

13 November 2015 Ken Walker (kwalker@museum.vic.gov.au) Museum Victoria. Edition 34.

Hi All – I have had a funny week. Last Saturday on the Gardening Australia TV show they played a 4 minute segment featuring my work at the Museum. The footage was shot last August. A crew of a producer, a sound recording and cameraman arrived about 8:30am and did not leave until after 5pm. Apart from a one hour lunch break, they filmed me doing all sorts of activities – mostly getting me to repeat the same activity and voice over 5 to 6 times. The segment began with walking across the promenade in front of the Museum – they made me do that walk 5 times until I had got it right. How hard is it to walk to work? – apparently, I got it wrong 4 times.

But, I reckon I was robbed!! They say everyone has their “15 minutes of fame”. Well, after 8 hours of filming, they reckoned there was only 4 minutes of what I said worth putting on TV. I was robbed of 11 minutes of fame!

Still – it was a hoot to do and for once, it brought the TV cameras actually into the collection room and allowed me to show specimens we will never put on public display. I even got a plug in for my “gorgeous” native bees.

Of course, my family were my major critics. They laughed almost all the way through the 4 minutes. “Why did you say

that?” “Why did you do that?” As I explained, after 8 hours of having a camera poked up your nose, being made to repeat everything again and again, your resistance is worn down and you just do whatever they ask of you.

I also copped a bit of good natured ribbing from my work colleagues who promised to vote for me when it comes time for the Gold Logie nominations.

Bah-humbug I say to them all! (:->

If you have 4 minutes to waste and are in need of a good laugh, here is the link to my “brush with fame”:

<http://www.abc.net.au/gardening/stories/s4346027.htm>

The other thing that made me smile this week, was a botanist from the Victorian Royal Botanic Gardens. Noushka (apparently her mother was German but she liked that Russian Christian name) is working on the Victorian threatened orchid : *Caladenia versicolor* — the Candy Spider-orchid. They have been able to successfully germinate from seed and growing a number of these orchids in glasshouses and now they want to introduce them to areas outside of the orchid’s natural distribution. But for once they wondered about the orchid’s native pollinators. So they designed an experiment where they collected insects visiting the orchids in their natural habitat and then collected insects visiting flowers in the new areas where they want to introduce these orchids.

Of course, my name popped up when it came time to identify the collected bees and flies. Their collecting technique was to collect insects in a net and then to place them singly into plastic vials with a hand written pencil collecting label on the outside of

the vial. All sounded good so far. BUT then they decided to put these vials into a freezer until they had completed their collections period – which was over a 2 month period in spring.

Has anybody taken something out of their home freezer and watched what happens? As the frozen food thaws it “sweats” or develops water droplets on the surface of the thawing food.

The same happened to the frozen bees and flies but they were inside an airtight plastic vial with nowhere for the water to go except to create a high humidity inside the plastic vials. Any guesses what happened next? Perfect conditions for fungus spores on the bodies of the insects to germinate and grow and grow and grow. Apparently the frozen vials were taken out of the freezer about 2 weeks before they were presented to me.

Oh dear – it was not a pretty sight scientifically to see when I opened up the vials and examined the bees but on the other hand it was an absolutely wonderful aesthetically pleasing sight visually to see what had happened to the bees.

Every bee was encased in a deathly white shroud of fungal hyphae. I could hardly see the specimen through the thick, white covering around each specimen.

And they wanted me to name the bee and determine the sex of the bee and I couldn't see the bee itself.

The second problem I encountered was the label data. If I could make an identification, I had to record it against the label data on the outside of the vial. The problem was that the sticky white label was longer than the diameter of the plastic vial. So the recorder wrote in pencil the details of the collection site and date and then wrapped the label around the middle of the vial. They seem to always peel off the label and place it on the vial with the right leading edge of the label placed onto the vial first

and then wrapped around. Now, the label data had always written with the leading text beginning on the right side of the label. That meant when they wrapped the sticky label around the vial and the label was longer than the diameter of the vial, the left trailing edge of the label was placed on top of and covered the right side of the label --- which was where the pencil information text was written. Damn! Every time I pulled back the over laid tape, the pencil writing stuck to the sticky part underneath part of the label.

There is an expression of what to do at this stage:

“When you stop hitting your head against a brick wall – you feel better.” And when I stopped, I felt better.

It's interesting to see the clashes when botanists venture into the animal world. I'm sure botanists would find lots of issues if I was to plant press plant specimens I collected in the field.

Soldier on is all I could do. Scrape away as much of the fungus I needed to make an identification and make a guess about the label data. I also added 80% alcohol to each of the vials to halt the growth and spread of the fungal infestation.

The final results were interesting. All of the bees collected on the orchids in their natural habitat were the same species and same sex. They were all male Colletidae, *Leioproctus* species. Many of the specimens clearly had the orchid's large, orange coloured paired pollinia on the thorax indicating they were the correct pollinator for this orchid. The fact that only males were collected from the orchids suggests the orchid is using a pseudo-copulation technique by releasing a pheromone that simulates the smell of a female bee thereby attracting the male bee to visit the flower. Unfortunately, no specimens of this male bee were collected at the transition sites outside of the orchid's

natural habitat. Which will cause problems with the translocation of the orchid if it cannot get its correct pollinator to visit.

So, what began as a disaster turned out (with a lot of extra fungal removal time) to be of interest to the bee and orchid people.

Here is an example of the pencil label having been overlaid by the label and destroyed when I lifted the covering label:



And below, are two images showing the “aesthetically pleasing” but scientifically destroying fungal growth on the specimens.

Never a dull moment around here.



Using the resources

From time to time, I receive requests to help place images to genus or species. As I have tried to show over recent posts, Australia has over 300,000 described insects and probably that much again as undescribed. For each insect, there can be egg, larva, pupa and adult version so that increased the number of variations of a species you need to know (just for the described species) to about 1.2 million variations. And of course, for many species, no one has ever seen the egg, larval or pupal stages of many insects.

My initial reply is often “Welcome to my world of the unknown.” So, I thought I would take you through the process I went through to help Graham Winterflood decide what to name this magnificent moth he photographed near Cairns.



Location: Mooroolool QLD Photo by Graham Winterflood

Graham and Darren had decided the generic name best suited was *Euchromia* but which species?



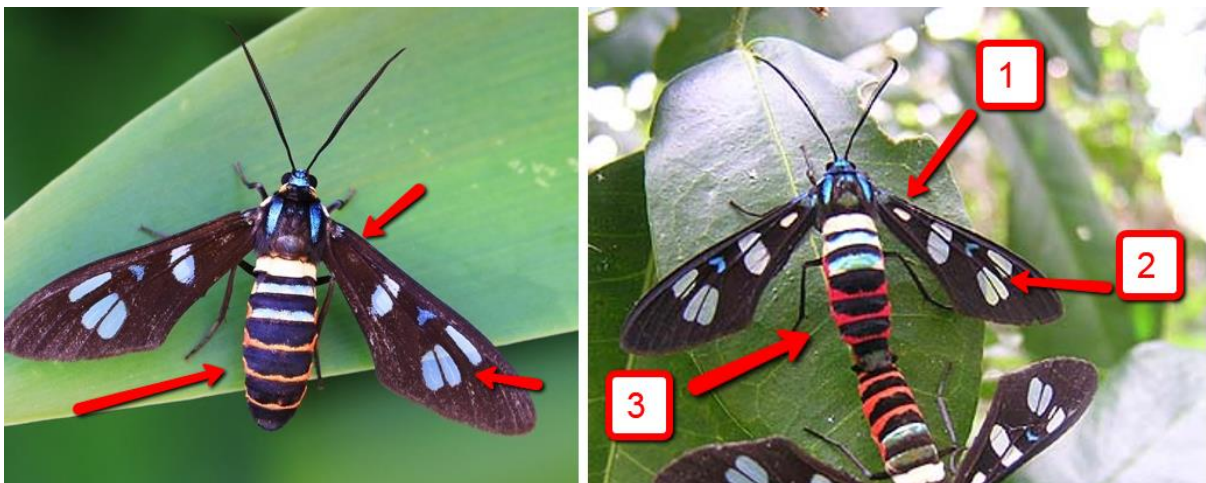
Euchromia
(genus)

Taxonomy: Animalia: Arthropoda: Insecta: Lepidoptera: Arctiidae: *Euchromia*

Graham had found an image of *E. irius* that was a close match but this was a Papua New Guinea species not recorded in Australia.

When I compared Graham's image with that of *E. irius* I noted a number of differences.

1. Note the white mark at the base of the forewing in *E. irius* which is missing in your image
2. Note the small mark below the upper distal mark on the forewing which is missing in your image
3. Note the colour and thickness of the red abdominal bands on *E. irius* which is missing in your image.



So then we had a look at the available resources to see what we could find.

Step 1. Check what species of *Euchromia* occur in Australia. This is done on the Australian Faunal Directory (AFD) <http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>

Query the genus name:

You can start by searching our names or you can [browse by group](#) or use the [main checklist](#).

Name Search

This will search valid names, common names, alternative combinations, excluded species and synonyms. It attempts different gender endings.

Scientific name or common name

This returns a webpage like below which on the right side has a link to the “Names List” which will tell you what species for this genus have been recorded from Australia.

Genus *Euchromia* Hübner, [1819]


Euchromia Hübner, J. 1819 [1816–1826]. *Verzeichniss bekannter Schmetterlinge*. Augsburg : Jacob Hübner 17-176 pp. [issued 1819, dated 1816–1826] [121].
Type species: *Sphinx sperchius* Cramer, 1777 (Sierra Leone) by subsequent designation, see Kirby, W.F. 1892. *A Synonymic Catalogue of Lepidoptera Heterocera (moths). Sphinges and Bombyces*. London : Gurney & Jackson Vol. 1 xii 951 pp. [117].

Hira Walker, F. 1854. Lepidoptera Heterocera. *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum 1*: 1-278 [220] [objective synonym].
Type species: *Sphinx sperchius* Cramer, 1777 by subsequent designation, see Hampson, G.F. 1898. *Catalogue of the Lepidoptera Phalaenae in the British Museum. Catalogue of the Syntomidae in the Collection of the British Museum*. London : British Museum (Natural History) Vol. 1 xxi 559 pp., 1 folded page. [293].

Phalanna Walker, F. 1854. Lepidoptera Heterocera. *List of the Specimens of Lepidopterous Insects in the Collection of the British Museum 1*: 1-278 [218].
Type species: *Sphinx polymena* Linnaeus, 1758 (Asia: [tropical southern]) by subsequent designation, see Hampson, G.F. 1898. *Catalogue of the Lepidoptera Phalaenae in the British Museum. Catalogue of the Syntomidae in the Collection of the British Museum*. London : British Museum (Natural History) Vol. 1 xii 559 pp., 1 folded page. [293].

Open this Names List link to view the species of this genus:

Genus *Euchromia* Hübner, [1819]

- [Checklist](#)
- [Statistics](#)
- [Host Taxa](#)
- [Bibliography](#)
- [Names List](#) 
- [Complete Preview](#)

Which shows there are 4 Australian species:

Names List for *Euchromia* Hübner, [1819]

The *Euchromia* Hübner, [1819] names list is also available in [CSV format](#).

Euchromia Hübner, [1819]

Hira Walker, 1854

Phalanna Walker, 1854

Euchromia Hübner, [1819]

Euchromia aemulina Butler, 1877

Euchromia aemulina Butler, 1877

Euchromia minuta Rothschild, 1916

Euchromia creusa (Linnaeus, 1758)

Sphinx creusa Linnaeus, 1758

Sphinx thelebas Cramer, 1777

Sphinx irus Stoll, 1781

Glaucopis ganymede Doubleday, 1846

Euchromia superposita Rothschild, 1916

Euchromia lurlina Butler, 1888

Euchromia lurlina Butler, 1888

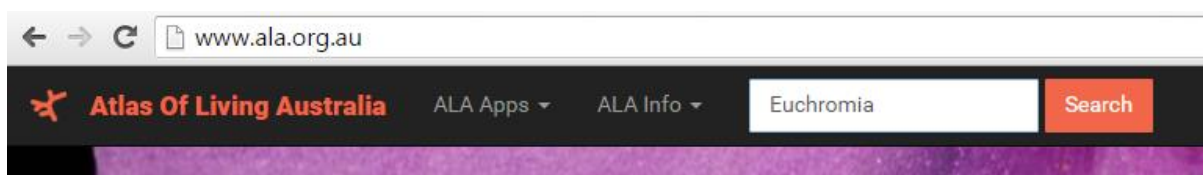
Euchromia intensa Rothschild, 1916

Euchromia polymena (Linnaeus, 1758)

Sphinx polymena Linnaeus, 1758

Euchromia elegantissima Wallengren, 1861

Step 2. Look at where the genus has been recorded in Australia. For that you go to the Atlas of Living Australia (ALA) www.ala.org.au



This query shows there are 53 distribution records for the genus *Euchromia*. Click on the “Occurrence” link.

[Home](#) → [Search the Atlas](#)

Search for **Euchromia** returned 19 results

[Download](#)

Results per page

Genus: *Euchromia* Hübner, [1819]
Kingdom: ANIMALIA
[Record a sighting/share a photo](#) Occurrences: 53 [View images of species](#)

Species: *Euchromia polymena* (Linnaeus, 1758)
Kingdom: ANIMALIA
[Record a sighting/share a photo](#)

Species: *Euchromia creusa* (Linnaeus, 1758)
Kingdom: ANIMALIA
[Record a sighting/share a photo](#) Occurrences: 45

Species: *Euchromia lurlina* Butler. 1888

Refine results

Section
[Species \(19\)](#)

Recorded in Australia
[Yes \(19\)](#)

Lifeform
[Animals \(4\)](#)
[Arthropods \(4\)](#)

Species groups
[Butterflies, Moths \(4\)](#)

Taxonomic Rank
[Species \(18\)](#)
[Genus \(1\)](#)

Which shows you this map: Enlarge the map using the + button until you have the Cairns area which is where you photographed your specimen.

53 results for GENUS: *Euchromia*

Records Map Charts Record images

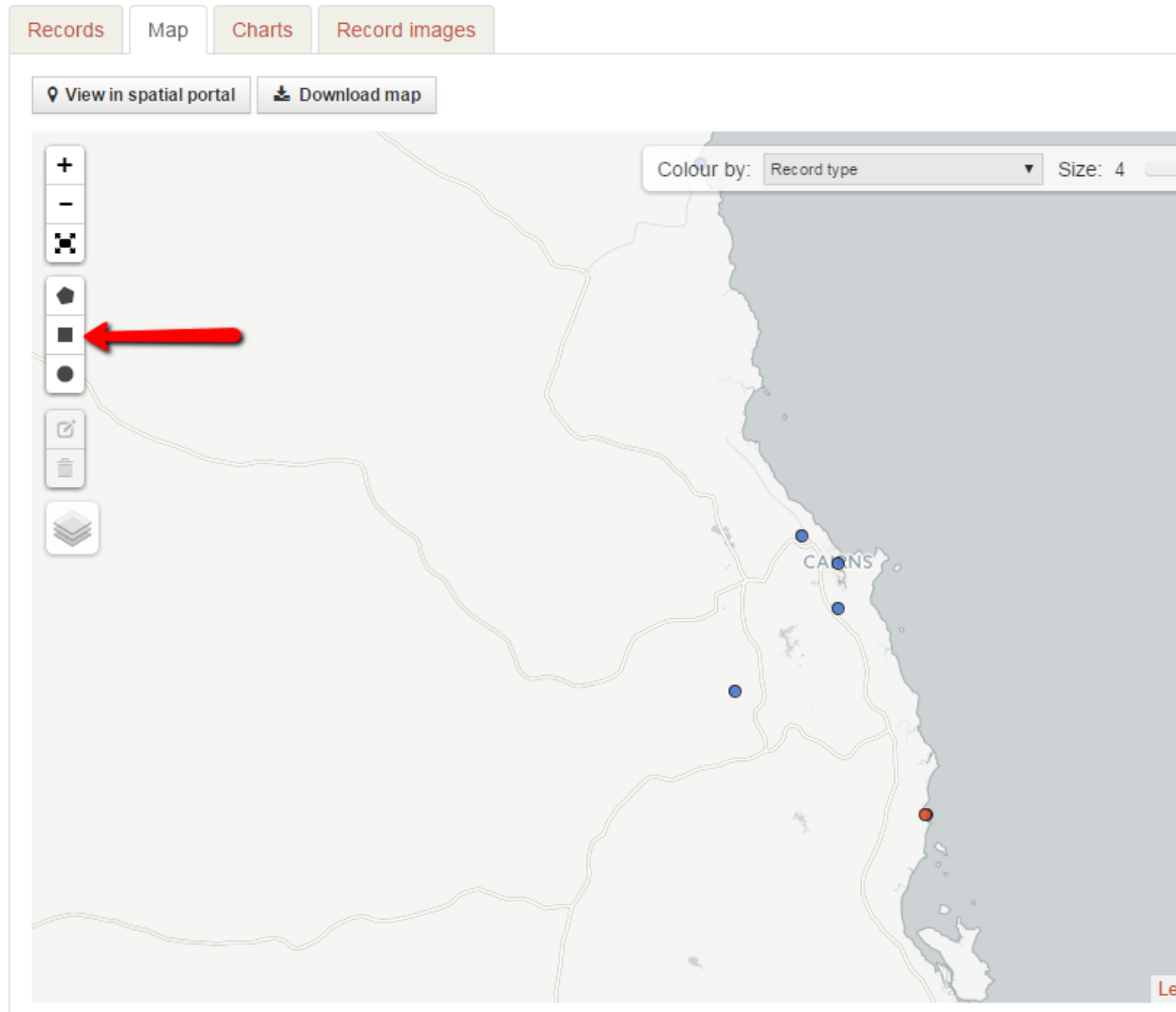
View in spatial portal Download map

Colour by: Record type Size: 4

HO CHI MINH CITY
KUALA LUMPUR
SINGAPORE
MALAYSIA
JAKARTA
PAPUA NEW GUINEA
PORT MORESBY
AUSTRALIA
BRISBANE
PERTH
SYDNEY
Leaflet | M

Now click the spatial query square button. Move your mouse onto the map and click just to the top left of the dots around Cairns and drag your mouse to the bottom right corner to capture the three dots around Cairns

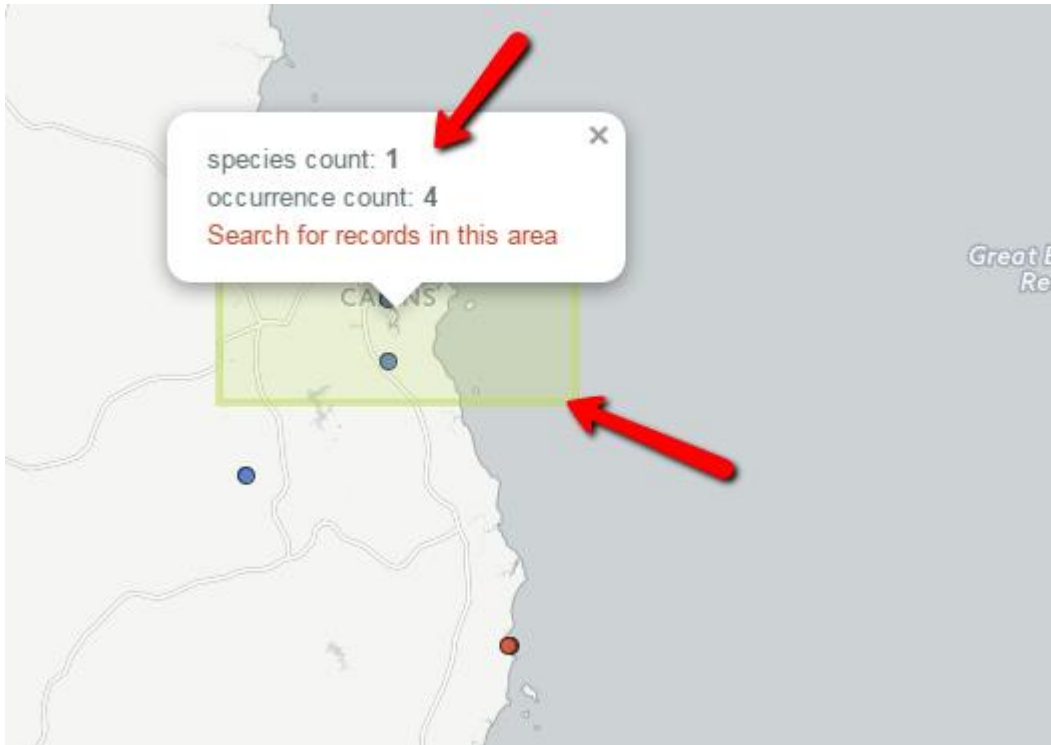
53 results for GENUS: *Euchromia*



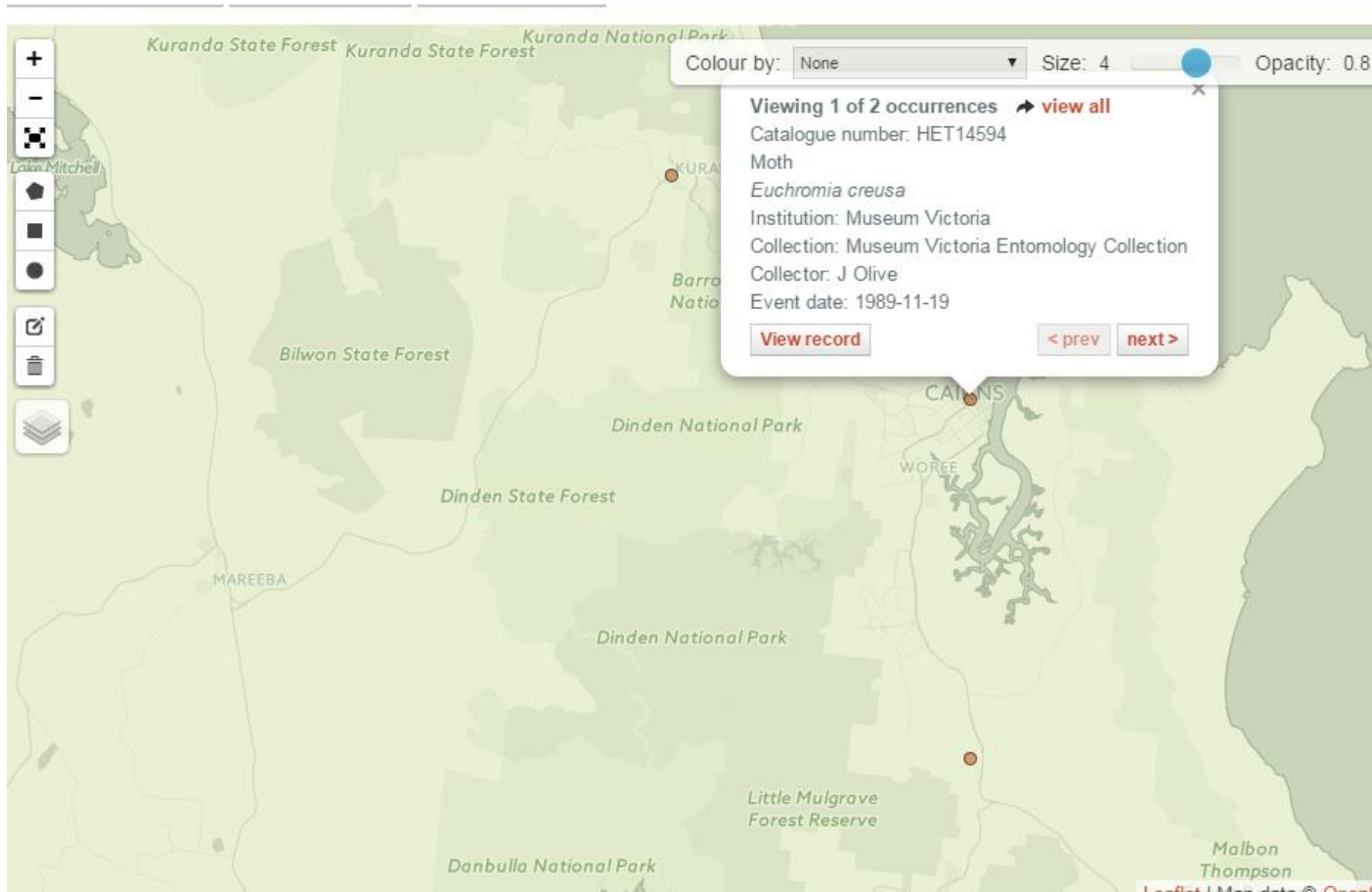
The green shaded area is the area I chose to spatially query with my above mouse movements. When I release the mouse button, the display shows me how many species and records are within the area you marked.

It appears only one species of *Euchromia* has been recorded around the Cairns district.

To look at these 4 records, click the “Search for records in the this area” link



To open and view each of the returned record, you simply click on each actual dots on the map. You can immediately see that the only species recorded in the Cairns district is the species *Euchromia creusa*.



So, let's use this resource knowledge to search for images of *Euchromia creusa*.

A google image search for this name shows a mating pair of *E. creusa*. The first thing I noted was the differing forewing patterns between the sexes. Notice how one specimen has the white marking at the base of the wing and the other specimen does have the white marking. This suggests the forewing marking differ between the sexes in this genus or species – either the male or female lacks the basal dots.

Now let's compare the BowerBird image with the google images for *E. creusa*. The amount of red on the abdomen differs markedly between the two photos. You need to take into account that the BowerBird image shows a worn specimens that has lost some scales. But the question you need to ask is :

Is the worn nature of the BowerBird image/specimen enough to make up for the amount of red difference to the on the left photo? I think not. The colour in your photo is an orange rather than red.

Google image of *E. creusa*

BowerBird image



So, I would not have confidence in naming the BowerBird image *E. creusa* – shame after all that work. The easy thing to have done would have been to simply accept the ALA records and name it as *E. creusa*. But, ALA simply records whatever is sent to it and ALA had only 4 records which is a small sample.

Now, we could go back to the Australian Faunal Directory and examine the other 3 species listed on AFD. I was able to source an image of *Euchromia aemulina*.



Note the colour banding on the abdomen is more similar to the BowerBird image. The base of the forewing does have a white marking, not present on the BowerBird image.

However, at this stage I would stop trying to match a species based on images only. The species recorded around Cairns on ALA does not fully match the BowerBird image.

Images of the other 3 Australia are close but none show an exact match. From here, we would probably need to do a genitalia examinations to correctly determine the species and of course we do not have the specimen.

The record identified to the genus level still hold enormous scientific value. It will add a new record to ALA for this genus in the Cairns area. Anyone interested in this genus will be able to look at the BowerBird record on ALA and consider there perhaps are two species of *Euchromia* in the Cairns district rather than just the one species as was evident before the addition of the BowerBird record.

As has been said: “Rome was not built in a day” and neither can the distributions of all 300,000 Australian insect species be complete. Each new record adds significantly to the available information. We scientists often couch our advice with the phrase: “From the available information”

Science is all about change as new information appears. You need to test or trust the information sources before you make conclusions but putting forward a theory to be supported or refuted is the “doing of science”.

Thanks to Graham Winterflood for raising this interesting topic. Something a wrestle with every working day.

Let's build a BowerBird resource page.

A recent good suggestion from another Bugle reader was to, over time, develop a web resources page that people could use to look up the various animals they catch. If people would like to email me the web address they use to help identify their images, I will compile them here.

Spiders:

<http://ednieuw.home.xs4all.nl/australian/Spidaus.html>

<http://www.findaspider.org.au/>

<http://www.arachne.org.au/default.asp>

Snakes:

<http://www.arod.com.au/arod/>

Butterflies:

<http://lepidoptera.butterflyhouse.com.au/>

General Insects and Spiders – Brisbane Insects

<http://www.brisbaneinsects.com/>

Pentatomidae

http://www.saveourwaterwaysnow.com.au/01_cms/details_pop.asp?ID=991#4904

Insects of Tasmania

<https://sites.google.com/site/insectsoftasmaniahymenoptera2/>

Ladybeetles of Australia

<http://www.ento.csiro.au/biology/ladybirds/ladybirds.htm>

Australian Dragonfly Identification Key

<http://rnr.id.au/cgi-bin/species/odonata>

Moth identification

http://www.leapfrogoz.com.au/LeapFrogOz/Moth_Identification.html

What Bug it that?

<http://anic.ento.csiro.au/insectfamilies/>

Canberra NatureMap

<http://canberranaturemap.org/>

Molluscs of Tasmania

<http://www.molluscsoftasmania.net/index.html>

Australian Fungi Blog

<http://australianfungi.blogspot.com.au/>

FungiOZ

<http://www.fungioz.com/>

Atlas of Living Australia

<http://www.ala.org.au/>

Australian Faunal Directory Query Page

<http://www.environment.gov.au/biodiversity/abrs/online-resources/fauna/afd/home>

Biodiversity Heritage Library

<http://www.biodiversitylibrary.org/>

Please send me what you use and we can grow this resources page.

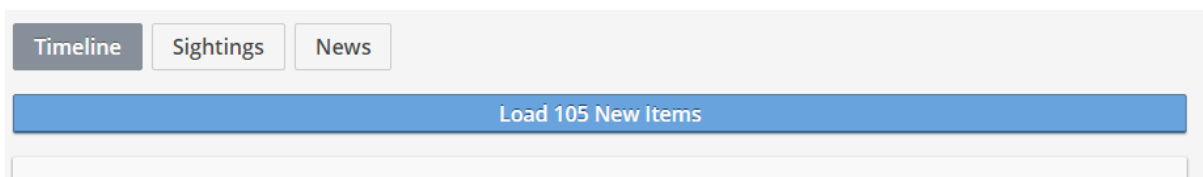
Gee – BowerBird is a “busy bee” overnight

The other night I was in a rush to leave work to catch my train ride home and so I forgot to logout of BowerBird before I left. I left work about 5pm and I was back in at work about 9am the following morning.

I saw that I had left BowerBird on overnight and to my surprise between 5pm and 9am the following day, 105 new records, identifications or comments had been made.

WOW – that’s great. I could imagine people taking images during the day, then waiting until the evening to download them from their camera and then upload into BowerBird.

Thanks everyone for this great activity.



In the next week or two, I will be doing some whooping and a hollering when BowerBird reaches the magic 30,000 identified records on ALA.

As of now, we sit at 29,364 record. The BowerBird uploads to ALA happen each Sunday afternoon so I’ll be checking the count on Monday morning! Here is the URL if you want to check the ALA/BowerBird count yourself:

http://biocache.ala.org.au/occurrences/search?q=data_resource_uid:dr893#tab_mapView

29,364 results for **Data resource: BowerBird**

I love it when someone finds “THEIR FIRST”.

And so it was Reiner who uploaded his first images of a Velvet Worm. At one stage, they were considered to be the “missing link” between worms and insects but that theory has now lost credence. Still, they are the most amazing creatures. To catch prey, they “spit” or “shoot” two streams of fluid from their mouthparts that covers and traps their prey. These are magic animals and infrequently seen or photographed.



Tasmanipatus barretti Location: Mathinna, Tas Photos by Reiner Richter

A brushy with baby



Brushtail Possum Liana TAS Photo by Reiner Richter

Reiner's image brought back such good memories for me. In our front yard is a tall eucalypt and about 4 metres up this tree we have a possum box. You can usually tell when a possum is in residence by the branches of nearby trees sticking out of the possum box. This tree is next to our front stairs so we always look up to say hello to the "possum in residence".

Since we usually only see the tail end of the possum hanging out of the box, we nicknamed it "possum-bottom". I still hear my 22, 20 and 17 year old children all still saying hello to "possum-bottom" on their way out the door. And, haven't we fed these possums some apples over the years! Free-loaders!! (->!

Ready, set and Go!

This was the record title that Reiner added to this amazing capture of a click beetle (Elateridae) just taking flight.

I love it. For me, this is the richness that images bring to taxonomy. In most cases, this specimen's spatial and temporal data would be recorded and databased but none would be the wiser of the artistry and beauty of the individual specimen.

This image required someone to be there just at the right time and to take the image.

Thanks for sharing Reiner.



Location: Bakers Beach TAS Photo by Reiner Richter

Spot the bee!

I joined the Facebook Australian Native bee page to assist with identification In my spare time.

So often I see posting asking whether hoverflies are bees.

This great shot by Linda Rogan shows a hoverfly and an Exoneura bee side by side.



On the wrong plant.

Our Mallee Farmer, Maree Goods, is always trying to confuse me by sending me images that “according to the textbooks” just should not happen. Australia has the most primitive set of bees called the Colletidae. Some of these bees do not carry pollen on the outside of their body but rather they eat the pollen and carry it in the crop – the first part of their stomach. These Euryglossinae and Hylaeinae bees are supposed to be restricted to feeding on the flowers of Myrtaceae only – eucalypts ... that was until Maree sent me this image of a Hylaeinae bee feeding on *Eremophila* – Myoporaceae. It just shouldn't happen ... if I close my eyes it will go away



So, I wrote to Maree and told her that her images must be incorrect because the textbooks say so. These bees have never before been recorded on anything but Myrtaceae.

Maree did not take this well and she sent me this additional picture of the same bee feeding on sweet Bursaria ... lalalala ... if I close my eyes I cannot see it and it didn't happen !

Amateurs! What would they know anyway ??????????












Location: Maree's front garden Wail. Photos by Maree Goods.

I should never have gone out and given that evening talk on bees to Maree's plant group and been accommodated by Maree and her husband Graham overnight. That's where I went all wrong to get Maree interested in photographing bees!

What an amazing set of images

Marc Newman is a keen bee amateur enthusiast in the NE NSW hinterland. Marc has photographed a wonderful array of bees visiting his home and the surrounds. Here is just a snapshot of Marc's BowerBird page.

<p>Marc Newman</p> <p>Lasioglossum Parasphecode...</p>  <p>0 1 1 1 0</p>	<p>Marc Newman</p> <p>Euryglossa subsericea roosti...</p>  <p>0 1 2 0 0</p>	<p>Marc Newman</p> <p>Lasioglossum (Chilalictus) br...</p>  <p>0 1 1 0 0</p>
<p>Marc Newman</p> <p>Amenia imperialis Snail par...</p>  <p>0 2 1 0 0</p>	<p>Marc Newman</p> <p>Lasioglossum (Australictus) ...</p>  <p>0 1 1 0 0</p>	<p>Marc Newman</p> <p>Homalictus punctatus</p>  <p>0 1 1 0 0</p>
<p>Marc Newman</p> <p>Leiproctus sp. Big black be...</p>  <p>0 1 1 0 0</p>	<p>Marc Newman</p> <p>Callohesma sp. from WA on ...</p>  <p>0 2 1 0 0</p>	<p>Marc Newman</p> <p>Euhesma Euhesma neglectu...</p>  <p>0 1 1 4 0</p>

However, I recently spotted these amazing photos of a raspy cricket (Orthoptera: Gryllacrididae: Kinemania) using one of Marc's bee hotel enclosures.

Marc added these comments to his images:

"I observed this cricket behind a curtain of silk in some of the larger openings in my bee hotel.

A few different openings had been used but most remained open during the day therefore unoccupied.

I poked a hole late one day to get a face view and an hour later it was stitched up again. I checked again later in the dark and she had opened the curtain and left but was once again in residence in the morning.

The full view photo of the cricket was not the same individual as I found it on the ground during the day. I don't understand why its wings were crumpled like that as if, like a cicada, they needed to be pumped up before flying."

Looking at Marc's "crumpled wing" image, I would suggest an immature cricket has in its final moult when the adult wings finally emerge. The cricket was in the process of fully expanding its wings and Marc took his photo as it was in the process of pumping blood into the wings to fully extend them.

Insects only have about 30 minutes in which to extend their wings for flight. The air reacts with the wing chemicals and hardens them so if the insect cannot do this extension within 30 minutes of reaching the adult stage, then it will never fly.

Enjoy Marc's "cricket in the bee hotel" images.







Location: Ballandean QLD Photos by Marc Newman

The “old” disappearing act

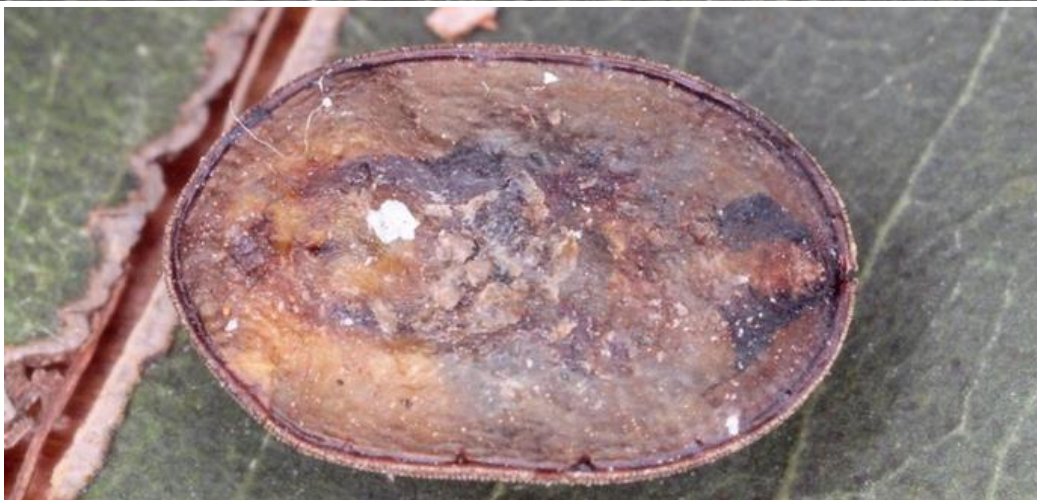
This mum had had enough of carrying around joey - time to stand on his own two feet.



Location: Kanangra NSW Photos by Linda Rogan

Mystery Insect

Martin Lagerwey photographed this insect but had no idea what it was. Neither did I when I first saw it many years ago. I did some research and found it is the larva of a Hoverfly called *Microdon*. The larva feed on ants. Now that is weird.



Location: Langwarrin VIC Photos by Martin Lagerwey

Magic photos



Location: Kanangra NSW Photo by Linda Rogan



Location: Waeel WA Photo by Jean and Fred Hort

Mark Berkery's Nature's Place

Raiders On The Tom's ...

They're back, the dreaded fruit fly – dreaded by some because they destroy the harvest. I see them as a photo opportunity, since I don't expect so am not disappointed.

I have a few tomato plants at different locations in the garden and at just one site something has been taking big bites out of some growing fruit and opening the way for so many others to feast.

This year's garden is burgeoning beyond bounds. Plants overgrowing others to their apparent detriment. I just do a little pruning, dead-heading, and trust it works out for the best. The insects are loving it.

And oddly – not for me but against the usual thinking, I see the insects as a good sign, all is well in my garden. Because that's nature and my garden is me 'out there'. As within so ...

I find if I let what must be alone 'enough', inside and out, it doesn't take more than its share of the available space and things are in balance, not too much or too little of anything.

Equilibrium, who could ask for more?

I know, I know ...



© Mark Berkery



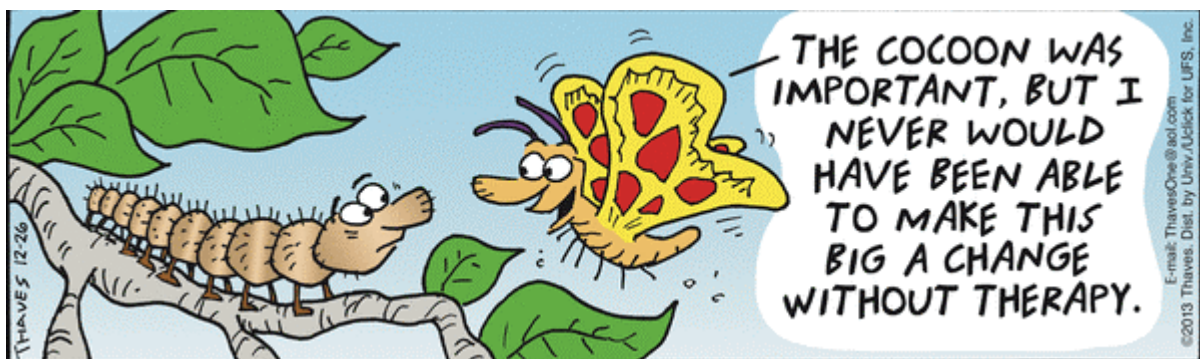
© Mark Berkery





© Mark Berkery

Insect humour



Now – I have a lot of fun writing the Bugle each week 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)