NATURA Far South Coast

Observing and understanding the flora and fauna of Bermagui/Wallaga Lake's forests and shorelines

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September has, for me, been a month of two very distinct and different halves. The first half of the month was very quiet with only a handful of observations recorded. I ***had*** hoped that the first month of spring would see a marked increase in invertebrate activity but, despite regular and often lengthy field trips out into the local forests, very few insects or spiders were to be found. I did however note that, like our gardens, the local forests and reserves were feeling the effects of the ongoing lack of precipitation with very little in flower and many plants struggling to hang on in until some rain arrived. Even the ever-hardy pittosporums looked wilted and jaded …. a bad sign indeed. I also noted that the Hop Goodenias (*Goodenia ovata*) seemed to be particularly affected with many of their dense stands suffering substantial dieback. These goodenia stands had, in previous, wetter years, proved a fertile hunting ground for my camera and I, but this was definitely not the case this month with only the occasional European Honey Bee observed visiting the very few flowers that were present on the plants. Perhaps the Hop Goodenia's failure to thrive this year, and the overall lack of floral bloom across the board, is a contributing factor in the lack of invertebrate activity, especially of pollen-feeding species. Shown at right is a **Hop Goodenia (*Goodenia ovata*)** in happier, wetter times. This endemic shrub grows to a height of 2 metres and, in suitable conditions, can grow in dense stands. It is particularly prolific in disturbed areas such as beside roadsides or along forest trails. Although peaking between October and March flowering occurs throughout the year, with pollination carried out by native bees, honey bees, hover flies and other insects. Hop Goodenia is killed by bushfire but regenerates from seeds afterwards and quickly re-establishes itself. This information gives me hope that the current dieback of this plant is only a temporary setback and that this ecologically important plant will once again thrive when favourable conditions (i.e. rain) return.

Adding to the difficulties in the first half of September was the demise of my old but trusty and hard-working camera which developed a glitch …. and, apparently, a mind of its own …. that intermittently did not allow the camera to turn on. Since so much of what I do is dependent on visual documentation such unreliability was not acceptable so a new camera was purchased. Thankfully, this replacement arrived within 5 days of its online purchase and only a few observations were missed.

The second half of the month was an entirely different matter. With my new camera now in hand I continued to visit both familiar and new locales in my never-ending quest for bug life. These excursions proved largely, and disappointingly, unproductive … possibly a good thing as I was still grappling with the workings of my new piece of kit. I did, however, observe the occasional dragonfly, damselfly and butterfly as well as 2 beetle species (information on both beetles are below in the appropriately named "BEETLES" section). I'll share with you here my journal entry of Sept. 25th written after I had returned from a walk through forest surrounding the Bermagui Bike Track - "*You know it's quiet in the forest when you can walk through untraversed bushland at 9 a.m. and not be constantly dodging spider webs or executing at least one elaborate and ungraceful spider dance because you zigged when you should have zagged. When even the omnipresent flies and ants are MIA … it's VERY quiet!*"

In direct contrast to the quiet, still forests the insect activity around my house increased dramatically mid-month with a 3-day spell of horribly hot and windy conditions. As unwelcome as this unseasonal weather was it did give me the opportunity to observe not only familiar and easily recognised species but also several rarely observed or new-to-me species. It also gave me ample chance to mess about with, and tweak the settings of, my still unfamiliar new camera in a more controlled setting so I could get the macro shots I was aiming for. As much as I was thrilled with the insects I was able to observe throughout the day it was after sunset that the level of activity and diversity of species really ramped up. Subsequently, it was often well after midnight on many a night before I went to bed. Total madness that on more than one occasion necessitated an afternoon nana nap the following day! Below are a select few of the insects observed during this time. The species shown have been chosen based, not on rarity or wow factor, but as an overview of the diversity that you, the reader, may also encounter around your own homes.

DAYTIME VISITORS

This small 10 mm long native bee is ***Lasioglossum bincingutum*** (no common name) and is one of 382 Australian species in the **Halictidae** family of bees. Dependant on species, Halictid bees can be either solitary or colonial, and usually nest in burrows in the ground. For this reason they are known as Burrowing Bees, but are also often referred to as Sweat Bees. The majority of Australian Burrowing Bees, including the one shown here, belong to the genus *Lasioglossum*. This genus contains more than 250 of Australia's Burrowing Bees and, because they can carry large amounts of pollen on both their back legs and their hairy bodies, are important and valueable pollinators. Typical of the family to which they belong, *Lasioglossum* bees usually nest in burrows in the ground and, although a group of females may share a nest, it is much more usual for just one female to construct each nest. The Burrowing Bee species shown here is no stranger to my place, with up to a dozen often observed buzzing up and down the windows of my partially closed-in front verandah on any given day. I have noticed that they usually appear, and in greater numbers, on extremely hot and/or windy days so perhaps they are seeking shelter, or possibly water, during difficult periods. I have also noticed that as the afternoon cools they huddle down to roost in the ferns on my verandah. This makes me think that they are a possibly a more social species of Halictid bee than is typical, and that the females may be nesting in the pot plant soil. If anyone can supply further information and confirm … or refute …. my thoughts on this please do get in touch.

Also found on the same window as the Burrowing Bees was this rather super little wasp that I had to rescue so it didn't become a spider snack. Although I have not yet been able to confirm the species I do know that it is an **Ichneumonid Wasp** and that it belongs to the genus ***Xanthopimpla***. Like all ichneumonid wasps, wasps in the *Xanthopimpla* genus are parasitoid, with females possessing a piecing ovipositor that is used to inject eggs into a host so that the larval young have an immediate food source after emerging from the egg. Compared to many ichneumonids, female *Xanthopimpla* wasps have a relatively short and rather stout ovipositor that is used to lay eggs in moth caterpillars. This ovipositor is clearly evident in the photo at left.

Both male and female wasps of the *Xanthopimpla* genus are bright yellow in colour with black markings and, although small (the one pictured here is 20 mm long), are quite easy to spot in bushland where they can often be seen flying around foliage as they search for caterpillar hosts if female, or mates if male. **An important note -** Although the ovipositors of female ichneumonid wasps look like stingers these insects pose little risk to humans because, in all but a few of the larger species, the ovipositor is not strong enough to pierce human skin. In fact, rather than being feared, ichneumonid wasps should be encouraged because they fulfill an important role as regulators of insect populations. As parasitoids, the pressure exerted by ichneumonid wasps on insect populations can be tremendous and, with some studies showing that as much as 10-20% of a host species population may be parasitised each season, the potential for their use as a biological control of agricultural pest species is showing great promise.

Although the insect at right looks very bee-like with its black and yellow stripes it is, in fact, a fly. Specifically, it is a **Common Halfband (*Melangyna viridiceps*)**, one of the 170 Australian species of fly in the **Syrphidae** family. The flies in this family are commonly known as Hover Flies because of the way they hover over the flowers on which they feed and, after bees, are the second most important pollinator group not only in Australia but around the world. As an endemic species the Common Halfband has a wide distribution across eastern Australia, and is a common garden visitor in even the most urban of areas. Adults feed on the pollen and nectar of flowers while the larvae feed on aphids. As with all hover flies, the Common Halfband has a distinctive flight pattern, hovering in one spot before moving suddenly forwards or sideways then either hovering again or settling on a flower to feed. **A fun fact -** Hover flies have evolved as wasp or bee mimics with many, including the Common Halfband shown here, displaying a black and yellow striped abdomen. Some species however have taken their level of mimicry well beyond superficial appearance and will, if held between the fingers, make a stabbing action with their abdomen as they attempt to mimic the stinging action of a wasp or bee. Of course, this is all bluff as they do not have a stinger and are completely harmless but ***why*** do I now feel compelled to go out and catch myself a Common Halfband to see if it will do this??

NIGHTTIME VISITORS

As one would expect, the majority of after-dark visitors to my house were moths and, although often over-looked and frequently considered as the poor, drab relatives of the day-flying butterflies, I am constantly reminded of and astounded by their diversity. Because their nocturnal comings and goings can be almost never-ending with some species arriving earlier in the evening and others not arriving until much later, I am often up late so I can observe as many species as possible. Miraculously, and even though a good moth night might see dozens of moths resting on my windows and sills or flying around my outside lights, by sunrise they are all gone.

This fabulously flashy little moth shown at left is a **Green-blotched Moth (*Cosmodes elegans*)** and, because it readily comes to lights, is one of the most commonly seen moths around our homes. The Green-blotched Moth belongs to the

Noctuidae family and, with its distinctive and characteristic green wing markings, is easy to identify because no other moth has a similar patterning. The wingspan of this moth is about 40 mm but, as seen here, the moth typically rests with its wings folded tent-like over its body. These moths fly all year round with populations peaking in autumn and spring. The larvae grow to a length of about 30 mm, are bright green with spiracles along both sides and feed on *Lobelia*, *Verbena* and *Wahlenbergia* plant species.

Like the Green-blotched Moth, the moth shown at right – a **Tobacco Looper (*Chrysodeixis argentifera*)** – belongs to the **Noctuidae** family and, also like the Green-blotched Moth, has prominent crests of scales protruding above the thorax and abdomen. All of Australia's native *Chrysodeixis* species (there are five I think) are agricultural pests with the larvae feeding on a variety of crops including silver beet, tomatoes and beans as well as garden ornamentals., Although all *Chrysodeixis* moths look superficially similar, each species has its own particular patterning of silvery forewing markings. The Tobacco Looper can be distinguished from other *Chrysodeixis* moths by the S-shaped squiggle below the larger silver markings on the forewing. Adult moths have a wingspan of about 30 mm and, along with some of the other *Chrysodeixis* species, are common visitors to our homes and gardens. **A confession** - way back when my moth knowledge was almost non-existent I usually referred to these, and similarly tufted moths, as "Punk Moths". Even today this incredibly unscientific yet, in my opinion, somehow totally appropriate name is often my initial go-to identification, at least until I can narrow it down to something approaching a far more knowledge-based and accurate ID.

The next moth belongs to the **Geometridae** family, a large lepidopteran family with around 1,300 recognised Australian species and hundreds more known but yet to be identified. Although there is considerable variance in the appearance of geometrid moths most species rest with their broad wings spread out flat and their antennae tucked beneath the forewings.

There are 5 main subfamilies within the Geometridae family – Ennominae, Geometrinae, Larentiinae, Oenochrominae, and Sterrhinae – and 2 minor subfamilies – Archiearinae and Diptychini. The pretty moth shown here belongs to the subfamily **Geometrinae**. Because many of the moths in this subfamily have a green base colour to their wings they are commonly referred to as "Emeralds". The moth shown at left is one of several very similar *Chlorocoma* species that are difficult to definitively identify but it might be a **Guenee's Emerald (*Chlorocoma dichloraria*),** the most commonly recorded *Chlorocoma* species here on the far south coast. The larvae of most *Chlorocoma* species feed almost exclusively on Acacias and, with no shortage of these trees and shrubs in the local area, could well explain why these beautiful, dainty moths are such common nighttime visitors, especially in autumn and spring.

Here in Australia, both the moths and the larvae of geomtrid species are referred to as "loopers" because of the looping action of the caterpillars when they are on the move. This distinctive action is possible because, unlike most caterpillars which have 5 pairs of false or hind legs (known as prolegs) located along the abdomen, geometrid larvae often only have 1 or 2 pairs at the rear. This reduced number of prolegs allows them to move by first stretching forward to grasp with the 3 pairs of true legs at the front of their body and

then looping their bodies upwards and forwards to bring the rear prolegs close to the true front legs. The process is repeated every time the caterpillar reaches out for a new front end attachment and is an incredibly effective mode of locomotion. **A fun fact -** Overseas, these caterpillars are commonly known as "inch worms", a term directly linked to the family name Geometridae which is derived from the Ancient Greek "**geo**" meaning "**earth**" and "**metron**" meaning "**measure**". If you have ever watched one of these caterpillars in action you will have noticed that they do indeed look like they're "measuring the marigolds".

The 3 moth species above, and many others, are common visitors attracted to my house lights at night but, as lovely as they, are only documented regularly by myself to monitor populations and seasonality. This next moth however, and shown below, had me all a-flutter. This is an iconic and much lauded **Bogong Moth (*Agrotis infusa*)** and is a rare visitor to the Bega Valley shire … so rare in fact that I have only ever recorded the species once before - a single moth that I observed at Wandella in December 2015. The Bogong Moth is famed for 2 reasons – it's biannual long-distance migrations and its importance and value as a food source for Australia's indigenous people.

The Bogong Moth (*Agrotis infusa*) belongs to the Noctuidae family of moths, and is one of the 9 named *Agrotis* species found in Australia. With a wingspan of between 40 and 50 mm and a body length of between 25 and 35 mm, the average weight of an adult moth is 0.326 grams.

The twice-a-year movement of Bogong Moths is one of the great migration events of the natural world with up to 1,000 km covered in either direction. The moths spend the cooler months of autumn and winter in an area ranging from the Darling Downs in southern Queensland to the dry inland plains of NSW and Victoria. It is here that the moths breed and lay eggs. The resultant larvae, known as black cutworms, live in the surface layer of soil during the day and emerge at night to fell young plants, particularly wide-leafed pastoral plants, by chewing through the stems at ground level. The larvae can then feed on the felled seedlings from the safety of the soil. After pupation, the young moths emerge in spring and begin their south and south-easterly migration. Flying at night, the moths feed on nectar to build up the fat reserves they will rely on to survive their summer hibernation, known as ***aestivation***, in the Southern Alps. From late September onwards the moths begin to congregate in alpine caves and crevices, thickly lining the rock walls in their hundreds of thousands – up to 17,000 per square metre – to survive the hot months in a state of dormancy. In late February and early March those moths that have survived the summer set off at night to return to their cooler inland breeding grounds. **A fun fact -** The common name of this moth is derived from the Bogong High Plains region in the Victorian Alps which is one of the sites where the adult moths congregate in huge numbers over the summer months.

The arrival of Bogong Moths in the Alps each year represents a huge influx of high-fat, high-protein food that is devoured by a range of insectivorous animals, particularly mammals such as the Mountain Pygmy Possum. The summertime Bogong Moth bounty has also been harvested for thousands of years by First Nations people who, with a good knowledge and understanding of the moths' habits and migratory patterns, would come together each year in intertribal gatherings to collect, roast and feast on the moths. These gatherings were of great cultural and social significance, and were an important and celebrated part of the year. The highly nutritious moths would be roasted whole in hot ashes and the bodies then mashed to make "moth meat" which is said to have a nutty taste.

The conservation status of Bogong Moths - Starting around 1980 and accelerating rapidly after 2016, the Bogong Moth population has rapidly declined as a result of increasingly severe droughts and increased temperatures in the caves used by the moths to aestivate. Ever-increasing light pollution, which sees adult moths fatally diverted from their migrations, and pesticide use has also contributed to the dramatic crash in numbers. In 2021 the Bogong Moth was added to the IUCN's red list of **endangered** species.

The fabulous creature shown below is not a moth but it did arrive after dark to join the moths on the outside sill of my kitchen window. This is ***Mallada signatus*** (no common name), an endemic lacewing species in the insect family **Chrysopidae**. The insects in this family are commonly known as green lacewings because yep, you guessed it, they're all green! Adult *Mallada signatus* lacewings are 15 mm long and, like all lacewings, have large wings that are delicately lacy in appearance. While the adult insects feed solely on pollen, nectar and honeydew their larvae are predatory and feed on a range of small insects including aphids, caterpillars, moth eggs, scale insects, mealy bugs and psyllids. In order to feed, these lacewing larvae have two pairs of strong, hollow jaws which they use to grasp and then suck out the body fluids of their prey. Bizarrely, after feeding *Mallada signatus* larvae carry the remains of their prey on their backs. This affords them good camouflage as they hunt for their next meal and also helps them avoid becoming somebody else's next snack. It is also the reason why these larvae are often called "trash bugs". *Mallada signatus* is one of the most common and widely distributed lacewing species in Australia and, because the larvae are generalist predators that feed on many pest species, are widely used as a biological control agent. Gardeners can attract these lacewings and ensure a steady supply of their hugely beneficial larvae through companion planting of dill, angelica or any plant in the Asteraceae family (e.g. daisies. sunflowers and cosmos), and by tolerating weed species such as dandelions and sow thistles. Alternatively, you can buy packs of either adult *Mallada signatus* insects, or their eggs, online. Adult insects are shipped in plastic jars with a supply of honey while the eggs are sent packed in rice hulls and with a quantity of sterilised moth eggs for any larvae that hatch in transit to feed on. A pack of 500 eggs will cost you $35.20 + $15.50 postage …. it's cheaper to just let the weeds grow.

BEETLES

As promised earlier, here are the two beetles I found in the Bermagui State Forest this month. The first, shown at left, is a weevil belonging to the beetle family **Curculionidae**. Curculionidae is the largest beetle family in Australia, containing an estimated 8,000 species representing over 668 genera and divided into many subfamilies. Weevils are characterised by their elongated ***rostrum***, or snout, which is tipped with the insects' small chewing mouthparts and, in many species, is also used by the females to bore the holes in which she will lay her eggs. The beetles typically have distinctly elbowed antennae with a clubbed end. The legless larvae are "C" shaped and usually feed on wood or other plant parts. The weevil beetle shown here has been identified on iNaturalist as belonging to the genus ***Lixus***. No

further identification has been possible. Beetles in the *Lixus* genus are found worldwide but in Australia are little known with just 106 observations recorded on iNaturalist. Only 5 of those 106 observations have been identified to species level. That species is *Lixus cardui* , with all observations of it made in or around Canberra. Like my *Lixus* beetle the remaining 101 are identified just to genus level. Locally, only one other observation of a *Lixus* beetle has been recorded in the Bega Valley Shire (at Brogo in Nov. 2019) and 3 others recorded in the Eurobodalla (all in the Narooma/Kianga area and observed in Oct. or Nov. in 2021/2022). Although this beetle may look plain and rather unexciting, it is a great find and I will certainly be keeping an eye out for more of them over the coming months.

The second beetle, shown at right, is a ***Rhytiphora*** species (no further identification available at this time) that belongs to the **Cerambycidae** (Longicorn Beetle) family. Within the Cerambycidae family, *Rhytiphora* and many other genera are placed in the subfamily **Lamiinae**, a group of beetles characterised by a head that is deflexed rather than vertical or horizontal and is held sloped slightly backwards between the forelegs. As a group, these beetles are commonly known as Flat-faced Longicorns.

Cerambycidae is a large family of beetles that, in Australia, currently contains 1,400 species that represent 300 genera divided into 4 subfamilies. Beetles within the Cerambycidae family can vary greatly in body shape, colour and size, measuring anything from a tiny 3mm to whopping 80 mm in length. Typically, they are elongated and flattened in shape but some may appear more rounded. Although a number of species are coloured to mimic ants, bees and wasps, the majority are cryptic and subtly coloured.

Longicorn beetles have two distinguishing features which make them easily identifiable, at least to family level, by even the most inexperienced of observers. The first of these features, and the most obvious to the naked eye, is the extremely long antennae which, in most species, are at least two thirds as long as the insect's body. Some species however have antennae that are much longer, extending up to several times the insect's body length …. such individuals are a very impressive sight indeed! The second, slightly less obvious feature is the beetles' kidney-shaped eyes which partially surround the base of the antennae. This feature can be easily observed, especially on the larger individuals, with a bit of close scrutiny. Although adult longicorn beetles feed on the pollen and nectar of flowering plants (particularly those in the Myrtle family) or, less commonly, leaves and bark, the insects have prominent, strong mandibles (jaws) which, as I can attest to, are more than capable of giving a nasty nip and even drawing blood, especially if one of the larger species is handled carelessly. The larvae, known as roundheaded borers, feed for one, two or even more years on the soft stem, trunk or root tissues of living, dead, or dying plants before pupating. The adult beetle emerges through the tunnel bored by the larval insect.

At left - this photo of another Longicorn Beetle, ***Didymocantha obliqua*** (no common name) that I photographed at Beauty Point in December 2022 shows how the antennae appear to be mounted within the insect's large kidney-shaped eyes.

The beetle shown at right is also a longicorn beetle …. just look at those long antennae! This beetle arrived late one night to join the moths on my window sill and, although I have seen very similar beetles before, the patterning on this one looked slightly different. After unsuccessfully attempting to identify this insect by myself I turned to my oft-used "brains trust" – a group of Coleopteran experts who admin and offer advice via the facebook group "Australasian Beetles Only". Success! The beetle was identified as ***Aesiotyche favosa*** (no common name). Armed with this information I found out that this beetle belongs to the subfamily **Cerambycinae**, a group commonly known as the Typical Longicorn Beetles. I also discovered that, on iNaturalist, this beetle has NEVER been recorded in NSW before (!!), and that it had been documented just 23 times in its "home state" of Victoria. Fantastic and exciting news for our local area, and another win for citizen science.

WHY IS THERE A BANDICOOT SITTING ON MY LOUNGE?

Mid-month I was more than a little flabbergasted when a Long-nosed Bandicoot casually sauntered in through my back door and proceeded to make itself at home! For several minutes this cheeky and unexpected visitor explored every room of my humble abode before hopping up onto the lounge where it sat, snuffling quietly with an air of nonchalant derring-do. Having tired of the view, or perhaps having deciding that "Midsomer Murders" was not appropriate viewing for a creature such as itself, the bandicoot hopped back down and continued with its inspection of any previously unscrutinised ground-level nooks and crannies. As I watched the bandicoot poking around behind the curtains what struck me as even more astonishing than the sight of a small and unanticipated marsupial in my lounge room was the fact that this animal seemed completely unperturbed by its arrival in such unfamiliar territory. It was not scared. It was not alarmed. And it certainly didn't seem in a hurry to leave via the open door through which it had entered!

Needless to say, this rather extraordinary turn of events on an otherwise very ordinary Thursday night raised a lot of questions. Why did this bandicoot come into my house? What did it want? Was it hungry? And why was it sitting on my lounge? Was it hoping to catch the Thursday night Powerball drop? Why was this animal so calm? And why did it not want to leave and rejoin its friends truffling out beetle larvae in my lawn? Even now I have no answers to any of these questions. At right is a photo of the animal in question standing next to the open back door and ***not going outside***! It's actually looking at the open door here but decided instead to go back into the loungeroom …. an understanding of bandicoot logic eludes me. This photo also raises another question …. ***why is this bandicoot wearing pantaloons????*** (My daughter would like to know lol)

Suffice to say, the bandicoot ***did*** eventually wander back outside where it was welcomed back into the fold by 3 of its bandicoot buddies. This in itself was unusual because bandicoots are solitary creatures and it is

rare to see two or more together. But then, because the night was not already odd enough, I saw a most wondrous thing …. 4 bandicoots standing in a circle and apparently dancing!? For a full minute those bandicoots hopped up and down beside each other in the middle of ny backyard. Perhaps it was courtship behaviour. Perhaps it was purely an expression of joy because a lost sister had returned safe and sound. I have no idea but it was truly marvelous! The best way I can describe what I saw is to liken the scene to watching popping corn popping in a frypan …. pop ... pop … poppity pop! Unfortunately, I did not get any footage of this extraordinary scene so, as unlikely as it sounds, you will just have to take my word that it actually happened. I did, however, manage to get some photos of the bandicoot inside my house. They're not great because I was in-between cameras (old one wouldn't turn on, new one had yet to arrive) and, regrettably, I did not get a photo of the bandicoot sitting on the lounge but at least these few taken on my phone provide proof that there was, indeed, a bandicoot in my house.

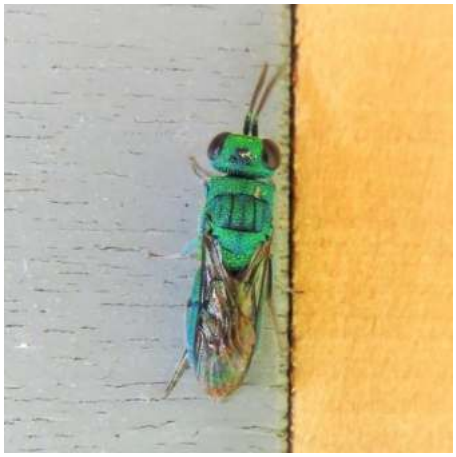
BEES and WASPS

I have a bee hotel. The penthouse suite has been tenanted by a small, unidentified spider for the past year or so but it's been several months since the lower floors have been occupied. This changed on the penultimate day of September when the first guests of the season began to check in. First to arrive were 3, or possibly 4, small **Cloudy Masked Bees (*Hylaeus nubilosus*)** who spent the whole day coming and going as they provisioned their chosen nest cavities with the regurgitated nectar and pollen mixture that would sustain the larvae once their eggs had hatched. In the afternoon, with provisioning of the nest complete and the eggs now laid, some of the bees began to seal their nest cavities. As a species of Plasterer Bee (family Colletidae), this work was done in the manner usual for the family with the bees using their short tongues to lick a shiny, cellophane-like secretion onto the nest entrance. Some of the bees, however, chose to also painstakingly apply tiny particles of clay, one by one, to the cellophane fluid. Although not typical of Cloudy Masked Bees, this method of nest occlusion by the species has been recorded by other observers, and is thought to be done to camouflage the nest entrance and aid in the protection of the nest, eggs and larvae from predation.

Shown at left is an 8 mm long Masked Cloudy Bee sealing her nest cavity by applying tiny clay particles to the still moist cellophane-like film.

I. however, was not the only who had noticed the bees' presence and activity, and it wasn't long before a **Cuckoo Wasp** began its characteristic, darting search pattern as the Cloudy Masked Bees came and went. Cuckoo wasps such as the one I observed at the bee hotel belong to the wasp family **Chrysididae** and the subfamily **Chrysidinae**. These wasps are small to medium in size, usually a bright metallic green in colour and, unlike many wasps, lack a defined waist. As the name "Cuckoo" Wasp implies, these insects are kleptoparasites and lay their eggs in the nests of bees and other wasps. Once hatched, the larvae first consume the host insect's egg or larvae and then consume the nest's provisions. Although these wasps are classified within a group that includes ants, bees and stinging wasps, the female's stinging apparatus has been modified

into an egg-laying tube and they cannot sting in defence. Because of this, cuckoo wasps have evolved with a concave area on the underside of their stout body that allows them roll into ball for protection.



At right – A cuckoo wasp at the bee hotel. This insect was partaking in a typical search pattern by landing on the bee hotel to make short, darting runs before flying briefly and then re-landing to repeat the manoeuvre. Whenever the wasp was not in flight the antennae quivered constantly and vigorously. With a length of just 5 mm this wasp is smaller than the Cloudy Masked Bees whose nests it intends to use for its own eggs and larvae.

And then ***another*** wasp arrived. This new wasp was much bigger than the cuckoo wasp, and far more blatant and sinister in its examination of the masked bees' nest cavities. This was **a Gasteruptiid Wasp** (family **Gastereruptiidae**), a group of wasps that, like the cuckoo wasps, lay their eggs in the nests of wasps and solitary bees. This Gasterupiid Wasp hovered some distance away from the face of the hotel as the bees were working but, as soon as they left to gather more provisions, would fly in to closely inspect the cavities the bees had been busy at. On several occasions the wasp landed at a cavity entrance, even partially entering some for a closer inspection, before eventually inserting her extremely long, thin ovipositor into the cavity to lay her eggs. When these eggs hatch, the resultant larvae will prey on the bee's eggs, larvae and provisions. Over the course of 5 or 6 hours this wasp predated several bee nests in this way. I spent almost the whole day totally absorbed in this mesmerising tragedy that was unfolding in front of me. At one point, when the Gasterupiid Wasp was laying yet another egg in the nest of a poor bee whose hard work would be for nought, I even thought "Wow! As a daytime drama Days of our Lives has nothing on this!"

Below – A series of unfortunate events as a Gasterupiid Wasp (most likely ***Gateruption cinerescens*** – no common name – and yet to be confirmed) flies in to initially inspect a nest cavity from a distance and then more closely before inserting her long, thin ovipositor inside to lay an egg.

A few days after watching the above described activity I was very relieved to see a Cloudy Masked Bee working to seal her nest cavity with the shiny covering so typical of her kind. "At least these bee babies will be safe!" I thought. But I was wrong. Very wrong. After the bee left a Gasterupiid Wasp returned and used her ovipositor to pierce ***through*** the thin, cellophane-like covering so that she could lay her eggs. As mortifying as I found this observation, it and indeed all the observations I have made this month, has reminded me yet again just how fascinating, complex and intrinsically connected everything around us is, and just how crucial it is that all things, no matter how big or small, are nurtured and cared for.

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