The underside is the same as the top with the addition of darker markings following the vein lines. The spots on the hindwings, under, and a small area close to the body, contain splashes of yellow.



The females are about the same size as the males and are very variable in colouration. The upperside on some can look the same as the males and others will have the white areas replaced by an orange-pink colour with the black areas more extensive. The underside is also darker than the males and the white areas are replaced with yellow even on the underside of the forewing.

The main larval foodplant for the Maleny area is "*Capparis arborea*" and I will guarantee that if one is planted, it will not take long for the butterflies to find it.





Lemon Migrant

(Catopsilia pomona)



"The mackerel are on the bite!" was the elated call from my next door neighbour, as he pointed into the air at three medium sized yellow butterflies.

You see my neighbour was a timber getter from Maleny and the theory is that when the medium sized yellow butterflies are in a migration, the time is right to go mackerel fishing.

The butterflies he was talking about are Lemon Migrants and upon checking, I found his theory to be very accurate.

The butterflies are approximately 58mm. From wingtip to wingtip. They are lemon yellow in colour on both upper and lower wings. The forewings on the male have a very narrow black band on the outer tips whilst on the females, the black band is slightly thicker and extends from the body on the forewings, almost back to the body on the hindwings.



There is actually two forms of this butterfly, a light form and a dark form. The easiest way of telling them apart is the colour of their antennae. The light form has pink antennae and the dark form has black antennae.

When in numbers, they are a spectacular sight flying around flowering Cassia trees.

The narrow white eggs are laid singly on both the upper and undersides of the food plants and suffer a high mortality rate from ants.

The young larvae, also heavily predated by ants, are a yellowish green colour and blend in extremely well with the midvein on the leaves of the food plant, along which they rest when not feeding.



The more mature larvae are green in colour, they have a yellow and a dark blue to black stripe running from back to front.



The lime green pupae are suspended in a head up position, by their tail and a central silken girdle, usually on the underside of a leaf of the food plant.

The best of the local food plants I have seen is Brewster's Cassia (*Cassia brewsteri*), and I will guarantee anyone planting one in their butterfly garden will soon have their own colony of this brightly coloured invertebrate.





Purple Moonbeam

(Philiris innotatus)

If you have a Sandpaper Fig, (Ficus coronata), or know where there is one growing, you may have noticed a series of trail like etchings on the leaves. These markings are actually formed by the larvae of the Purple Moonbeam butterfly, as they feed on the underside of the leaves.

Upon closer inspection of the underside of one of the leaves which has

fresh markings i.e. the trail is still green, you may see a small, green larvae with a creamyyellow line running from front to back through the center of its body.

> This larvae will not be very large, usually only about 5-10mm long. It will normally be found at the end of the feeding trail, or resting along the central mid-vein of the leaf, where the creamy-yellow line on its back offers excellent camouflage.

The green pupae are about 11mm long, they have lighter patches on their backs, which help them to resemble the mottled appearance of the fig leaf. They are found on the underside of the leaves of the fig, supported by the tail and a central silken girdle.

> The adult male butterfly is approximately 22mm across the wingtips, with the female approximately 24mm. The upperside of the males are mainly purple with a narrow

brown-black edge. The tips of the forewings have a broader patch of brownblack.

The upperside of the females are mainly all over brownblack with a pale blue suffusion, this is more prominent on the forewings.

The underside of both the male and female butterflies is predominantly white. They have one small black spot near the bottom of the hindwing, toward the body. The bottom edges have four small black spots joined together by a faint black line.

These butterflies are very active at the moment and can be seen flying rapidly around most Sandpaper Figs.

The main food plant for the blackall range area, is "Ficus coronata".















Butterfly Migration



This time of the year is the most appropriate to mention the little known about phenomenon of butterfly migration, because it is happening right now.



When we talk about butterfly migration, we all immediately think about the mass migrations of the Wanderer butterfly (*Danaus plexippus*) in North America. Over there they fly south in Autumn and congregate in their millions between the north of San Francisco and Los Angeles, in the moist groves of Monterey pines and Eucalypt trees. An estimation of their numbers was put at between ten and one hundred million butterflies in an area of a few hectares!

We don't have the mass congregations of butterflies in Australia like those in America, but we do get congregations numbering a couple of thousand individuals at times. It is quite a sight to walk into an area that is protected from the wind and see every tree adorned with butterflies, like decorations on a Christmas tree.



One of the butterflies that are migrating at the moment is the Blue Tiger (*Tirumala hamata*). This one is a fairly large butterfly, about the same size as the Wanderer, but its wings are black with numerous blue spots on both the upper and undersides of its wings. I have seen migrations of this butterfly so large that the sides of the road, from Landsborough to the Maleny end of the Ice Box was littered with the bodies of butterflies about fifty millimeters deep that had been struck by vehicles.



Another butterfly migrating now is the Caper White (*Belenois java teutonia*). This butterfly has a wingspan of approximately 55mm. It is fairly variable in colour between males and females and light and dark forms, but generally, they are a white butterfly with a black outer edge containing white spots or as is the case with most females, they are a combination of colours from white to apricot – even pink at times.



There was an earlier migration of butterflies which occurred in July - August this year. This butterfly is the Lemon Migrant (*Catopsilia pomona*). It has a wingspan of about 58mm. and is as the name suggests, a bright lemon-yellow colour, with or without a black border. I received a phone call from a friend of mine in Cairns just before this migration occurred, he had just returned from an excursion into the rainforest up there and he described how one particular area was yellow, everywhere he looked, even the fence wires had lines of Lemon Migrants on them.

In Australia we have a couple of other migratory butterflies, but those mentioned above are generally the ones that are noticed the most.

Black Jezebel



(Delias nigrina)

In most books about butterflies, this one will be referred to as the "Common Jezebel".

It is one of the few butterflies that fly in the colder months of the year, and so can be observed "on the wing" at the moment.



When they are in flight, they appear to be both a black and a white butterfly in one! but they are actually white on the upperwings and black on the undersides. When the wings are open, they show white, and as they close, they show the black, making them appear blackwhite, black-white, as they fly past.



On closer inspection, they are medium sized butterflies, with a wingspan of approximately 56mm. The upperside of the male is mainly white with a black tip surrounding white spots on the forewings, and white with a narrow black edge on the hindwings.

The upperside of the female is similar to the male, but the black areas are larger, the spots on the tips are

cream, and the

white areas take on a greenish sheen, because of the extra suffusion of black scales.

The undersides of both the male and female are also very similar. The forewings are mainly black, with a band of yellow spots on the tips. The hind wings are mainly black, with a narrow red band running from



top to bottom, roughly following the curve of the wing. Both forewings and hind wings are suffused with grey scales.

This butterfly is also one of the few that lay their eggs in clusters, most only lay single eggs. The eggs are light yellow when first laid, but become darker yellow with time, there can be as many as 90 eggs in one cluster!



The larvae are very gregarious, feeding and growing uniformly together as a group. Similar to the spitfires seen destroying your Melaleucas and Callistemons. They are dark olive to black in colour, with a row of yellow spots running from front to back along the sides of the larvae. Their heads are black, and both the head and body are covered with sparse white hairs.

The pupae are yellow at first, turning orange-yellow as they age. They have a white, forked spike, tipped with black on their heads, and black spikes on their bodies. They can be found on the undersides of leaves or branches, suspended in a head up attitude, supported by their tail and a central silken girdle. They have also been known to descend to the ground on silken threads, here they will pupate on blades of grass.



The only food plants for the larvae are mistletoes, this makes it a little bit difficult, but not impossible, to add to our butterfly gardens.

The best way to start is to grow the host tree for the mistletoes, most of which we probably already have. The best ones are Callistemons, Eucalypts, Melaleucas, Acacias and Casuarinas. When our trees, shrubs reach about one meter tall, we can then attach the mistletoe. This is as simple as finding the mistletoe on another tree and collecting a large quantity of seeds. These are then squeezed onto as many young branches as possible - most will not take hold long enough to attach.

Scarlet Jezebel



(Delias argenthona)





Probably known to most of us as Northern Jezebel, this is another of the "Mistletoe" butterflies.

Normally quite common at this time of the year, this year it has been unusually low in numbers. I personally put this down to the dry conditions we have been having for so long now.

Without rain we are not getting the new

growth on a lot of our butterfly larval food plants and most butterflies refuse to lay their

eggs on the older growth. Hopefully, rain is not that far away.

The butterfly has a wingspan of about 62mm. The upperside of the wings are mainly white with a darker edge enclosing white spots, the females are a bit lighter on the edge with a more yellowish tinge overall.





The underside of the forewing is

identical to the upperside, but the hindwing can almost be divided in half. One half being lemon yellow and the other half is dark brown with a large amount of crimson spots surrounded by white.

It is not usually a very fast flying butterfly, unless threatened, it is mostly observed flying around Callistemons.

This is for two reasons, firstly the larval food plants, Mistletoes utilize Callistemons, secondly, Callistemon flowers are a favourite nectar source for the adult butterflies.

The eggs, mainly laid on the leaves or stems, are orange yellow in colour and are laid in clusters of about thirty five at a time.



The larvae are very variable in colour, ranging from yellowish-brown to greenish-pink with lots of different combinations in between. They have a row of white spots, from which white hairs extend.



The pupae, found suspended by its tail and a central silken girdle in a head up attitude, are orange-yellow in colour. They have a black projection on the head, with conical shaped spines on the body. The conical spines are the best way to distinguish between the pupae of this butterfly and the pupae of "*Delias nigrina*" the latter having pointed spines.

As with "*Delias nigrina*" the pupae of this butterfly can be found attached to a stem of the food plant, an adjacent piece of vegetation or even on the ground at the base of the host tree. The local mistletoe food plants include: *Amyema bifurcatum, Amyema cambagei, A. miquelli, A. pendula, Dendropthoe glabrescens and Diplatia furcata*.

The trees that host these mistletoes include: Callistemons, Casuarinas, Eucalypt and Melaleucas.





(Argyreus hyperbius inconstans)

Now seems to be an appropriate time to be talking about this butterfly, mainly because its larval food plant, *Viola betonicifolia* (Arrow-head violet) has been growing very rapidly following that little bit of rain we had recently.

Presumed extinct from Queensland by some people, some of us are still hopeful that this butterfly will turn up somewhere in our state again.

The only living specimen I have seen personally, in more than thirty years of searching was in New South Wales. This site seems very vulnerable to me, as it is rapidly being overrun by Bitou bush.

The Butterfly and Other Invertebrates Club of Queensland has a recovery plan for this butterfly awaiting approval by the relevant authorities, and so hopefully when this is approved, we can all start noticing it around us in numbers again.

In Australia, it is known as a butterfly that is found in association with wetlands and Melaleuca swamp lands. This is because the larval food plant grows most vigorously in these areas.

The pale-yellow eggs are laid either on the food plant, or on an object in close proximity to the food plant - even on the ground.

The larvae are black, with an orange G.T. Stripe running from back to front on its back. They have a series of non-irritating spines on their bodies, these are black with orange or reddish-pink bases. They will get to a size of about 45mm. long when fully grown.

The pupae are about 26mm. long and are orange-brown when fresh, this then turns to brown or pale brown after about one day. They will normally pupate on an object like a stick, rather than the food plant. This helps to ensure their survival, because if they pupated on the food plant, the chances are that one of the other larvae would eat your perch out from under you, causing you to fall to the ground and an inevitable death. They always pupate in a head up attitude attached by the tail and a central silken girdle.

The adult butterflies are about 60mm. from wingtip to wingtip, and are an overall orangebrown colour, with numerous black spots.

The undersides of the fore wings are a pinkish-orange colour, with numerous black spots. The undersides of the hindwings are a pale brown colour, with black and silver markings.

To see a freshly merged adult flying by, with the beautiful pink-orange undersides, is a sight to remember and hopefully one we can all soon start to enjoy.

Plumbago Blue



Boic

(Leptotes plinius pseudocassius)

Everybody has probably noticed that there was not many butterflies around this year. I think the reason for this was that the last few years have been so dry, the lush growth that the butterflies need for their larvae has been almost non existent, and because of this, invertebrate numbers have diminished. This is all part of a natural cycle and everything should return to normal with adequate rainfall.

An upside to this is, with larval numbers so low, parasite numbers also become depleted, so when the butterflies do return, they should be in good numbers again until parasite numbers explode and control them.

One butterfly that is in good abundance

at the moment, has a name that is about four times as big as it is, (*Leptotes plinius pseudocassius*).

The Plumbago Blue is also commonly known as the Zebra Blue. The first common name refers to the fact that its larval food plant is Plumbago, either *Plumbago zeylanica* or the introduced *Plumbago auriculata*. Both seem to be extremely attractive to the adult butterflies, and they can be seen flying around them in big numbers.

The second common name, Zebra Blue, refers to the patterns exhibited on the underwings of the adults. This is actually the identifying feature of "just another one of those small blue butterflies".

The adult butterfly has a wingspan of only about 22mm.

The male is purple-blue on the uppersides of the wings, the females are a glistening blue with a whitish suffusion throughout, both have small tails.



If you already have a Plumbago growing at your place, grab a magnifying glass and have a close look over the newest flower buds. I have found that the larvae are very fond of the un opened flowers and can be fairly easily found on them.



The larvae are either green or a pinkish-brown colour with a darker stripe running from head to tail on their backs. They sort of look like coloured maggots, *sorry about that description, but they do !!* They are about 9mm when fully grown.



The pupae are caramel in colour, mottled with small brown spots. They are found suspended upside down, attached to a stem of the food plant by the tail and a central silken girdle.

The adults are on the wing most months of the year.

Ant Association



Here is a little snippet that not many people know.

Some of these larvae are dependent on an association with different varieties of ants. The ants wait until the butterflies' larvae hatch from their eggs. They then pick up these larvae and carry them underground into the ants' nests. One would think it is then curtains for the poor larvae, but nothing could be further from the truth. Instead of eating the larvae, the ants actually 'farm' them. In exchange for the ants' protection from everything else that wants to eat them, the larvae exude a liquid from special glands on their upper back end. It is said that this liquid contains a valuable source of amino acids, the building blocks of life.



To further increase their chances of survival, these larvae lead a nocturnal life and will only emerge from the ants' nests at night to feed. The ants herd them up the bush or vine, with sentries posted at every possible point where an attack on the larvae could be launched. Just before the sun rises, the ants then herd the larvae back down into the safety of the nest where the larvae will rest again until sundown.







Moonlight Jewel

(Hypochrysops delicia delicia)

I have been an observer of mother nature for countless years now, but she still manages to show me things that just leave me looking on in awe.

The latest of these occurred about a month ago now.

I was wandering around my backyard checking on how the different larvae were going on their respective food plants, when out of a cloud of about ten Plumbago Blues flew a larger blue butterfly that appeared red underneath.

My immediate thoughts were that it could have only been one of the Jewel butterflies, but a positive ID could only be made if it landed long enough for me to compare the differences.

Sure enough, after a couple of circuits around my *Acacia spectabelis*, she perched on the very highest of the foliage - a habit the Jewel butterflies use to frustrate observers!

Being too high for identification, I stood there and watched her, just in case she came closer.

She proceeded to walk around the foliage, then onto the branch, moving her antennae up and down all the time, as if she was looking for something special.

What was she doing on this Acacia? The larvae feed on different species of Acacias, but this one is not one of those listed for it.

Was she testing it to see if it was one of those known food plants, or was there still more? With these thoughts running through my head, I noticed that she was now hanging upside down, still walking along the branch.

All of a sudden, she was gone. She let go of the branch, and with the precision of a trapeze artist, she fell down past three branches, grabbed hold of the fourth and proceeded to do as she did on the top. Walking along, head down, antennae moving up and down. Still looking for something? After walking along the branch for a minute or two, she once again went onto the underside and let go, this time catching a branch within thirty centimeters of my head.





She was now close enough for a positive ID, but although at this stage I could narrow it down to two butterflies, I needed her to open her wings so I could see the colour of the upperside.

She walked along this branch, again going through the same motions. A minute or two passed before I could see the upperside colour, a brilliant metallic blue, with large bright red patches towards the base of the upperside of the hindwing.

This confirmed that it was indeed a Moonlight Jewel.



The underside of the wings is also something that can only be described as spectacular. They have an orange-beige background colour with numerous bright red spots, surrounded by metallic green scales. The description doesn't do them justice at all, they have to be seen glistening in the sun before they can truly be appreciated.

After what seemed to be an eternity to me, she stopped and seemed to go into a trance. She then proceeded to lay her eggs on the upperside of the branch she was standing on.

Three eggs were laid when I noticed an ant looking at the first one. Knowing the incredible predation on butterfly eggs by ants, I thought that they were doomed from the start. But it wasn't to be. The ant inspected the egg for a short time, and then went about doing whatever ants do, the eggs were all still intact.

She laid fifteen eggs before the rain started to fall, making it to eighteen before she was knocked off of the branch. She then flew away to find shelter.

So as to confirm this plant as a food plant, I decided to take the eggs inside and raise them through under controlled conditions.





When the larvae emerged from the eggs in exactly two weeks they were no larger than a pin prick, but by the time they pupated they had grown to about 25mm long.

They stayed dormant in their pupae until the first ones started to emerge as adults eighty one days from when the eggs were laid. There has been a steady stream of adults emerging ever since.



Upon talking to other entomologists about the ants not touching the eggs of this particular butterfly, it seems that upon emergence of the larvae from the eggs, the ants will either carry, or herd them back to their nest, or another suitable shelter near the foliage. This shelter can be as simple as an old seed pod, a piece of bark trapped on the tree, or even a couple of leaves joined together.

They stay in these shelters, attended by the ants, until nightfall.

The ants will then herd them out onto the foliage to feed, guarding them all the time they then herd them back to the relative safety of the shelter until the following night, when they are again herded out to feed.

Watching this symbiotic relationship in progress, it is really hard to believe that these two invertebrates are not deadly enemies; after all, ants eat caterpillars. In return for protection, the ants are treated to a sugary substance, exuded from glands on the rear of the larvae.

As it turns out, what the female butterfly was looking for was evidence of the ant colony before she was willing to lay her eggs. The ant colonies occur in borer holes in the dead branches. I used to trim all dead branches off of my Acacia, but I now know they are an important part of the diversity of my garden.

For those of you that are familiar with ants, these are Crematogaster sp.

For the rest of us that do not know ant species, they are small black ants that walk around with their pointed abdomens raised when they are disturbed.

The adult butterflies are approximately 32-35mm. From wingtip to wingtip. They generally fly too high for identification.

The main food plant for this butterfly on the blackall range is Acacia melanoxylon.





Australian Painted Lady



(Vanessa kershawi)



The Australian Painted Lady is one of those select few butterflies that land with their wings in an outstretched attitude.

Another of these butterflies, and the main one that it is confused with, is the Meadow Argus (*Junonia villida calybe*). The easiest way to tell them apart is the eye spots on both the fore and hindwings of the Meadow Argus, these are not present on the Painted Lady.

It can best be described as a medium sized butterfly, having a wingspan averaging about 45mm. And if you have noticed something dining on your daisies, the chances are that it was the larvae of this butterfly. This is actually one of the few butterfly larvae that I have seen spin a web in which they hide during the day and come out at night to feed.

The egg, greenish in colour, is laid singly on a leaf of the food plant.

The spiny larvae are very variable in colour, some are brown, some grey and even some are green. They can be all of these colours from the same batch of eggs. Even though they are adorned with spines, they are non-irritant and so can be handled safely.

The pupae are also variable in colour, ranging from greyish brown to reddish brown. They are either found on the food plant or on an object nearby, but they are always found hanging head down.

The adult butterfly is mainly orange in colour, with some brown patches and white spots on the forewings, and four blue spots on the hindwings. The undersides are very cryptic and because of their beige ground colour, the butterflies seem to disappear upon landing.

The Australian Painted Lady is one of our migratory butterflies and can sometimes be seen in large numbers.





(Eurema hecabe hecabe)



From mid-May to the present day, you may have noticed an increase in the numbers of a small yellow butterfly.

Although this butterfly is around all year, it is normally more abundant in the cooler months, this is especially noticeable if you are growing the larval food plant, Native Coffee Bush, *Breynia oblongifolia*.

The eggs are white in colour and are laid singly on the fresh new growth. However, sometimes there can be ten or more eggs found on the same leaf.

The larvae are light green, with a white line edged in yellow, running down both sides. They are normally found resting along the mid-vein of a leaf, where they are very well camouflaged.





When the larvae are fully grown, about 30mm, they find a suitable position under a branch. Here they will hang upside down, suspended by the tail, with the forward end supported by a central silken girdle.



The pupae, about 20mm long are variable in colour, ranging from light yellow with brown flecks to deep green. The head is pointed and the body is quite narrow.

The adult butterfly has two distinct colour forms, the wet season form and the dry season form.

The male butterfly is about 37mm. across the wingtips and is mainly yellow on both the top and the undersides. The upper forewing has a broad black outer edge with a square yellow notch in the center and the upper hindwing has a narrow black outer edge. The undersides are yellow with light brown spots in the wet season form and yellow with dark brown spots in the dry season form.





The females are very similar to the males. The main differences are; they are slightly larger, being about 40mm. across the wingtips, the yellow upperside of the females is suffused with black scales and the black outer edge on the hindwings is broader than that of the males. The undersides are similar in both sexes.





These butterflies are fairly slow flyers, but can accelerate quite quickly if threatened. The main identifying feature of the Large Grass-yellow is the square notch out of the black on the forewing as described earlier.

Yellow-spotted Jezebel



(Delias nysa nysa)

Another one of the butterflies that are more abundant in winter on the Blackall Ranges, is the "Yellow-spotted Jezebel", formerly called "Nysa Jezebel".

One of the things that make this butterfly so fascinating is that the larvae feed on Mistletoe. "But hang-on a minute, we have read about lots of Mistletoe butterflies in the past haven't we?" We sure have, but the Mistletoe that this butterfly's larvae feed on is very special, and not very frequently found.

In most books it is called "*Korthalsella breviarticulata*", but I have been told it has had a name change. What makes it different to other Mistletoes is that it is shaped like Zygo Cactus, having erect, flat segments. I have personally observed this Mistletoe on only two species of trees, those being *Scolopia braunii*", (Also the larval food plant for the Bordered Rustic), and *Rhodamnia dumicola*.



The eggs of this butterfly are laid in groups of about 15-20 at a time, in small clusters. Upon emerging, the small larvae begin to feed as a group, but as they mature, they then feed as individuals.



The larvae are about 34mm long when fully grown. They are olive-green to brown in colour, with rows of white and yellow spots running along the sides and sparse white hairs, with a black head. When ready to pupate, they will move from the Mistletoe and suspend themselves by the tail and central silken girdle to the upperside of a leaf.





The pupa is about 20mm long and variable in colour. I have seen them range from lime green to dark brown. They have a white lateral line on their sides, a yellow spine on the nose and tail ends, four yellow spines and two black spines and lots of white spots on their back.

The adult butterfly is about 47mm. from wingtip to wingtip. The upperwings are creamy grey with a darker border. The undersides are mainly brown, with the forewings having two rows of white spots on the males and one row on the females.



There is also a large white patch strongly suffused with yellow on both sexes. The hind wings have one row of yellow spots, hence the new common name, Yellow-spotted Jezebel.

This butterfly seems to be found mainly in the higher altitudes, which makes the Blackall Range area ideal for it to colonize. To date, the only colony that I have seen in this area, is at Flaxton, but I will guarantee that there are other isolated colonies yet to be discovered.

In a Nutshell

Whilst researching the many folders and articles Bob kept giving me to make this book, there were many questions I needed to ask him. Here are four of his most poignant and precious responses.

Why did you write these stories?

... because they asked. He said.

You have always been the teacher, has there been anybody who taught you something?

...yes, Marc Russell. He said.

What has he taught you?

...almost everything I know about plants. He said.

One day I asked, where is that blurb you wrote about mistletoe?

... His answer was I DO NOT BLURB!

I had a real giggle with that one.







Common Grass-blue

(Zizina labradus labradus)

Have you ever had the time to just lay on the grass and watch the clouds drift by? Well if you have, you may have noticed small blue butterflies flying around the clover and wondered what they are.

The answer is probably Common Grass-blues (*Zizina labradus labradus*), this is by no means the only small blue butterfly that you will have on your lawn, but it is probably the most common.

The reason for them being so interested in the clover is because this is one of their larval food plants.



The eggs can be found anywhere on their food plants, leaves, stems, flowers or even the seed pods. They are either white or pale blue in colour and shaped like a mandarin.

The larvae can also be found anywhere on the food plant, but for such a common butterfly, not many are seen. When fully grown



they are about 10mm. long, lime green in colour with a darker green stripe running from front to rear on the upper back. This stripe is mildly edged with white and the head is khaki in colour.



The pupae are about 10mm long, lime green, greyish or pinkish in colour with a series of darker green spots running along both sides. A noticeable dark green stripe is also found on the top of the

pupae, near the head. They are always found suspended upside down, supported by the tail and a central silken girdle.

The adult butterflies are about 20mm across the wings in the male and about 23mm across in the female. They are a lilac blue, edged with brown on the upperside and they vary between light grey to light brown with obscure markings on the undersides. The brown edges on the uppersides are broader on the females.

As mentioned earlier, the adult butterflies are seen mainly flying near the ground around patches of their larval food plants. The food plants include: *Cullen tenax, Hardenbergia violacea and Indigofera australis,* which are regularly available from Barung's nursery. The most commonly utilized food plant in most peoples yards though, is Clover.

Sort of makes you think twice about mowing the lawn!



Small Green-banded Blue

(Psychonotis caelius taygetus)

I have often referred to butterflies as being the jewels of the insect world, and one butterfly that certainly fits that description is the Small Green-banded Blue.

If you have ever seen a small blue butterfly flying around an "*Alphitonia excelsa or Alphitonia petriei*", the chances are that it was a Small Green-banded Blue. The reason for this is because these are the plants that the small green banded blue lays their eggs upon and upon which their larvae feed.

The eggs are white, shaped like a mandarine and are usually laid singly on the underside of the leaves of *Alphitonias*.



The larvae feed on leaves and can be found on the undersides of those leaves displaying the irregular holes, typical of their feeding pattern. For such a common butterfly, the larvae are not easily found and a lot of searching is required to turn up just one larva. The colour of



the larvae bears a striking resemblance to the underside of the leaves, being light green with a lighter stripe running down the center of their back, looking not unlike the leaf veins. The perfect camouflage for an animal with so many predators.

The pupae are caramel in colour with darker brown markings. They are also found on the undersides of the leaves and are attached by the tail and a central silken girdle.

The adult male butterfly is about 30mm. from wingtip to wingtip. They are brilliant blue on the upperside with a narrow black edge on its outer wings and a white patch on the hindwings.



The adult female butterfly is slightly larger than the male. The uppersides are black with a white center and a generous profusion of metallic blue-green scales.



The undersides of both sexes are the same, being black with a white center and a narrow band of metallic blue green scales on the forewings and with a slightly broader metallic blue-green lower edge encircling six black spots.

The metallic scales on both the upper and undersides of the adults flash in the sunlight as they fly slowly around with no apparent urgency to go anywhere.



Rayed Blue

(Candalides heathi)



Photo by Martin Purvis

Anyone who has experienced "Wallum country" will understand my hesitation to crawl through it on hands and knees, but unfortunately this was what I was going to have to do to get my next lot of butterfly lifecycle photos.

I don't wish to portray the Wallum as an inhospitable place, quite the contrary, during spring and early summer you cannot find a better display of wildflowers. It just seems that most of the plants that harbor those beautiful

flowers, have prickles on the ends of their leaves or in the case of the Gahnias, razor sharp edges. (For those that don't know, Gahnias are referred to as Swordgrasses, say no more!).

The butterfly that I was researching, is known as the Rayed Blue, (Candalides heathi).

Its eggs, white to light green in colour and small enough to fit four or five on the head of a pin, are laid singly on the leaves, flowers or stems of the food plant, a species of Westringia that is scattered throughout the habitat.

The plant itself is quite insignificant and most times can only be confirmed by the flowers. These I noticed varied from white to a light shade of mauve.

The larvae that emerged from the eggs are so small that extreme care has to be taken not to lose them when changing the food in the containers.

Fortunately, they grew very quickly and it wasn't long before I was able to remove the old food plants, confident that I was not throwing the larvae out as well.

When fully grown, the larvae are approximately 16mm. long, green in colour with four brown spots on the head end, six brown spots running down the center of its body and another two brown spots on the rear end. The outer edges of its body has a serrated

appearance. Looking at the side of the larvae, you will notice that the brown spots are actually on the top of small projections on the body. There is also a fine yellow line running from front to back along the length of the body.





The pupae, approximately 12mm. long range in colour from a golden-beige to black, and are always found suspended by the tail and a central silken girdle, either on the food plant or on an object nearby. The front end of the pupae is rounded whilst the back is very flat, making an interesting geometrical shape.

The butterfly that emerged from the pupae have a wingspan of about 28mm. on the males with that of the females slightly larger.

The colour on the uppersides of the wings is a copper-bronze, the undersides are silver with a single line of black spots running around the outer edge of both the fore and hindwings.

Although the eggs were collected from the wild on the locally native Westringia, I actually raised the larvae on Coastal Westringia, (*Westringia fruiticosa*), as this is planted very commonly in landscape gardening and was readily obtainable without disturbing the natural environment.



Photo by Martin Purvis



Photo by Martin Purvis



Wanderer

(Danaus plexippus)

Known in the newer butterfly books as the Monarch, this is one example of the problems of using "common names" when referring to a butterfly.

I have noticed just recently that the Blue Triangle (*Graphium sarpedon choredon*), has also been called a Wanderer in the past.

An old timber getter from Maleny, Queensland, told me that he and his fellow timber getters used to call the Wanderer, "*The Brown Bunyip*". This one, like most other butterflies, can be known by half a dozen different common names, this all depends on where you come from!

Both males and females of this butterfly are approximately 93mm. across the wingtips. On the upper sides they are the brightest of orange in colour, with prominent black veins and a narrow black band with white spots running around the border. The undersides are very similar to the upper sides, but the colour is more yellow than orange.

Males can be distinguished from females by looking at the hindwings carefully. The males have a "sex spot" on the second vein up from the bottom of the wings, this spot is absent in the females.

The egg of this butterfly is fairly large and is higher than it is wide. It is white to yellow in colour and stands out prominently on the leaves, stems and tips of the plant on which they are laid.

Everybody knows the larvae of this butterfly, as it seems to be the butterfly most commonly raised by kids. When fully grown, the larvae are approximately 60mm. long. They are white with yellow and black bands running around the body.



Sometimes I have found larvae that are a lot darker than normal, these seem to be around winter time and the darker colouration may be to assist in thermal regulation during the winter months.

The pupa of this butterfly is something to behold. It is about 25mm. long, shiny lime green with a glossy black band near the abdomen and gold spots that you would swear were painted on the pupa using 24 carat gold. They are always found hanging upside down, sometimes a fair distance from the food plant. I think this may be a way of escaping the parasites that take a heavy toll on this butterfly.

When I was a kid, I picked up a dead gum tree branch which had lots more smaller branches radiating from it and as the larvae were about to pupate, I would place them on the main branch. They would crawl along the branch until they found a suitable position, then anchor themselves, hang upside down and pupate. In the end I had a miniature Christmas tree, adorned with about fifty of these green and gold baubles. In less than two weeks all of the baubles changed colour to black and orange and emerged almost all at once into perfect adult butterflies.



Unfortunately, the only food plants of this butterfly are pasture weeds and cannot be recommended for use as garden plants, but even Densey Clyne suggests that a corner of a suburban garden can be set aside for this plant, I actually planted both of the most common food plants "*Asclepias curassavica*" and "*Gomphocarpus fruiticosa*" in my garden in Landsborough to gauge the weed potential in a suburban garden situation.

I found the red and yellow flowered *Asclepias* didn't cause much of a problem, whereas the white flowered *Gomphocarpus* spread quite rapidly.

Another upside of this was that the butterflies also seemed to prefer the *Asclepias* - maybe this was why it was kept under control.

Again, I am not recommending the planting of this weed, but if you are contemplating using a corner of your garden as a Wanderer breeding area, make sure it is a corner where the wind-borne seeds cannot escape into pastures.



How to attract butterflies into your garden.



If you are contemplating introducing a few butterfly attracting plants into your garden, please consider including mistletoe.

Previously mistletoe was considered a pest that killed the host tree. You see it is a parasitic plant. When attached to the tree it gets moisture and minerals from it, apart from that it photosynthesises its own food just the same as any other plant. They coexist

beautifully and they both shelter and feed a host of butterfly and moth larvae, beetles and animals such as possums and birds.

Certainly, mistletoes require the right host tree and the tree needs to be mature enough to support them. Some butterflies require the right combination of ant species, mistletoe and plant before they will even lay their eggs. (This information we learned from reading Murdoch De Baar's books, The Misunderstood Mistletoe and Between the Leaves).

As Bob has told in his articles, the list of plants that butterflies utilise is vast. Trees, shrubs, weeds, bushes, vines and mistletoes. So, no matter how big or small your garden is, there will always be some plant you can grow to attract them. Or you can just grow some pretty, appropriate nectar plants to attract and feed passing butterflies.

Not all butterflies live in every area and some will only survive in special habitats. But with a little bit of investigating you can certainly attract many varieties into your own garden. The caterpillars will eat some leaves, but they will also leave a bit of fertiliser behind.

Sometimes you may even get too many caterpillars for just one plant. And that's why you should never put in just one plant. Also, you should never put in a lot of that one plant. If you do you run the risk of attracting parasites, this is called a monoculture, and is bad. Choose instead a few varieties of butterflies, get the appropriate plants, a few of each, and plant them around your existing garden.

If you want information on butterflies, their eggs, larval stages or their pupae or if you want to identify any stage of their lifecycle, look it up on www.bobsbutterflies.com.au In Bob's stories you will find the names of the plants that the caterpillar feeds on. Don't forget to add nectar plants for the adult butterflies. Oh, and just to make it a bit more interesting (or difficult) some butterflies prefer different nectar plants.

We can almost guarantee that if you put the correct plant into your garden, (as long as that butterfly occurs in your area), the butterflies will find it and you can be proud to have established an extension of the corridor they need to multiply and stay out of the growing list of extinct species.
Lesser Wanderer



(Danaus chrysippus petilia)

Another butterfly found on the range that will utilize the plants (weeds) discussed in the previous newsletter, is the Lesser Wanderer.

As the name suggests, it is not as large as the Wanderer, being only 60mm. (approx.) from wingtip to wingtip. The uppersides of the adults are a lighter orange than that of the Wanderer and the veins are not as pronounced. They have a black border, with the forewings sporting a white patch and small white spots on the black tips.



As with the Wanderer, the male Lesser Wanderer also has a small, raised patch of sex scales on the upperside of the hindwings. The undersides of the adults are similar to the uppersides, but the black borders are narrower and contain numerous white spots. The tips of the forewings are dull yellow, with the same white patch and black lower band as the upperside. The hindwings also have a few black spots in the central area.

The eggs, which are a cream-yellow colour and taller than they are wide, rising to a point, are laid singly on the leaves, stems or flowers of the foodplant.

The larvae, which grow to approximately 40mm. long before pupating, are quite attractive. They are white with a series of black bands running around their bodies. The



larger black bands contain lemon-yellow spots, and then there are three narrower black



lines before the next larger band and lemon-yellow spots etc. There are three sets of black, fleshy filaments, which are red toward their bases, one set near the head, one set near the rear end and one set on the fourth large black band with lemon-yellow spots. The set of filaments on the head end are longer than the other two sets. The head of the larvae are white, with a black triangular mark.

The pupae are approximately 16mm. long, pale green-blue or pink and the same shape as the Wanderers pupae. They have the same markings as the Wanderers pupae, with the black and brilliant gold banding and a few other brilliant gold spots on the backend. The easiest way to distinguish the two pupae from each other, is size, the Lesser Wanderers pupae is much smaller

than that of the Wanderer.

The foodplant that I have found they prefer is the Red Milkweed, (Asclepias curassavica).

Orange Palm-dart



(Cephrenes augiades sperthias)

I have never described a butterfly as being a pest, but this one is definitely regarded by some as being in that category.

Have you ever noticed blue faced honeyeaters in the palm trees meticulously stripping the leaves, one string at a time? Chances are they were searching for the larvae of the Orange Palm-dart, or one of the other palm leaf-eating larvae. Another telltale sign of larvae in residence is that the edges of the palm leaves are rolled over and joined with silk. You will also find nearby leaves have been eaten.

The eggs of the Orange Palm-dart are about 1.6mm wide, pale yellow and dome-shaped.



The larvae are about 40-50 mm long, with a translucent, pale, bluish-green body and a cream coloured head with brown markings.



The pupae are about 25-30 mm long, pale green and covered in a white waxy powder. The pupae are attached by the tail and a central silken girdle and are always found in the larval shelter.

The adults are about 40 mm from wingtip to wingtip. The upperside of the male's wings are dark brown with orange markings; the females are darker. The underside of the male's wings is a pale brownish-yellow with lighter markings, whilst that of the female is more a dark purplish-brown with lighter markings.

They are very rapid flyers, hence the common name of "dart", and can often be seen near the palm trees 'darting" from place to place and then landing, only to dart off again at the first sign of an intruder.

They were originally found only in NSW and Qld, but have now spread to other states where palms with larvae or pupae in residence have been transported. They are considered to be a pest because of the damage the larvae can do to the leaves of the palm trees, making them look untidy.

Chequered Swallowtail



(Papilio demoleus sthenelus)

This is a butterfly that I have previously featured in our newsletter, but because of the overwhelming amount of phone calls I have received from our readers, I thought that it warranted another mention.

Congratulations again to all of those people who rang to tell me of their successful plantings of the groundcover, Emu Foot (*Cullen tenax*), and the arrival of one of our migratory butterflies, the Chequered Swallowtail (*Papilio demoleus sthenelus*).



Everyone that I spoke to told me that they had never seen this butterfly on their properties before, let alone being able to observe the butterfly up close as they laid their eggs. The resultant larvae also gave everyone the chance to observe the complete lifecycle, from egg to adult.



The planting of these little "Islands" of food plants, provides these migratory butterflies with a previously unavailable breeding site, ensuring the survival of these magnificent invertebrates. This and many other butterfly food plants are available from Barung Landcares nursery, which will turn your garden into one with living colour.

The adult butterfly is about 73mm. from wingtip to

wingtip. It is grey-black in colour, with a series of light yellow patches and spots. There is an

orange and blue spot on the bottom edges of the hindwings. The undersides of the wings are similar to the uppersides, but appear more yellow, with orange patches fringed in blue. It is a very fast flier, flying at about knee height and only stopping to feed or lay eggs.

As with other Swallowtails, even when this butterfly does stop, its wings remain in constant motion, ready to move off at the slightest sign of danger.





The early instar larvae closely resemble the early instar larvae of the Dainty Swallowtail (*Papilio anactus*), dark brown with orange stripes. But as they get older they change dramatically, until they are finally a yellow-green colour with lots of small orange spots. The pupae are also very variable in colour, ranging from green to pinkish-brown. They are always found in a head up attitude, suspended by the tail and a central silken girdle, normally away from the food plant.



The success of everyone involved is another example of planting the right plants in the right place to achieve the required outcome.



Richmond Birdwing

(Ornithoptera richmondia)





Although I have written about this magnificent invertebrate previously. I feel that it is worth another shot as it is almost the "icon" butterfly for this region.

Previously listed as "threatened", the public response in terms of replanting to restore habitat has been enormous.

It can be found on the wing mainly during the months of September to May, and to see it for the first time is a very memorable experience.

The sight alone is enough to leave a lot of people in awe. It is one of the largest butterflies to be found in Southeast Queensland, with a wingspan of up to 115mm.

The wingspan of the male is approximately 105mm. The male is iridescent green on the upperwings, with a large patch of black on the forewing and up to four black spots on the hindwing.

The underside is slightly more spectacular. Once again the main colour is iridescent green, but the hindwings have an iridescent gold band running around the outer edge. A series of black lines and spots complete the wing patterns. If that isn't enough, the body of this insect is velvety black with a bright red patch on either side. This is contrasted by a bright yellow abdomen!



The female, although not as spectacular in colour, is just as magnificent in flight with a wingspan of approximately 115mm. The wings are brown with cream markings, with a yellowish band on the outer edge of the hindwings on both the upper and undersides. The body is a dark caramel colour with those distinct red patches on the thorax.

Eggs are laid singly on the underside of the leaves, mostly on the new growth.







Larvae are black on emergence, turning to caramel then maroon. Later they turn either a blackish-brown or brownish-gray toward the final instars. They have rows of non-irritating spines, all except four which are the same colour as the body, these four are yellow to white.



Pupae are approximately 40mm. long and are green with yellow patches on the back. They are always found suspended by the tail with a central silken girdle in a head up attitude.

The only foodplants for this butterfly are *Pararistolochia laheyana* and *Pararistolochia praevenosa*. The latter is the main plant in the Maleny area.







The following revised articles were printed in the magazines of the Butterfly & Other Invertebrates Club.



Cephenes Blue

(Pseudodipsas cephenes)

Sept. 1999

"Can you collect seeds of *Sterculia quadrifida* on your way home from work?" was the question I was asked as I left work at Barung Landcare, Maleny, on the afternoon of the 30th September last year.

"No problem," I said and walked out into the fading light.

I didn't know it at the time, but this was to be my first encounter with larvae of the butterfly known as *Pseudodipsas cephenes*, commonly called Cephenes Blue. They were not found on the Sterculia tree I went to collect seeds from, but on a very maligned vine that is growing on the outer fringes of the remnant patch of rainforest.

This vine goes by the name of Smilax australis but most of us would know it better as



Barbed-wire Vine, having had it scour our legs as we walked through the bush.

I had a few things working in my favour this day, the first being the time of day. As I didn't finish work until five pm., it was almost dark before I reached the area where I found the Smilax. This was a major factor, as the larvae of Cephenes feed mainly at night. The next thing in my favour was the fact that Cephenes is one of a fairly large group of butterflies, whose larvae feed in association with ants and I had encountered these ants on previous occasions attending the larvae of another butterfly the Miskins Jewel. The third thing was the feeding pattern of the larvae, unlike the larvae of Miskins Jewel, whose larvae "skeletonize" the leaves of the foodplant, larvae of Cephenes have typical caterpillar feeding actions i.e. eating from the edges in a semi-circular motion. "Skeletonized" is the term given to a leaf that has had its outer laminar removed, leaving only the exposed veins.

The first thing I noticed, was the Barbed-wire Vine, *Smilax australis*. We all know how easy that is to find, especially when not looking!

Out of habit, I then looked for the special ant needed for the butterflies survival *Iridomyrmex gilberti*. I recognize this ant by its size, being slightly larger than the common black ant found in our gardens and also by the abdomen having a slightly grey appearance. If these ants are attending larvae, there will be a steady stream of them walking up and down the vine, with small groups surrounding the butterfly's larvae, following them wherever they go.

"Yes!" both ants and larvae but unfortunately also thousands of mosquitoes. I had to brush them off, my legs were so sore from bites.

On looking back at the vine, after only seconds(!) there were no ants or larvae.

I followed the vine down towards the ground and there, about one metre from where I first found them, were the ants and larvae. Some of the larvae crawling quickly, whilst the smaller ones were being carried by the ants down into the darkness at the base of the rainforest.

I managed to gather up about ten larvae and took them home for observation.

I didn't find the Sterculia until the next day!



Photo by Rob Ham



Photo by Rob Ham

Butterfly Observations at Goodnight Scrub



June 2001

The following are the results of a survey I conducted at "Goodnight Scrub National Park" approx. 25 km west of Hervey Bay, on the 13th March 2001.

We were there between 12 noon and 2.30 pm. The day was slightly overcast and the temperature was about 30deg. C.

The survey was not an official one and, because we were in a National Park, we couldn't keep any specimens however, we kept a visual record. Most of the specimens mentioned were quite common on the day!

N.B. Exotic "Dutchman's Pipe Vine" Aristolochia elegans is present throughout the Park

Adults of the following butterflies were sighted – Acraea andromacha andromacha – Glasswing; Appias paulina ega – Yellow Albatross; Belenois java teutonia – Caper White; *Candalides hyacinthina hycinthina* – Varied Dusky Blue; Candalides margarita -Trident Pencilled Blue; Catopsilia gorgophone gorgophone – Yellow Migrant; *Catopsilia pyranthe crokera* – White Migrant; Catopyrops florinda halys – Speckled Lineblue; *Cepora perimale scyllara* – Caper Gull; Cressida cressida - Clearwing Swallowtail; *Cupha prosope prosope* – Bordered Rustic; Danaus chrysippus petilia – Lesser Wanderer; Danaus plexippus – Monarch; Delias nysa nysa – Yellow-spotted Jezebel; *Euploea core corinna* – Common Crow; Eurema herla – Pink Grass Yellow; *Graphium eurypylus lycaon* – Pale Triangle; *Graphium sarpedon choredon* – Blue *Hypocysta metirius* – Brown Ringlet; Lampides boeticus – Long-tailed Pea-Triangle; Leptotes plinius pseudocassius – Plumbago Blue; Nacuduba berenice berenice blue: Papilio aegeus aegeus – Orchard Swallowtail; Papilio demoleus Large Purple Line-blue; sthenelus – Chequered Swallowtail; Papilio fuscus capaneus – Fuscous Swallowtail; Phaedyma shepherdi shepherdi – White-banded Plane; Psychonotis caelius taygetus – Small Green-banded Blue: *Tirumala hamata hamata* – Blue Tiger; Vanessa itea – Yellow Admiral: *Ypthima arctous arctous* – Dusky Knight; Zizina labradus labradus – Common Grass Blue.

Larvae, pupa and adult of Ogyris zosine zosine

Combined Clubs' Excursion



13th August 2003 Maroochy Bushland Botanic Gardens

The morning temperature was around 15 deg. and there wasn't a cloud in the sky when we all arrived at the Maroochy Gardens. The Queensland Naturalists Club and the Wildlife Preservation Society, Caloundra branch members, were already gathered, discussing the things that we normally discuss before embarking on our days of discoveries.

Starting from the car park, we slowly made our way into the gardens, picking up the track guide from the main entrance as we passed.



One of the first things of interest that we all noticed, was a white flowering form of *Hardenbergia violacea*. Normally producing purple flowers, this is a recognized larval food plant for *Zizina labradus* (Common Grass-blue).

As we moved further into the park, we noticed an *Acacia melanoxylon* festooned with mistletoes. Upon closer inspection, we recognized the majority of the mistletoe to be *Amyema congener*, a mistletoe that is known to support at least seven butterfly life cycles, although on the day, we only found eggs and larvae of *Delias nigrina* (Black Jezebel). Also using this mistletoe as a host is another mistletoe *Viscum articulatum*. This one is not a recognized food plant for butterflies.



Slightly further on we noticed on the ground, the distinct orange flowers of the mistletoe *Dendrophthoe vitellina*. We stood back and looked up into a fairly large eucalypt, and there they were, two quite large examples of the mistletoe in full flower. Whilst looking at the mistletoe, which by the way is known to support at least fifteen butterflies, we noticed a medium sized blue butterfly ovipositing on its leaves. Upon it landing in a suitable position for easy identification, we all agreed that it was *Candalides margarita* (Trident Pencilled-blue).

We were very fortunate on the day to have with us, Andrew Atkins, the person who is considered to be Australia's leading authority on the butterfly family Hesperiidae (Skippers, Flats, Awls and Darts). It wasn't long before we were all amazed at the number of Hesperiidae larvae that were all around us, but that we were completely oblivious to. Those club members that weren't on this excursion, certainly missed out on a very enlightening experience to say the least and our sincere thanks goes out to Andrew. We would be honoured to have you on more of our excursions. I for one wouldn't miss out on any of them.



As we descended into the first gully, we noticed a medium sized *Wilkea macrophylla* supporting two larvae of *Euschemon rafflesia* (Regent Skipper). We searched the gully a little bit longer, looking for the Richmond Birdwing Vine (*Pararistolochia praevenosa*), but unfortunately none were located there.



After descending into the second gully, we could see a lot of the "companion" plants associated with the Birdwing Vine - *Calamus, Flagellaria, Wilkieas* etc. and it wasn't long before we came across some very mature vines, which will no doubt support larvae of the Richmond Birdwing later on this year.

Walking back up the track, it wasn't long before we had returned to our starting point. We had a group lunch, before heading for home.

Speaking for everybody, I think that this was a very interesting and informative trip for anyone with even the slightest interest in nature.

Following is a list of Butterflies (E=Eggs, L=Larvae, P=Pupae, A=Adults) and Mistletoes that were observed on the day.

Scientific Name	Common Name	Stage
Hesperilla picta	Painted Sedge-skipper	L
Hesperilla sarnia	Swift Sedge-skipper	L
Telicota anisodesma	Southern Large Darter	L
Euschemon rafflesia	Regent Skipper	L
Hasora khoda haslia	Narrow-banded Awl	L
Trapezites praxedes	Southern Silver Ochre	L
Catopsilia pomona	Lemon Migrant	А
Appias paulina ega	Yellow Albatross	А
Delias nigrina	Black Jezebel	E, L, A
Melanitis leda bankia	Evening Brown	А
Hypocysta metirius	Brown Ringlet	А
Danaus plexippus	Monarch	А
Candalides margarita	Trident Pencilled-blue	А
Psychonotis caelius	Small Green-banded Blue	А
Philiris innotatus	Purple Moonbeam	Р

Mistletoe

Host

Dendrophthoe vitellina	Eucalyptus sp.
Amyema congener	Acacia melanoxylon
Amyema conspicua	Alphitonia excelsa
Notothixos subaureus	Amyema congener

Bob's reply to a question



2003

Earlier this year (2003) David St. Henry, a Rockhampton school teacher, contacted the Butterfly and Other Invertebrates Club asking for advice regarding the planned Butterfly Habitat Regeneration Project his school was undertaking. "I am an avid amateur 'lep' and just love God's amazing butterflies. I am also a teacher and sometimes host butterfly lessons, in which I bring in some of my specimens, eggs, larvae and pupae for the children. We are currently trying to start a 'habitat reconstruction' project to bring back some of the Graphium species (Triangles and Swordtails) that are not common anymore in Rocky. I have only done the research and informed the class and we have subsequently entered the competition - that is where we are up to. I really enjoyed your creature features and archives. I would like some help with the foodplants." This has now become a wellplanned campaign and I thought it would be of interest to our members and maybe encourage others to undertake a similar venture. First I will give you the advice regarding establishing a Butterfly Garden given to David by Bob Miller.

Hi David, not knowing the school grounds makes it hard to say where you should start your re-vegetation project. If you have a creek flowing through the school with an existing riparian zone, this is an ideal starting point. Failing that, schools being the harsh, dry environments they normally are, pick an area that can be considered "semi-shade," with a moist well-drained soil. Plant into this area and mulch deeply, keeping the mulch at least thirty centimeters from the trunks.

As most of the butterflies targeted have larvae that feed on "rainforest" plants, semi-shade is the next best place to start. If there are no areas of semi-shade, these will then have to be created using "pioneer" species.

The best plants for your area should be recommended by your local landcare group or native plant nurseries.

The pioneers that I normally suggest for our area (S.E. Qld.) are Alphitonia excelsa, Alphitonia petrei, Ehretia acuminata, Acacias, Melicope elleryana, Pipturus argenteus, Castanospermum australe – all larval foodplants, Macaranga tanarius and Commersonia bartramia. These may also be suitable for your area.

As for nectar sources, aim for plants that will flower for as much of the year as possible, both in shade and full sun. Butterflies need to be warm to fly and so will flock to flowers in the sun; they also like to feed whilst ovipositing in the shady areas. Some of the better nectar sources I have found are *Callistemons* (Bottlebrushes), *Melaleucas* (Tea-trees), *Melicopes* (Evodias), *Buckinghamia celsissima* (Ivory-curl flower), *Parsonsia straminia* (Monkey Rope) – all natives, and Lilac Buddleia (Butterfly Bush) and *Asclepias curassavica* – exotics.

The *Callistemons* and the *Melaleucas* can also be made into larval feeding areas by introducing mistletoes into them, *Dendrophthoe vitellina* is the best of these that I have found.

Anyway, following, I will list the Swallowtail butterflies that can be found in your area, and the best larval foodplants that I have found for each.





CRESSIDA CRESSIDA – Aristolochia pubera, Aristolochia tagala GRAPHIUM EURYPYLUS – Melodorum leichhardtii, Annona reticulata GRAPHIUM MACLEAYANUM – Cryptocarya triplinervis, Cinnomomum oliveri GRAPHIUM SARPEDON – Cryptocarya triplinervis, Cryptocarya erythroxylon, Cinnamomum oliveri

PAPILIO AEGEUS – Flindersia australis, Flindersia schottiana, Flindersia bennettii, Flindersia collina, Clausena brevistyla, Citrus australis, Citrus australasica, Citrus limon, Micromelum minutum

PAPILIO ANACTUS – Citrus australasica, Citrus limon PAPILIO DEMOLEUS – Cullen tenax, Cullen patens PAPILIO FUSCUS – Clausena brevistyla, Micromelum minutum, Citrus limon PROTOGRAPHIUM LEOSTHENES – Melodorum leichhardtii





As well as the Swallowtails, why not attract some of the other "Common" butterflies into your re-veg. area? Some examples of these are;

ACRAEA ANDROMACHA – Passiflora aurantia, Passiflora herbertiana, Passiflora suberosa APPIAS PAULINA – Drypetes deplanchei (formerly D. australasica)

BELENOIS JAVA – Capparis arborea CATOPSILIA GORGOPHONE – Senna surattensis CATOPSILIA POMONA – Cassia brewsteri CATOPSILIA PYRANTHE – Senna barclayana CATOPSILIA SCYLLA – Senna surattensis CEPORA PERIMALE – Capparis arborea CUPHA PROSOPE – Scolopia braunii DELIAS ARGENTHONA – Dendrophthoe vitellina DANAUS CHRYSIPPUS AND D. PLEXIPPUS – Cynanchum carnosum DOLESCHALLIA BISALTIDE – Pseuderanthemum variabile ELODINA PARTHIA – Capparis arborea EUPLOEA CORE – Parsonsia straminea, Ficus benjamina EUREMA HECABE – Brevnia oblongifolia HYPOLIMNAS BOLINA – Sida acuta, Sida rhombifolia JUNONIA VILLIDA – Centaurum spicatum, Verbena bonariensis, Goodenia sp. MELANITIS LEDA – Panicum maximum, Imperata cylindrica MYNES GEOFFROYI – Pipturus argenteus PHAEDYMA SHEPHERDI – Aphananthe philippinensis, Ehretia acuminata, Mucuna gigantea, Brachychiton acerifolius, Brachychiton discolor POLYURA SEMPRONIUS (formerly P. PYRRHUS) – Brachychiton acerifolius, Cassia brewsteri, Acacia melanoxylon, Acacia spectabelis TIRUMALA HAMATA – Secamone elliptica VANESSA ITEA – Urtica incisa, Urtica urens VANESSA KERSHAWI – Bracteantha bracteata, Gnapthalium pennsylvanicum

HAPPY PLANTING !









Osmeterium-type projection found on the larvae of the White-banded Plane

(Phaedyma shepherdi)

March 2004

Whilst moving several larvae of *Phaedyma shepherdi* from one set of food plants to another in a breeding facility, I noticed a slightly pungent smell. Upon closer inspection and quite a bit of poking and prodding, I noticed a fleshy protuberance coming and going from the underside of some of the larvae.

Legs7 EHead Cosmeterium

This protuberance, looking not unlike that of a telescope expanding and contracting, was positioned below and towards the front-end of the

larvae and was obviously the source of the scent. Upon inquiries to Michael Braby, CSIRO, Division of Entomology, Canberra, I discovered that this had never before been noticed in any members of the *Nymphalidae* family.

Osmeteria are defence structures and have only previously been found in larvae of *Papilionidae* (i.e. Swallowtails).

President's Note: Bob wrote this note a number of years ago and his discovery was included in Braby's "Butterflies of Australia" on page 552. Congratulations Bob. It is great that Club members are making these significant observations. Keep up the good work.



Bob answers a question



September 2004

I would highly appreciate some information on blue butterflies spotted both at the Sunshine Coast and North Stradbroke Island, as they fly in great numbers towards the ocean. The butterflies are medium sized and of a clear blue colour. I am sorry but I'm not able to give a clearer description. I was simply struck by the number of them heading for the seas. It seemed somewhat suicidal? I would like to know the name of these butterflies, and perhaps some explanation as to why they behave as they do. I would need this for my work (I am a PhD student of indigenous literature).

Yours sincerely, Kikki



Hi Kikki, My name is Bob Miller and I have received an email from Daphne requesting help in identifying some migrating blue butterflies. The only butterfly in Australia that fits your description is the Blue Tiger. These butterflies form massive migrations that seem to head out to sea and do look to be completely blue in colour when in flight. Further information on these butterflies can best be referenced from "Butterflies of Australia" by Michael F. Braby, 2000". The only definite way of identifying a butterfly, if you are not familiar with them, is to actually capture one and then reference the excellent photos in the back of Michael Braby's Volume 1. Or if you have a digital camera, take some photos and email them to me, I am only too happy to help. **Bob**

A Trip to Iron Range National Park



June 2007

Well, it's finally going to happen; after months of contemplation, we finally decided that we were going to Iron Range. June and July seem to be the best months to go there. The wet season should have been over for a few months, so the track in should be nice and dry.

The first day started just after 1 pm. Being a Friday we organized to get off work early and with the car already packed the previous day, we set off from Cairns with the intention of getting as close as possible to Coen, on the Cape York Development Road. Because the road was in the best condition we had ever encountered it, we made it to Coen on the first night, albeit at 8 pm. The hotel was still open and so we organized accommodation for a well-earned rest.

6 am saw us on the road again, heading north until we came across a sign saying "Lockhart River 118km" to the east. About 16km in was the first of the larger crossings, the Wenlock River. This actually turned out to be no problem for the Nissan four-wheel drive we were in, so we continued on full of enthusiasm at the thought that the rest of the track might be just as good. 35km further on, we crossed the Pascoe River just as easily, then more and more creeks.

The road was a dry sandy loam and very pleasant to drive on and so we decided we could stop for a while and stretch the legs. Whilst walking along the side of the road, we noticed a large concentration of Ant Plants (*Myrmecodia*) and because these are the food-plant for the larvae of the Apollo Jewel (*Hypochrysops apollo*) we looked for signs of larval activity. One of the larger *Myrmecodia* had a significant amount of larval damage on the leaves and on closer inspection, we noticed that a flap had been cut on the face of it. We gently moved back the flap and sitting neatly inside was one larva and a pupa of *H. apollo*; just what I needed for perfect photos. After photographing them, we carefully re-arranged the "front door" and moved on, full of expectation as to what we may find next.

It wasn't long before things came crashing back to Earth. We were now getting closer to the rainforest and, as the name implies, these are created by rain, lots and lots of rain! The road has now turned into a swamp, the sandy loam is now mud, not just ordinary mud, but the real deep wet sloppy stuff. After a few minutes of looking at it and thinking that "it can't be too bad, after all these places must have a solid bottom somewhere!" we attacked it. Left, right, up, down for about 2km before we were finally clear of the worst of it.

We are finally entering rainforest, not just ordinary rainforest, but the most luscious, vinefilled rainforest that you will find anywhere, the sort of place you would expect to find Tarzan swinging across the road, or at least his Australian cousin! The trip has now slowed down considerably whilst we take it all in. There, all around us are *Litsea, Commersonia, Alphitonia, Macaranga;* butterfly larval food-plants everywhere. The road is very slippery clay because of the road widening works. 93km in from the Peninsular Road and we have now reached the West Claudie River. I would say that it was a gentle fifty-degree slope of really wet clay before reaching the actual riverbed. The Nissan surprised us with its seemingly effortless way of traversing everything that was put in front of it. The climb back out was no problem and it was only a short 4km before we reached the Claudie River. This one was the easiest of our river crossings. It has a bridge!

We have now come to an intersection, where we turn to the right to go to the ranger's selfregistration booth about a kilometer down the road. We paid our camping fees here and then set off for our camping area. We decided to camp at "Rainforest Campground" because of its relative solitude and its short walk to the toilet facilities at "Cooks Hut Campground." It was now about 10 am Saturday morning, a relatively easy trip in from Coen; how easy it is to forget the bad bits when you are surrounded by such incredible diversity.



We pitched our tents and set up camp in relatively dry conditions, then with camera in hand we set off to get what we came for: as many butterfly lifecycle photos as possible in the short time available. Remembering that it is wintertime and conditions down south are colder, I couldn't be sure how many lifecycles we would find here. So I wiped the sweat from my brow and

investigated the *lycaenid* feeding patterns on a large Leichhardt Tree (*Nauclea orientalis*). It wasn't long before I found the next larva, still positioned in the groove it created on the leaf whilst feeding. It was a larva of the Amethyst Blue (*Hypochrysops elgneri*) one of the beautiful Jewel butterflies found in this area. After getting some great photos, I turned my attention to the bases of the Crows Nest ferns that were growing along the trunks of the tree, in the hope of finding a pupa to photograph; but to no avail. The tree was crawling with the ant *Philidris cordatus*, a small honey-coloured ant that also attends the larvae of *H. apollo, H. theon,* and *H. hippurus*. Anyone that has been associated with these ants will understand what I mean when I say they have an uncanny way of finding places that you can't reach, on one's back, belly and even in your eyes, where they will sting you! I will let these ants calm down for now and come back later to continue my search.

We continued along the road to a slightly more open spot. Here we found that *Litsea breviumbellata* was just re-generating after being devastated by the cyclone from the previous year and were flushed with new growth. We examined the older, lower leaves at first, where we found larval feeding patterns of the Moonbeam butterfly (*Philidris fulgens*)



kurandae). It wasn't long before we found both larvae and pupae of this species, an absolutely beautiful little *lycaenid* butterfly, which I consider to be the most attractive of all of the *Philiris* species. The common name, Bicolour Moonbeam, is an apt description of the upperside wings, being two different shades of blue. I took photos of both the larva and pupa, then next concentrated on the tree's newer, fresher growth where we were told we could find larvae and

pupae of another of the *Philiris* species, the Large Moonbeam (*P. Diana papuana*). The first of these were so hard to find. They are red and furry and sit on the new red-furry growing tips of the Litseas. Once we adjusted our eyes accordingly they were very common, and getting larval and pupal photos was very easy. Down the road another hundred yards was growing *Macaranga involucrata* and after careful searching, we found on it larvae of the Blue Moonbeam (*P. nitens lucina*), but no pupae. Oh well, larval photos will do for now and I will keep an eye on their progress. Not far from this was one of the Sandpaper Figs, I am not sure which one, but I could tell by the feeding patterns that there must be at least one larva present. Sure enough, larvae of the Purple Moonbeam (*P. innotatus*) were hidden on the underside of the leaves. Thus four different *Philiris* were found within one hundred yards of one another!

From here, we decided to look in the opposite direction to get an idea of the plant species that were growing to the south. We stopped at one of the creek crossings to examine the riparian zone, where there were quite a few butterflies flying in the corridor formed by the road through the rainforest. The Orange Albatross (*Appias ada*) were very common, but all were males and this put a damper on my thinking that we might find their lifecycle. This turned out to be true and even though I examined numerous *Crateva religiosa*



plants (their host), none indicated fresh feeding. Other butterflies on the wing that day were: Red-bodied Swallowtails, Small Green-banded Blues, Broad-margined Grass-yellows, Large Grass-yellows, Pale Ceruleans, Bordered Rustics, Black-eyed Planes, Yellow-eyed Planes, Hamadryads, Bush-browns and even a female Birdwing. We returned to the camp at about 4.30 pm for a well-earned rest and food, whilst contemplating what tomorrow might bring.

We awoke just after daylight on Sunday morning to the sound of the Eclectus Parrots in the trees above our tents. What magnificent birds. The plan for today was to make our way to a place called "The Knoll" as this is supposed to be one of the best places to go to observe the butterflies of Iron Range. Armed with a G.P.S. unit, we first found the bollards marking the track, left the car there and started trekking off into the bush. The track was degraded but far worse than we expected with large trees blown down across the track, bringing the "Wait-a-While" vine down with them. Unfortunately, the trees were dead, but the Wait-a-While was thriving in its new environment, making the track almost impassable. Expecting the worst from the start, I was, fortunately, wearing jeans, which offered some protection for my legs, but the rest of me was cut to shreds! Oh, did I also mention the Green Tree Ants? Whilst trying to untangle myself from the Wait-a-While, these ants took full advantage of the situation. I had no idea they ate humans!

After two hours or so, we managed to do the hundred yards to Phillip Hill, where we stop to have a breather. The track ahead looks clear from here. Who am I trying to kid; around the corner it all starts again! If you have never seen the Wait-a-While up there, you have no idea of the size of the thorns (I reckon that's where the crocodiles get their teeth from!). Maybe I'm exaggerating slightly, but when you have to crawl through Wait-a-While that is growing up to 50 or 60 feet above the ground, from ground level, it certainly feels that bad! Well, we gave it a good shot. It was now 1.30 pm and with no sign of being able to go further and with the daunting problem of having to re-trace our tracks back through the Wait-a-While, we gave up and turned around.

No lifecycles were found today, but on the top of the hill there were lots of adult Lurchers,



Birdwings, Ulysses, Blue Moonbeams, Rustics, Bluebanded Eggflies, Blue Argus, Meadow Argus, Greenspotted Triangles, Blue Triangles, Pied Flats, Black-eyed Planes, Yellow-eyed Planes and Pale and Dark Ciliate Blues.

Monday morning found us all sore and sorry from the previous day's escapades, but we decided to walk the road south of the campground to the "T" intersection and observe the vegetation along the way. It was only

about 2 km from the campground where we found our first lifecycles. This time they were of the Green-banded Jewel (*Hypochrysops theon johnsonii*) both larvae and pupae on a fern called *Drynaria quercifolia* and guess what? They are also attended by the small brown stinging ants *Philidris cordatus* that were attending *H. elgneri*. I tried to ignore all the stings while I secured the photographs; not an easy task I must say. Apart from *H. theon* and all of the other species already photographed, we found no other early stages. The adults seen were: Orange Aeroplane, Black-eyed Plane, Yellow-eyed Plane, Dusky Knight, Orange Bushbrown and even a Swamp Tiger. After lunch, we decided to walk in the opposite direction for as far as we could. Along the way we found more larvae of *H. theon johnsonii*, larvae and adults of the Copper Jewel (*H. apelles*), adults of Cedar Bush-browns, Red-bodied Swallowtails, Red-banded Jezebels and the Orange Albatross.

Tuesday, we decided that we would go to Portland Road and Chilli Beach, so that we could cover a more open coastal situation. Portland Road is a quaint little coastal village along the east coast, the sort of place we would all love to disappear to. Here we saw adults of



Common Grass-blues, Caper Gulls and Pale Ciliate-blues. We then moved on to Chilli Beach, which was extremely windswept. Upon entering a stand of Melaleucas, we saw adults of Purple and Small Brown Crows. We then proceeded on to Packers Creek where we observed adults of Orange Albatross and Pale Pea-blue. Further on, near Gordon Creek crossing #3, just before entering the rainforest again, we pulled over for a walk along the transitional zone. Here adults of *H. apelles* were flying quite commonly and adult photos were easily acquired. Also it was here that I noticed the feeding patterns of the Paradise Jewel (*H. hippurus*) on another small fern, *Pyrrhosia lanceolata*. Upon closer inspection we noticed that the same honey-coloured ant was very prolific, but we could see no larvae anywhere. Then, further down the tree, we found a pupa hanging out of a hole that was obviously created by the larva, in the moss around the fern. This was one of the highlights of the trip, as not many people have observed this butterfly's lifecycle, let alone been lucky enough to photograph it.

We returned to the car and drove to the site where we had previously seen the larvae of the Blue Moonbeam and after some searching found where it had pupated (very close to where it had been feeding). After taking photos of the *Philiris*, we then moved on to the Leichhardt Tree, which had been harbouring the larvae of the Amethyst Jewel, to see if I could get photos of the pupae, but again to no avail. I had all but given up when I noticed some dead, rotting branches, containing borer holes, on the ground. One at a time, I carefully opened up the borer holes, until suddenly I was again covered by a seething mass of those small honey-coloured ants. In the hollow that they came from, were both a mature larva and pupa of the Jewel. Except for the egg stages, lifecycle photos were now complete,

so I carefully positioned the hollow branches securely in the *Nauclea* where the ants and butterflies should have been able to survive. After lunch we drove to West Claudie River and then on to the Claudie River where the Eclectus Parrot lives in the "Smugglers Tree". No new lifecycles were observed and by now the rain was becoming very monotonous. The only butterflies we saw flying were the Palmfly (two males and one female) and the Pale Cerulean. Wet and tired we returned to camp where we had tea and discussed the possibilities of being rained in for an extended period. It was then that we decided to leave first thing in the morning.



Wednesday morning was still raining and everything was saturated by the time we packed up. But spirits were still high; after all none of us could think of a place where we would rather be stuck. The track out actually didn't seem to be as bad as it was on the way in, the only hiccup being when we were on the exiting side of the West Claudie River and the Nissan stalled in the creek, with that fifty degree wet clay slope in front of us. But just as it did on the way in, the Nissan crawled out of the creek, not missing a beat.

The afternoon saw us just on the northern side of Coen where we re-pitched our wet tents and hung out our sleeping bags to dry in the last rays of sunshine. We decided to walk along a creek bed whilst waiting for the sun to go down and disturbed some resting adults of Nobrand Crows, about a dozen in all and also noticed a small *lycaenid* flying fast around the tree tops. When it finally landed within view, we could see that it was the adult of the Cyane Jewel (*Hypochrysops cyane*), another butterfly that I had not taken lifecycle photos of, so the hunt was on in the failing light.

First things first. We checked the hostplant list for this species in the Michael F. Braby handbook, "The Complete Field Guide to Butterflies of Australia" and then returned to the creek bed. Sure enough, within an hour I had both larvae and pupae photographed. At that site they were using both Acacias and a *Lophostemon* sp. as hostplants.

All up, we managed to get lifecycle photographs of eight different *lycaenid* butterfly species, which we put down to a very successful trip. But then, how could one go to an area, which contains approximately 60% of Australia's butterfly fauna and not be successful?

Review of the new C.D.



produced by K.L. Dunn and L.E. Dunn.

December 2007

Dunn, K.L.& L.E. 2006, *Review of Australian butterflies – 1991: Annotated version*. (CD-ROM). Melbourne, Australia: Published by the authors. Aus \$45 (*Includes postage and handling.*) Available from <u>www.Calodema.com</u> Total pages I-XII and 1-898pp. Total number of figures and tables is 964.

For those of you who do not know me, my name is Bob Miller and I have been studying butterflies and their lifecycles as an amateur for well over forty years now. I am currently in the process of recording butterfly lifecycles on a CD. I have been asked if I would do a review of this new annotated version on CD of the original works by Dunn K.L. and L.E. 1991- *Review of Australian Butterflies: Distribution, Life History and Taxonomy*. Parts1-4, Melbourne, Australia: Published by the authors.

I must admit from the beginning that I was not familiar with the original works by Dunn and Dunn until I was sent the annotated version to review. I also must say that if I had possession of those volumes from the start, my quest for searching out butterfly lifecycles could have been much easier. For others who did not know about the project, the Dunns started their database back in 1983. This was soon after microcomputers first entered Australian households and they wrote their own software to store and map the information. They gathered this information from several museums during their spare time and many private collectors later sent them records. Within a few years, their database had grown to nearly 89,000 records, which they used to write the original volumes.

Each species (and some subspecies) have their own distributional map with each record marked with a spot, rather than the usual way of filling in the whole area of distribution as seen in many other publications. This is definitely a better way to pinpoint the occurrence of species and subspecies a lot more effectively. But enough of that, the original works have already proven themselves as a very useful tool to anyone interested in any aspect of entomology, this version on CD is now a new computer age version of the original works with many annotations to bring it up to date with the currently available information.

Being in CD-ROM format makes it easily accessible to entomologists in the field, many of whom already use laptops to download photographs or record data. Because it is in PDF form, a simple click on the search icon located in the upper toolbar will enable you to find everything related to your search quickly. No more flicking through pages trying to find the required information!

For those of you who want a CD so that you can access a lot of specimen photos, this is not the one for you, as there are only two photos of specimens in the whole work. In my opinion, this work is a must for anyone with an interest in entomology who owns a computer.



Further notes on "The osmeterium-type structure found on the larva of *Phaedyma shepherdi*"

September 2008

Those of you who have been long-time members of the Butterfly and Other Invertebrates Club will probably remember an article I submitted in Newsletter # 32, March 2004. I have included the same photograph with this article to refresh everyone's memory.

Since that time, I have also found the same structure on the larva of *Polyura sempronius,* but so far have not managed to photograph it.



An American colleague has since been in contact with me and it turns out that the gland has a name! It is called an adenosma and to the best of his knowledge, we are the first to have photographed it.



Head of Elymnias larva - undisturbed

Head of Elymnias larva showing colouration

Whilst looking under the microscope at a larva of *Elymnias agondas australiana*, I have seen another anomaly that could serve as a defence mechanism. Instead of being a retractable gland under the larva, as is the case with both the *Phaedyma* and *Polyura*, the larva of *Elymnias* has a bright pink colouration under the head, which is exposed when the larva is threatened. I have attached a photograph of this as well, showing the larva in its normal resting position and then with the pink showing as the larva felt threatened. This may just be a flash of colour to deter predators, as a smell was not detected.



Under the Microscope

Hypochrysops delicia duaringae

December 2008

Whilst trying to photograph the egg of *Hypochrysops delicia duaringae*, I was fortunate enough to capture images of a larva hatching. These photos show the progression from complete egg to the larva eating a hole through the micropyle on the top of the egg, crawling out and then posing for a photo.



Complete egg of

Hypochrysops delicia duaringae

Larvae beginning to hatch



Larva emerging from egg



First instar larva of Hypochrysops delicia duaringae



Description of the egg of Jalmenus inous inous (Hewitson)

(lepidoptera: lycaenidae)

March 2009

A friend of mine made a trip to Western Australia late in 2008 to take photographs of any butterflies that were on the wing. During the trip he noticed a female *Jalmenus inous inous* ovipositing on a low growing Acacia. Knowing that I am trying to photograph as many butterfly eggs as possible, he collected some of the eggs and sent them to me in Cairns. When they arrived, I noticed that the eggs have not been described in any books, so I compiled the following text.

Egg: Diameter 0.50 mm; Bluish white; Mandarin shaped with a course reticulated pattern of mostly square ridges; single spines arise from where these ridges intersect; the spines around the sunken micropyle face inwards; eggs are laid in clusters in crevices and against irregularities on the foodplant.



Jalmenus inous inous egg close-up



Egg side view



Cluster of eggs

Leaf-infesting Nematodes



September 2009

My neighbour is an avid orchid grower who puts on incredible displays in shopping centers all over Cairns. *Hypolycaena danis turneri* (The Orchid Flash) love his collection of tasty orchids!

Unfortunately one of his orchids looked like it was facing certain death. Its leaves were rotting and falling off, leaving a slimy mess in the pot, so he brought it over to me to see if I could help.



Hypolycaena danis turneri

I immediately took the pot into my study and placed

the orchid under the Butterfly and Other Invertebrates Club microscope. After a bit of searching and dismantling of the orchid, I noticed small white worm-like critters, fairly abundant around the base of the dead leaves, so I took a few photos of these for a positive identification.

I informed the next door neighbour that it looked like he had an infestation of Nematodes and emailed the photos to him. He quickly sent these off to be identified.

The reply we received back from Tony Pattison, a Nematologist from South Johnstone, stated that they are indeed Nematodes. They are a species of *Aphelenchoides*, leaf-infesting nematodes, which are common in Australia on a wide range of plants.



Nematode on orchid

Close-up of Nematode

Merging photos to improve "Depth of Field"



September 2009

Upon taking multiple photos of butterfly eggs using the B.O.I.C. microscope camera setup, we noticed that they all come out with a very bad depth of field, making them unusable.

Example of trying to take a photo of a bunch of Varied Hairstreak (Jalmenus inous) eggs:



<u>Before</u>: You notice that only a small proportion of the eggs are in focus. <u>After</u>: With the help of a program called Helicon Focus we can merge a series of badly focused pictures to create one crystal clear image of essentially anything you wish.

They have finally arrived!



June 2017

One of the more common questions I was being asked by butterfly enthusiasts when they visited me in Cairns was "Do you think The Tawny Coster (*Acraea terpsicore*) will ever get to Cairns and if so, when do you think it will happen?"

Well, we don't have to guess any longer. I saw my first one (a female) in the front yard on the March 27th. The next one I saw was also a female, at the same place, but on the next day.

This one I captured and put her in my breeding cage, in the hope she would lay some eggs which I could then raise to adulthood and get the life-cycle photos. Having captured this one, I then needed to find the foodplant for her to lay on. I drove to near the Cairns airport, where there is a lot of different vegetation. On the way there, they were hitting the car in numbers, only exceeded by those of the Caper Whites and Blue Tigers that had migrated earlier.

After getting out of the car, I noticed the adults were feeding on low-growing weed flowers and so picked up another four with just my fingers, all females.

I spent a good couple of hours looking for one of the right foodplants for them to lay on but without success. That afternoon, I went to the local boat ramp, where I was successful. Whilst there, a female *A. terpsicore* landed on the *Passiflora* beside me and commenced laying eggs. She ended up laying seventy six of them, taking about twenty minutes to complete the task.

These all hatched on the night of April 2nd. They then commenced eating and eating and eating, typical of *Acraea* larvae. They grew to full size and pupated on anything that was horizontal on April 16th, eventually emerging as adults on April 23rd.

Apart from the eggs that the *A. terpsicore* layed, the local *A. andromacha* were also laying eggs on the same plants. I found another five batches of eggs and wondered how they were all going to survive on the foodplants available.

That question was answered when they were about half grown. The Green ants found them and took every last one! Without that happening, I'm sure they would have run out of foodplant and died anyway.

The last report I have heard was that they have already passed through Kelso in Townsville, still heading South.

What will happen if they get down past the southern limit of the Green ants?



1 & 2 Acraea terpiscore eggs
3 & 4 A. terpiscore larva
5 & 6 A. terpiscore pupa
7 & 8 A. terpiscore female
9 & 10 A. terpiscore male

The following papers were published in the scientific journal The Australian Entomologist.

Australian Entomologist, 2009, 36 (2) Page 96

AN EXAMPLE OF INTERGENERIC PAIRING IN THE DANAINAE

(LEPIDOPTERA: NYMPHALIDAE)

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Abstract

An intergeneric pairing between Danaus plexippus (Linnaeus) and Tirumala hamata (W.S. Macleay) is reported and illustrated from southeastern Queensland.

Observation

In late March 2005. while walking through the Great Sandy National Park (Cooloola section) in southeastern Queensland, we observed and photographed (Fig. 1) the danaine butterflies *Danaus plexippus* (Linnaeus) and *Tirumala hamata* (W.S. Macleay) *in copula*. *D. plexippus* males are known to mate aggressively and force copulation. The specimens were not collected as a photograph was considered a higher priority; hence there was no opportunity to determine whether any progeny might have resulted from this intergeneric pairing.



Fig. 1. *Danaus plexippus* [male] and *Tirumala hamata* [presumed female] *in copula* at Cooloola, Queensland.

Australian Entomologist, 2008, 35 (3): Pages 89-92

THE LIFE HISTORY OF IONOLYCE HELICON HYLLUS

(WATERHOUSE & LYELL) (LEPIDOPTERA: LYCAENIDAE)

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Abstract

The immature stages of *Ionolyce helicon hyllus* (Waterhouse & Lyell) are described from eggs collected at Mossman and Cairns in northern Queensland. The larval food plant is *Allophylus cobbe* (Sapindaceae). Eggs are laid singly on flower buds or stems and larvae feed openly on flower buds during the day.

Introduction

Ionolyce helicon hyllus (Waterhouse & Lyell) has a patchy distribution along the eastern coast of Queensland, occurring from Thursday Island in Torres Strait to Mt Etna, 25 km north of Rockhampton (Braby 2000). The early stages have not been recorded previously and this account is of larvae raised from eggs collected at Mossman and Edmonton (near Cairns) in northern Queensland.

Adults were initially collected along the South Mossman River, by John Landy, between 1992 and 2007 but they were found more commonly in early 2007. In December 2007. the present authors went to the South Mossman River site and observed oviposition on *Allophylus cobbe* (L.) Blume (Sapindaceae). All adult specimens collected, except one, were female.

Eggs were collected between late December 2007 and early January 2008, glued singly between two flower buds or, less often, attached to the' flower stem. The immature stages were then raised at the home of one of us (RSM) in Cairns.

Life history

Food plant. Allophylus cobbe (L.) Blume (Sapindaceae).

Egg (Fig. 3). Diameter 0.40 mm; light yellow; shape similar to that of a mandarin orange and with a sunken micropyle; surface with a pattern of low intersecting ridges and with a small blunt projection arising from each of these intersections.

First instar larva. Length 0.5 mm; head capsule a transparent caramel-brown with prominent black eye-like spots; body elongate, lemon-yellow with numerous brown spots and very long, finely-branched white hairs arranged in dorsal pairs; the two anterior pairs point anteriorly and the remaining ten pairs point posteriorly; a row of shorter hairs occurs laterally, just above the legs.

Second instar larva. Length 1 mm; as for first instar except each segment slightly humped dorsally.

Third instar larva. Length 2 mm; head capsule a transparent caramel-brown with distinct black eye-like spots; lemon-yellow; each segment slightly humped dorsally; less hairy than other instars, with hairs restricted to two dorsal rows and one lateral row just above the legs; body covered with cream coloured, stellate secondary setae; a cream lateral line just above the legs.

Fourth instar larva. Length 3 mm; similar to third instar; head capsule a transparent caramel-brown with distinct black eye-like spots; lemon-lime in colour with cream coloured patches dorsolaterally; cream lateral line just above the legs; hairs very short and restricted to two dorsal rows and one lateral row just above the legs; body still covered with cream coloured stellate secondary setae.

Fifth (final) instar larva (Figs 5-6). Length 7 mm; main colour pale green with cream patches; cream coloured, crescent-shaped markings present dorsolaterally, forming anteriorly facing '3'-shaped markings. As the larva matures, maroon appears around these cream markings. Closer to pupation the larva fades and the centre of the stellate secondary setae now protrudes above the branched top.

Pupa (Figs 7-8). Length 7 mm; caramel-brown in colour; heavily mottled with dark brown spots and with a narrow, dark brown dorsal line on abdomen.
Observations

Allophylus cobbe was the food plant at both the Mossman and Edmonton collection sites. This plant is fairly common at both sites, growing along the outer edge of mangroves. Adult females of *I. helicon hyllus* land on the flower stem and drag their abdomens among the flower buds until the tip of the stem is reached, where they turn around and walk back along the stem, still dragging their abdomens on the buds (Fig. 1). Eggs are deposited on one of the flower buds, which in turn glues another flower bud to the upper side of the egg (Fig. 2). This hides the egg from view and they can only be seen with the help of a hand lens.

On hatching, larvae eat a hole through the top of the eggshells, crawl out and move away, leaving the empty eggshells virtually intact (Fig. 4).

There are five larval instars and all feed openly throughout the day. Later instar larvae chew a hole in the flower buds and insert their heads to consume the contents, while remaining on the top of the bud. When the contents are consumed the larvae move along the stem, progressively consuming the contents of successive buds.

Larvae remained on the food plant throughout their development, leaving only to pupate. Final instar larvae dropped to the bottom of the container if disturbed, then returned to the buds and resumed feeding when the disturbance ceased.



Figs 1-8. *Ionolyce helicon hyllus.* (1) female searching for a suitable oviposition site; (2) female depositing egg; (3) egg; (4) egg after hatching; (5) final instar larva, dorsal view; (6) final instar larva, lateral view; (7) pupa, dorsal view; (8) pupa, lateral view.

Photos of larvae and pupae are all head to the right.

Pupation was not observed in the wild, but in captivity final instar larvae moved off the plant and pupated either loosely in the debris in the rearing container or attached to debris by the cremaster only.

The duration of the immature stages was as follows: egg – 3 days; first instar larva – 4 days; second instar larva – 3 days; third instar larva – 3 days; fourth instar larva – 5 days; fifth (final) instar larva – 7 days: pupa – 7 days.

Other food plants that have been observed previously are: Matchbox bean, *Entada phaseoloides* (L.) Merr (Mimosaceae) at Cooktown (P. Samson, pers. comm.) and two unidentified plants on Thursday Island and at Iron Range (S. Johnson, pers. comm.).

Further racemes of *Allophylus cobbe* collected to feed the original larvae were examined under a microscope and, as a result, many eggs and larvae of *Megisba strongyle nigra* (Miskin) were also located and isolated. The life history of that species was documented by Lambkin and Samson (1989).

Acknowledgements

We thank John Landy for his excellent directions as to where to find *Ionolyce helicon hyllus* at Mossman, Marc Russel (Cooloola Shire Council) and Dr W.J.F. McDonald (Queensland Herbarium) for assistance in identifying the food plant, Stephen McKenna (Queensland Parks and Wildlife Service, Atherton) for a positive identification of the food plant and D.J. Miller, Dr S.J. Johnson and Dr P.R. Samson for their assistance with the compilation of this paper.

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Testimonials

Bob Miller is enthusiastic, knowledgeable and generous and, in my opinion, without him there would have been no Butterfly and Other Invertebrates Club.

Bob knows much more about butterflies than I do. I once asked him what the host plant for the Wonder Brown was. The reference books only listed "grasses". He told me which exact species of grass, gave me some to grow in my garden, told me he had personally raised caterpillars on it and told me where I could reliably go if I wanted to see the butterfly for myself. Wow!

He is generous. I once mentioned that it would be useful to have a display of real butterflies to take on my stalls and talks. Graham Forbes built two cases of a special design that displayed both sides of the butterflies and were easy to transport. Bob filled the cases with local butterflies and these were donated to the club. He didn't get to see the faces of wonder and appreciation of the people who viewed his butterflies but I did.

He was generous to me personally as well. I had expressed an interest in attracting the Moonlight Jewel to breed in my garden. I was growing several wattles which were the host plants for the caterpillars but had no idea what the ants that tended the caterpillars looked like. Bob gave me a colony of the ants which were living in a dead branch on one of the wattles in his back yard.

There is a difference between someone who likes to see butterflies flying around in their garden and someone who wants to also understand how they live in their world. Bob is a true enthusiast and is always finding out new things about butterflies. It was always a pleasure to be on an excursion with him because he would see something fascinating that I had missed. He noticed that the two species of butterflies that utilized Smilax as a host did not compete but complemented each other. The caterpillars of one fed only on the freshest young leaves and the other on the old tough leaves.

He cares deeply about butterflies and tried to save the Laced Fritillary from extinction. He located and took me to visit the last known breeding sites of this butterfly. The information he provided was crucial when the club wrote an interim recovery plan. However we were thwarted in our efforts by venal politicians and academics.

There are people who run around in circles or who chase balls and are called champions. The real champions are people who make a real difference and make the world a better place. Bob certainly makes a difference. *He* is a champion.

Frank Jordan

Dear Bob and Judy,

You are often in my thoughts, special people are like that, people who impact your life, who change your life in special ways, encouragers, motivators, who plant seeds in your mind that grow into a dream

Do you remember the day Rob and Jan drove a group of us to your place at Landsborough? I was eager to be back there where I had grown up, a beautiful place with abundant wildlife, when, even as a child I was fascinated by God's creatures and loved to explore the bush on our property, perched in the hills above the township.

From memory, we drove to a spot on the Stanley River where birdwing vines grew in abundance, a great curtain of bush vines, a perfect backdrop for a pair of beautiful birdwing butterflies, oblivious to our presence, as they courted. Shafts of sunlight filtered through the dense growth, the rays illuminating the iridescence of the male's wings. I fell in love ... and a dream was born, a dream to have a colony of these delightful creatures here, and so the vine planting began when I returned home, and continues.

Along the way, you took us to Arthur and Narelle's property where we were refreshed with cool drinks and fruit as it was a really hot day. At Powter's, we were entranced by more birdwings and a number of other butterflies as well.

Arthur loaned me some of his birdwing photos and these were used as references for my paintings. From there we went to June Wimberley's to admire her great garden. It was there we saw her gorgeous bed of Sturt Desert Pea and her many other host plants. June and I still keep in touch as a lifelong friendship began on that trip.

Returning to your place, you gave me some stinging nettles, plants I still have to this day. So I think of you when the Yellow Admiral's come visiting. We saw a curious thing recently while having a cuppa on the front porch. The nettles were "smoking". The pollen grains were exploding! We've since seen the Pipturus doing the same thing, as the sun warmed up the leaves. Not as spectacular as seeing the Bunya Pines doing it, though!

I loved it when you came visiting here once, I think it may have been with John M., and you pointed out various host plants I wasn't aware of and showed me the chewings on the Smilax, some made by moths, others by butterflies. Thank you for sharing your knowledge and time with us; in the early days, I often wished you were closer so I could pick your brains. I knew absolutely nothing about butterflies in those days. It was really scary drawing to illustrate your articles as very little literature was available then. Daphne and I had a standing joke that because we knew so little we hoped we wouldn't stuff up in the Newsletter, but if we did we hoped it would be the other one who did.

Do you remember the dung beetle I drew for such an occasion? The caption read "I'm really in the poo!"? I recall it accompanied one such blunder I made.

You can be really proud of the contribution you are still making Bob. Your legacy will live on as your life continues to live on in each of us who are privileged to know you.

P.S. The dream lives on what a wonderful idea you had, Judy, it's been great to have the opportunity to share some of my vivid memories of our times together with you both.

God bless you and yours for you are highly favoured, greatly blessed and deeply loved.

Lois

Bob has been a member of the Butterfly and Other Invertebrates Club since its beginnings in 1994.

During my 12 years as the Club's first President and as its co-founder, he was supportive of me, personally. His quiet, patient, generous, sharing persona has earned him many friends.

On club excursions I remember Bob showing me a stand of *Sida rhombifolia* in the shade that was loaded with Varied Eggfly caterpillars, taking me to a spot where there was a stand of *Smilax* at Landsborough with the species of ants present that support Dark Forest Blues, and having his kitchen door lintel and side frame covered with a row of Blue Triangle pupae, describing how they all would colour up and emerge just before it next rained.

His knowledge of butterflies is invaluable.

Helen Schwencke 2018

The Butterfly Whisperer

It's the end of December 2008 and Bob Miller has taken me to Lake Placid to look for *Bindahara phocides*, also known as the Sword-tailed Flash or the Australian Plane. It's a small butterfly, not often seen on the wing, and the improbably long tails on its hind wings make it unique amongst the Australian Lycaenids. I'd been hoping to see this species on every trip I'd made to Cairns, without any luck, and it was the number one target on my hit list for this particular trip.

The Lake Placid location was nothing special to look at, since it was just a roadside. We walked along for a short distance before Bob stopped, pointed out a particular plant and told me that it was the foodplant for *phocides*, saying I should wait there for a while as there was a good chance one would show up. I must admit I was sceptical. I had only been photographing butterflies for a few years, but it was long enough to know that the best way to guarantee a no-show is to tell somebody else you can find a particular butterfly for them. After about two minutes a male *phocides* – a perfect specimen no less – flew down and landed on the exact plant Bob had pointed out. I took a couple of photos, but he was a bit far away and the angle wasn't great. I was reluctant to get closer, as the ground between me and the butterfly was a tangle of intertwined vegetation, and there was no way to get close without disturbing the plant he'd settled on. "You'll be OK – he'll just sit there" said Bob. And he was right again – my clumsy approach shook the butterfly's perch but he just sat there while I got into a position to get good shots. And just like that, within 5 minutes of arriving, I had my photos. The butterfly had done exactly what Bob had told it to do. Over the years I've had many memorable moments when out butterflying with Bob. Later that same day we were at the edge of a field near Mossman, getting photos of *lonolyce helicon* in bright sunshine whilst a storm brought heavy rain at the other end of the field. There was the time at Kuranda when it was pouring with rain so we were stood in the rainforest, sheltering under an umbrella, while I took shots of a Regent Skipper larva Bob had just found. That was the first time, but certainly not the last, that Bob accused me of being a Rain God, having noticed the way clouds and rainfall follow me around wherever I go.

Then there was my 4-day visit in April 2011. Bob and I went butterflying together on the first two days, and I got one new species each day. Bob had other commitments on the third day, so I went out alone and got photos of two more species. I think it's fair to say that Bob had a determined look in his eye the next day, when he took me to three sites and I got photos of lots of freshly-emerged butterflies including six new species.

Bob has always been very generous with his time – and his beer – and without his expertise I would have missed out on seeing many lovely butterflies. I'm afraid his attempts to teach me about foodplants haven't been very successful, but that's the fault of the student not the teacher. All those vines still look the same to me – sorry Bob. We've seen a lot of butterflies together, but the time that stands out the most for me will always be the five minutes at Lake Placid, when Bob was The Butterfly Whisperer.

Martin Purvis - www.purvision.com/butterflies

Resources

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In Loving Memory