



14 August 2015 Ken Walker (kwalker@museum.vic.gov.au) Museum Victoria. Edition 21.

Hi All – Americans seem to do things bigger and better than most other groups. This morning I was sent a story about how the bee people at the American Museum of Natural History, New York, prepare their bee specimens before incorporating them into the collection.



BLOG POST

Buzz Cut: Bee Styling For Posterity

Find out why some bee specimens need a shampoo and a blow-out before joining the Museum's research collection.

[Read the article](#)

Yep – shampoo and blow dry is just the start. Once those tasks are completed, they put each specimen under a microscope and with a fine camel hair brush, they “fluff” up the hairs on the bee. I have collected “many” Australian bees. On a good trip, I may return with several thousand pinned specimens. I cannot imagine washing, shampooing, blow drying and finally fluffing each individual specimen before I add information and identification labels to the specimens. Perhaps, I have been doing it “all wrong” for several decades. Never too old to learn new tricks I guess !~ (:->! BAH!! I say.

Let's talk about orchids !!

Has anyone noticed the number of magnificent orchid images there are now on BowerBird? There are squillions of great images and so many different orchid species. If you run this web query, you will see the huge array of BowerBird's orchid images:

<http://www.bowerbird.org.au/home/sightings?query=orchid>

I am amazed at the range of colours and shapes of the BowerBird orchids. It is a pleasure to see and enjoy them.

I read something recently that a number of orchids require a fungus to "attack" the seed before it will germinate.

Then of course, there are the intriguing stories of orchid tricking male tiphiid wasps into thinking the orchid is a female wasp and the male wasps attempt to mate with orchid flower. However, all that the amorous male wasp receives at the orchid flower is a whack on the back as the orchid anthers deposit pollenia (pollen) on the back of the wasp. Then the silly male wasp goes off and finds another orchid which he again attempts to mate with and the pollen transferral is complete.

Say a lot about male tiphiid wasps doesn't it!



Photo by Russell Stanley



Pterostylis chlorogramma

Photo by Jenny Holmes



Cryptostylis subulata

Photo by Judy & Rob Peters



Diuris pardina



Corybas aconitiflorus

Photos by Russell Stanley



Pterostylis recurva



Caladenia venusta

Photo by Daniel Heald



Thelymitra x macmillanii

Photo by Hermit

Photo by Hermit



Petalochilus pictus

Photo by Judy & Rob Peters



Pterostylis x ingens

Photo by Tamara Leitch



Corybas diemenicus

Photo by Garth Wimbush



Calochilus platytilus?

Photo by Judy & Rob Peters



Pterostylis melagramma

Photo by Matt Campbell



Corysanthes grumula

Photo by Reiner Richter



Corybas despectans

Photo by Russell Stanley



Thelymitra peniculata

Photo by Russell Stanley



Cryptostylis leptochila

Photo by Reiner Richter



Dipodium campanulatum



Dipodium roseum

Photos by Russell Stanley



Cryptostylis erecta



Calochilus campestris

Photos by Judy & Rob Peters



Diuris aurea

Photos by Judy & Rob Peters



Diuris behrii

Photo by Russell Stanley

I love the way taxonomist's convoluted brains work! They are full of insect diagnostic characters and when presented with an identification request their brains go through a pattern matching process as well as a process of selective elimination followed by doubt and finally confirmation. I asked Bryan Cantrell, a retired fly taxonomist, to identify this fly image. His replies were classic.



Photographed near Maffra, Victoria. Photo by Mitch Smith

Dr Bryan Cantrell, Australia's tachinid fly expert (retired), was on holidays away from home when I first sent him Mitch's image. Bryan initially identified this fly in the genus *Goniophthalmus* but as he was on holidays and away from his references sources, he asked me to wait until he returned home before he could confirm the identification he made. Then, while still on holidays, he sent me a second email suggesting it was more likely in the genus *Tritaxys*. Do taxonomists ever stop?

Bryan arrived home two days ago. His double identifications had obviously been on his mind so it would seem he walked into his home and went straight to his references sources. Bryan sent me an email yesterday confirming his second identification. Bryan wrote:

"As I suggested in my second email, this is *Tritaxys milias* (Walker). Like *Goniophthalmus*, these flies lay microtype eggs on host foliage and if ingested while a host is feeding the eggs hatch, larvae leave the gut and feed on host tissue. Hosts are Lepidoptera. *Goniophthalmus* has bare eyes while *Tritaxys* has hairy eyes, which may be clearly seen in the photograph. Initially I mistook the reclinate orbital setae for reclinate ocellar setae, which is one of the characteristics of *Goniophthalmus* and jumped to the wrong conclusion; later the bare eyes character triggered in my brain, hence my recall notice on the identification." Bryan's email signoff comment was: "Sorry about the confusion and thanks for your understanding."

An easy mistake to make – "I mistook the reclinate orbital setae for reclinate ocellar" !!!

Of course, as is often the case, Mitch's record with Bryan's identification will be the first record and image on ALA for this species.

This story reminded me of a cartoon I recently saw that was the first I have even seen about taxonomists and their classifications and sorting obsessions even when on holidays.

I must admit that I can never go on holidays or even a walk through a park without checking out the bees on flowers --- sometimes much to the annoyance and embarrassment of my children. It's even worse when I pull out my camera!

My "eternally suffering" wife has now just given up and lets me wander knowing that will eventually catch up and then spew forth a diatribe of scientific bee names I have just seen. "That's nice dear" is usually the sentiments of her reply.

It's a family "secret" but I even snuck the hoop of a bee net on our honeymoon when we went to Tasmania. Trouble hit when I found a tree in flower where the flowers were out of reach of my arm's length so we travelled back into the nearest town where I purchased a broom handle and some string. I got my bees!



Some Leaf cutter bee males have a special treat for female bees!

An often asked question is how do insect sexes attract and how do the correct males find the correct females. Insects have many ways to enhance the success of reproduction. Initially, we used to talk about the “lock and key” mechanisms of male and female genitalia. Only the right key will open the right lock. Then in the late 1970s and early 1980s, we were told about the studies of Elmo Hardy on the Hawaiian fruit fly fauna. Elmo found that identically looking species were indeed separate species based ONLY on their behaviours – we now call them sibling species that cannot be separated using morphological methods. Elmo found that one group of male and female fruit flies would meet on a rotting log only in the morning while identically looking flies of both sexes would only meet on the same rotting log only in the afternoon. That’s called a vicariant event. The easiest vicariant event to explain is where a mountain range has arisen from a flat plain and the range physically splits a single population into two populations on either side of the mountain range. Over the next few millions years, the two populations evolve in different ways so that if you brought males from one population and mixed them with females from the other population, they could not mate and produce fertile offspring. Indeed, that is the definition of a species that members can mate and produce fertile offspring. Elmo’s Hawaiian fruit fly observations more than tripled the number of fruit fly species known from Hawaii and it was partly used to develop the “Species Recognition Species Concept” which is no longer in favour.

Nowadays, genetic analysis probably would have produced the same speciation results as Elmo's painstaking observations had over many years.

So, to bees who mostly seem to rely on the lock and key methods for species separation. Interestingly, only the male bee genitalia provides useful diagnostic characters. The female genitalia of all bees is basically a stinger that has been modified into an egg laying tube and they all look very similar – so we do not use female bee genitalia for bee taxonomy.

I have already shown you, some of the male bee genitalia are delightfully complex and exquisitely shaped designs of male bee genitalia. My favourite male bee genitalia is from a sugarbag species found in Cape York Peninsula (*Tetragonula clypearis*). I can hear Mae West saying “Is that a moustache you are wearing or are you just glad to see me?”



Male genitalia of a sugarbag bee. Photo by Ken Walker

However, several species of male bees have developed extra external modifications to assist in the correct pairing of the sexes. One of these groups is the Leaf cutter bees – Megachilidae.

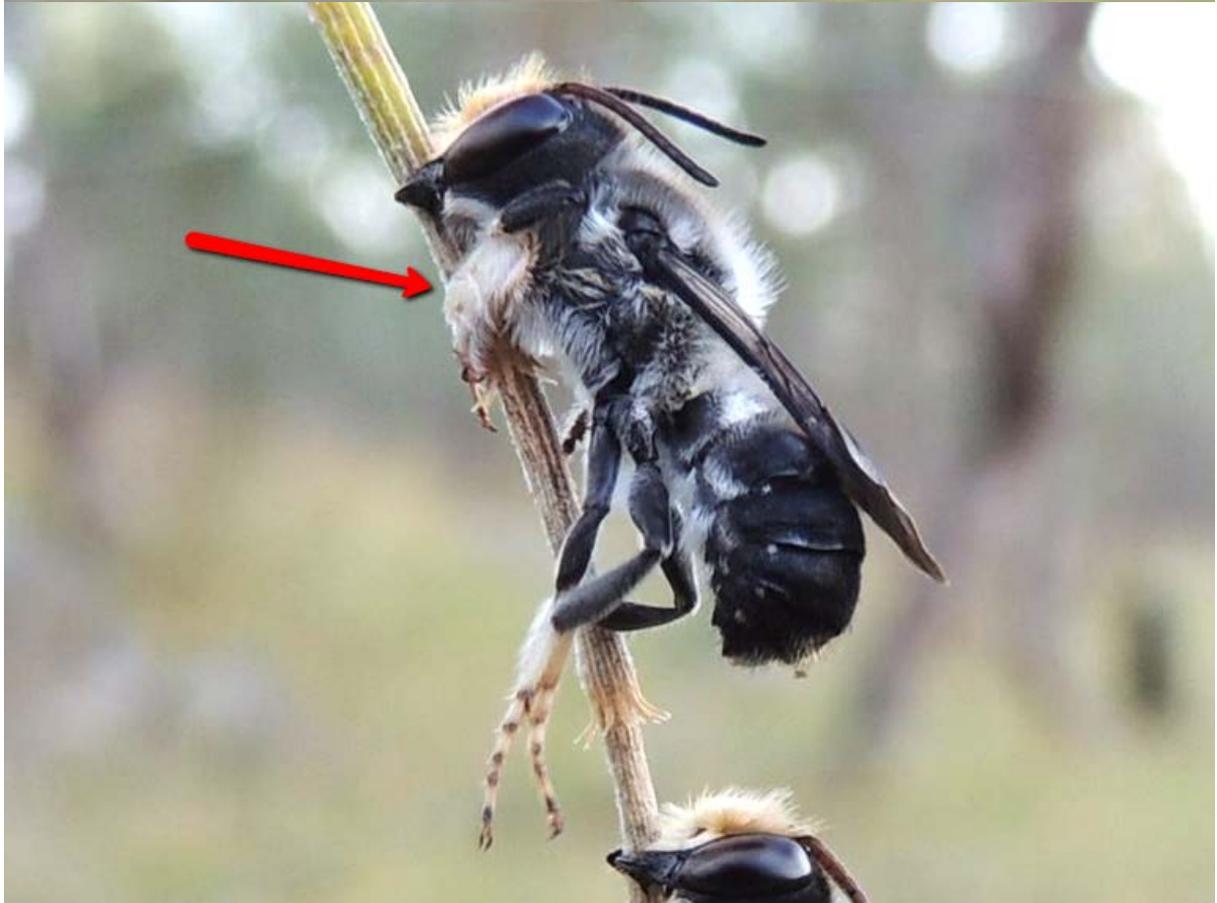
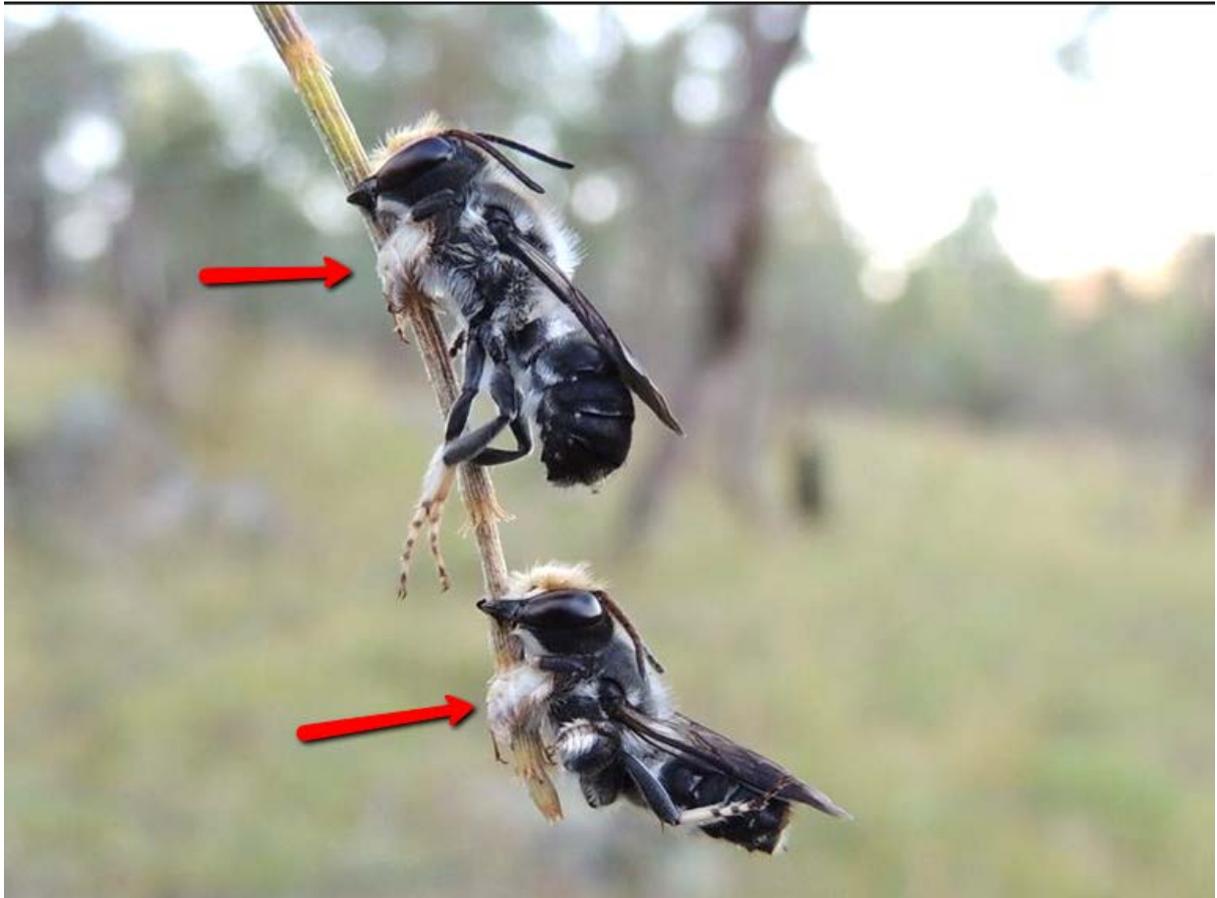
In some species, the male foretarsi are enormously enlarged and sometimes have colour patterns across these enlarged flanges. Through observations, we watched and saw that the male climbs onto the back of the female and he then places his enlarged foretarsi over the eyes of the female – like a game of “peek-a-boo”.

We believe the light patterns the female sees through these “male tarsal sunglasses” is one of the ways to ensure successful matings.

A recent new BowerBird member, Michael Bedingfield, from Queanbeyan NSW uploaded some wonderful images of a local leaf cutter species who males have these enlarged flanges.

Michael photographed the male bees roosting which provides us with excellent viewing of these male tarsal extensions.

The species is the leaf cutter bee *Megachile (Eutricharaea) maculariformis*. The arrows point to the tarsal extensions.



Photos by Michael Bedingfield



Megachile Eutricharaea phenacopyga – Note the oval dot!



Megachile (Eutricharaea) chrysopyga Photos by Ken Walker

Speaking of bees doing what bees do best comes this photo!

Here are some bee stats:

- One in every three mouthfuls of food we eat is a direct result of pollination
- Annually, Australia receives approx. \$6 billion worth of pollination services
- Annually, the global economy is boosted by approx.. \$250 billion worth of pollination services
- There are approx. 25,000 species of bees world-wide
- Australia has 1,667 described species – many more undescribed.
- Australia has the smallest bee in the world – 2mm *Quasihesma*



Photo by Reiner Richter

Being there at just the right time.

Martin Lagerwey was there at the right time with the right camera to catch this salty croc munching down on a stingray.



That's one big crocodile – 4.3 metres.

Photos taken at Palm Cove, Qld by Martin Lagerwey.

Rarer than a Hen's tooth.

I love it when rarities pop up on the BowerBird records. Such was the case with a record posted by Reiner Richter of a spotted grasshopper taken at Mt Baw Baw. The adult wingless female is the larger of the two specimens with the male on top.



Photo by Reiner Richter

This species is known as the Colourful Yeelana, *Yeelanna pavonina*. Note: I did not make a spelling mistake between spelling the common name as “Yeelana” and the scientific name as “Yeelanna”. I do not know why there is a difference. The species is known from only two restricted populations - one is on Mt Kosciuszko, NSW and the second is on Mt Baw Baw. The Mt Baw Baw population is the darker form whereas the Mt Kosciuszko has more of an olive green to brown colouration. Only one record on ALA and there is no image until this one.

It's the little things that run the world !

I looked in amazement when I saw the first image of a Symphylan on BowerBird taken by Mitch south of Maffra, Vic.



Photo by Mitch Smith

Symphylans are indeed arthropods but fall completely outside the insect related groups within the subphylum Hexapoda. They belong to the subphylum Myriapoda which includes the centipedes (Chilopoda) and millipedes (Diplopoda).

Interestingly, when first born, symphylans have only 6 legs but over a lifetime of several years they add an additional pair at each moult so that the final adult stage has twelve pairs of legs. Symphylans are also known as garden centipedes or pseudo-centipedes. They are small, cryptic myriapods without eyes and without pigment. Their long antennae serve as sense organs.

They have several features linking them to early insects, such as a labium (fused second maxillae), an identical number of head segments and certain features of their legs. About 200 species are known worldwide and 26 species are recognised for Australia.

Symphylans are not uncommon but rarely recognised and less so photographed. Open up your compost bin or turn over a rotting log and you will most likely see these always white, centipede like animals scurrying around and moving at a quite a quick rate. Look for their white colour, their long antennae and their small size to distinguish them from baby centipedes.

Below you can see the currently accepted Arthropoda classification chart. These animals are in a “Class” of their own!

Look out for them the next time you are at your compost bin or in the bush.

- [-] Phylum ARTHROPODA
 - [+] Subphylum CRUSTACEA
 - [+] Subphylum CHELICERATA
 - [-] Subphylum MYRIAPODA
 - [+] Class CHILOPODA
 - [+] Class DIPLOPODA
 - [+] Class PAUROPODA
 - [+] Class SYMPHYLA
 - [-] Subphylum HEXAPODA
 - [-] Class ENTOGNATHA
 - [+] Order DIPLURA
 - [+] Order PROTURA
 - [+] Order COLLEMBOLA
 - [+] Class INSECTA (= Ectognatha)
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Impossible identifications

For the past 35 years, I have been identifying insects. Back in the 1980s and early 1990s, this was mainly done over the phone or from specimens sent in by post. However, with the era of the digital camera or phone imaging, most identification requests now arrive as image attachments to an email.

And so, this image arrived in my email box this morning from an exporting company (mainly citrus) that had had their shipment stopped by quarantine for having live insects on the product. Wanting to know what the insect was, they sent me this image and a request for an “immediate” identification.

Here is the image sent:



I replied: “It is said that a good taxonomist needs to have a good sense of imagination. However, no amount of imagination can help this image. Please send me the specimen!”

I “think” it’s a stink bug (Pentatomidae) but I would never put my name to an identification from such an image.

Your fungal fixes for this week.



Fungi: Basidiomycota: Auriscalpiaceae: *Auriscalpium* sp.

Photos by Matt Campbell



Armillaria novaezelandiae Photo by Torbjorn von Strokirch



“Hanging fungus” (*Serpula himantioides*?)

Photo by Friends of Chiltern Mt Pilot National Park



Austroboletus sp. Photo by Reiner Richter.



Ascomycota - Photo by Matt Campbell



Ramaria lorithamnus — Photo by Torbjorn von Strokirch



Fungi: Ascomycota: Parmeliaceae: *Usnea molliuscula*

Photo by Teresa and John

My AP (Aesthetically Pleasing) moment

WOW! I love the purple and green colours in this image as well as the shape of the fungus and hairy green leaves.

An aesthetically pleasing photo.

Two names have been suggested: *Ramariopsis pulchella* or *Clavaria zollingeri*. I have emailed the Fungal Guru – Tom May – to enlighten us.



Wilson's Promontory, Vic - Photo by Reiner Richter



2752 Wilson's Promontory Road, Wilson's Promontory VIC 3960, Australia

Just for the fun of it !



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Photo and copyright by Mark Berkery.

Finally, a fun image from the “Friends of Chiltern Mt Pilot National Park” members who posted this record this afternoon. The record is titled:

“Boobook Owl observing humans”



42 Main Street, Chiltern VIC 3683, Australia

Now – I have a lot of fun writing the Bugle each and I would like to share that fun. If anyone has a BowerBird related story they would like to tell, please send me your story and I will include it in the next Bugle.

As always from BowerBird .. that's your lot for this week.

Haveagoodweekend all Happy photographing ...

Cheers – Ken

(If you wish to leave this email list, please contact me directly at kwalker@museum.vic.gov.au – else share with your friends)