



Understanding
Our Natural World
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Field Nats News No 340



Newsletter of the Field Naturalists Club of Victoria Inc.

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Governor of Victoria

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May 2023

From the President

Next month on Sunday, May 7th, we have our Annual General Meeting and I look forward to seeing as many of you as possible join us at the hall. Veterinarians Sasha Herbert and Alice Aldora will be delivering a presentation on their current research titled, 'Reptiles, mites, microbes and people: Seeking insight into the bacterial biome of reptiles and their parasites'. If you can't get there, please avail yourself of the opportunity to vote via proxy. The forms are available in the last FNN, 339 and at the office. If you would like to contribute to the running and sustainability of our organisation don't hesitate to contact me. In the coming weeks we will be organising a working bee to tidy up the garden around the hall and to paint the walls of the toilets which are in need of some urgent attention. Your participation will be very much appreciated and we can organise a BBQ to make it a social gathering as well. There will also be ongoing visits and working bees to Mali Dunes.

**The due date for FNN 341
will be the first Tuesday of
the month, 2nd May.**

joan.broadberry@gmail.com



The female gall of *Apiomorpha* sp on *Eucalyptus cephalocarpa*

At the last TIG excursion to Cranbourne I photographed a large gall of *Apiomorpha* sp, Eriococcidae, Hemiptera (Photo 1) on a silver stringy bark, *Eucalyptus cephalocarpa*. Upon dissection it revealed the well-developed female insect living within (photos 2 to 5). On nearby leaves were the galls of male insects (photo 6), presumably of the same species. Parasitism or a more sophisticated symbiotic relationship? The high species richness of *Eucalyptus* and apparent host-specificity may have resulted in high species diversity for some of the eucalypt-galling eriococcid genera such as species of *Apiomorpha* which are more host-specific than are their non-gallicolous eucalypt-feeding relatives. There are over 40 species of *Apiomorpha* with new species regularly described in Australia. This is a very interesting group and there will be many opportunities to photograph their various, interesting forms on future TIG excursions. Be forewarned; if you attend the excursions, you will run the risk of learning something new and interesting every time.

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The opened gall revealing the female insect.



The six legs are clearly visible.



Male galls

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CALENDAR OF EVENTS

All meetings are held at the FNCV Hall, 1 Gardenia St. Blackburn at 8 pm., unless otherwise indicated. On days of extreme weather conditions, excursions may be cancelled. Please check with leader.

May 2023

Monday 1st – Fungi Group Meeting: *Fungi under the microscope*. Slide preparation and staining specimens from spores and gills using a wide variety of fungi. Microscopes will be set up so everyone can have a go at making their own slides. Speaker: Philippa Burgess. Contact: Melvin Xu 0410 522 533 fungifncv@gmail.com

Tuesday 2nd - Fauna Survey Group Meeting: *Testing for PIT-tag loss and monitoring bat boxes at Organ Pipes National Park: A long history with a new twist*. Speaker: Robert Bender, Friends of Organ Pipes National Park. Contact: Ray Gibson 0417 861 651; rgibson@melbpc.org.au

Saturday 6th - Botany Group excursion: Meet at 10 am at the Wirra Willa carpark in Toolangi State Forest (Sylvia Creek Road (off Myers Creek Road). Come and see the magnificent giant trees of Toolangi with Brett Mifsud (tall tree hunter). Juniors are very welcome to join us. Registrations essential. Contact: Sue Bendel possum56@gmail.com 0427 055 071 Please note the excursion will be postponed if high winds are forecast.

Sunday 7th – Annual General Meeting 2 pm. Join in this important event in the life of our club. Congratulate our new Long Term (40 year) members and help launch The Victorian Naturalist Digital Archive: Volume 1 –13, 1884-2020, *see p6*. Veterinarians Sasha Herbert and Alice Aldora will be giving a presentation on their current research '*Reptiles, mites, microbes and people: Seeking insight into the bacterial biome of reptiles and their parasites*'. If you are unable to attend there is the option of voting by proxy, *see FNN 339*. Contact: FNCV Office admin@fncv.org.au

Sunday 7th – Fungi Group Foray: Meet at 10.30 am *Wanderslore Sanctuary, car park, Launching Place*. Melway 237 J6 Google maps link [Launching Place Station](#) Contact: Melvin Xu 0410 522 533 fungifncv@gmail.com

Monday 8th – Marine Research Group Meeting: *Field trip roundup*. Join us as we review where we have been and what we have seen over our field work season. Contact: Leon Altoff 0428 669 773

Wednesday 17th - Terrestrial Invertebrates Group Meeting: Contact: Wendy Clark wendy.empathy@optusnet.com.au

Thursday 18th – Botany Group Meeting: *On the trail of giants*. Speaker: Brett Mifsud, tall tree hunter. Contact Ken Griffiths, botany@fncv.org.au

Saturday 20th to Sunday 21st – Fauna Survey Group Camp: *Rushworth Forest nest box inspection and maintenance*. Prior bookings essential. Contact Ray Gibson rgibson@melbpc.org.au or 0417 861 651

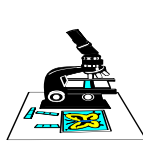
Saturday 20th to Sunday 21st – Fungi Group Foray: Weekend Away in the Otways. Melway X926, A10. Google maps link [Triplet Falls Carpark](#) Meet Saturday 10 am at Triplet Falls Carpark. Sunday meet 10 am Melba Gully car park Lavers Hill. The suggested accommodation for this foray is at Otways Tourist Park, Gellibrand, or Bimbi Park, Cape Otway, both of which offer camping and cabin options. Contact: Tobi May tobi.fungi@gmail.com

Monday 22nd - FNCV Council Meeting 7.30 pm via Zoom. Apologies and agenda items to Wendy Gare, admin@fncv.org.au Max will email the link.

Tuesday 23rd – Day Group 10.30 am. Coffee and a chat, speaker 11 am. *Bat adventures in Australia and Slovenia*. Speaker: Silvia Zele. Contact: Joan Broadberry joan.broadberry@gmail.com

Wednesday 24th – Geology Group Meeting: *Unquiet Victoria—tectonic activity over the last 5 million years*. Speaker: Professor John Webb, La Trobe University. Contact: Ken Griffiths geology@fncv.org.au

Friday 26th – Juniors Group Meeting 6.45 pm: *Dunnarts and other Dasyurids*. Details advised to Juniors by email. Contact: Adam Hosken adamhosken@gmail.com



The policy of the FNCV is that non-members pay \$5 per excursion and \$3 per meeting, to contribute towards Club overheads. Junior non-member families, \$4 per excursion and \$2 per meeting.

Members' news, photos & observations

We always have space for member photos and natural history observations. Please share with us what you have noted in your daily life, travels or garden. Email: joan.broadberry@gmail.com by the first Monday in the month.

Welcome
Welcome

Warmest greetings to these new members who were welcomed into our club at the last Council meeting:

Colin Sando, Eric Xie, Elizabeth Newton, Anna Foletta Montgomery Hall and Peter Durkin

A Net-casting spider with a net!

Wendy Gare was collecting something from her garage about 11 pm recently when she noticed a Net-casting Spider had constructed a beautiful little net. She immediately took a photo, which was timely as the net and spider had disappeared in the morning.

These spiders hunt by spinning a very elastic net out of special silk. It is held close to the ground, between their front legs and flung forward at great speed, entangling any prey that ventures below.

We published a photo of a male Net-casting Spider in FNN 339. It is much more unusual to see the female holding its net. A wow moment indeed.

To repeat: an article titled, '*The Secret world of Net-casting Spiders*' appears in *The Victorian Naturalist*, volume 136 (4) August 2019, p.153



**Thanks to the editorial
and layout team who put
together FNN 340**

Joan Broadberry
Wendy Gare

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publication are those of the authors and do
not necessarily reflect those of the FNCV.*

bookshop@fncv.org.au

for any orders or bookshop queries.

If you don't have access to email, the FNCV office will pass on your message. Kathy will then be in contact with you.

Vale: Arthur Kevin Elliott, Inventor of 'The Elliott Trap'. 16th Dec 1940 – 24th Feb 2023

Kevin, as he was known, grew up in Upwey, attending the local primary and high schools. Whilst working fulltime, he completed his engineering qualifications at RMIT. In 1965, he met Joyce and later the same year, they married. They were life-long friends and had four children, three daughters and a son.

About 1966, Kevin designed his well-known trap for capturing live animals, so that the wildlife could be closely studied. The traps were initially built by Kevin's father Arthur, but, in the early 1970s, Joyce took over the production, helped by a number of employees. This was done in the workshop at their home in Upwey. The Fauna Survey Group used the traps regularly until recently and they are recognised around the world.

Kevin was also a car enthusiast, loved animals and always enjoyed a good talk with everyone. Joyce died in June 2021.

Sally Bewsher

Continued from page 1

On many occasions I have seen European wasps kill and butcher many caterpillars including, geometrids, lasiocampids, saturniids (emperor gum caterpillars in particular), *Doratifera spp* and many others. I have also seen them successfully tackle mantids and large huntsman spiders. On Sunday 26th March, near dusk, I saw them attack and butcher small damselflies. I managed to obtain one of the small zygopterans which had been almost beheaded and stripped of most of its legs (photo 6) when it fell into the grass, still clutched by the wasp. As I approached, the wasp flew away leaving its prey. A few minutes later another damselfly was snatched from the air and both prey and predator again crashed into the lawn but this time, the wasp managed to carry the zygopteran away before I could capture either of them. As we all aware, there is always something new and interesting to be discovered when observing nature.

Jean-Henri Casimir Fabre, a French naturalist and entomologist (1823-1915), was described by Charles Darwin as an incomparable observer who noted and recorded inestimable natural phenomena. I can thoroughly recommend reading his many publications which illustrate the patience, commitment and sheer persistence of one of the truly great naturalists. As a child I was able to borrow the works of J.H. Fabre from the mobile library when it visited our neighbourhood. "The Life of the Fly", "The Life of the Spider", "The Life of the Caterpillar", "The Mason Wasps", "The Life of the Grasshopper", "The Life and Love of the Insect" and "Social Life in the Insect World" are some of the notable titles that I still enjoy reading.



6. The sad remains of the damselfly which was still twitching and moving. The head was attached by a thread of tissue, but detached completely when I positioned the animal for photography.

Max Campbell (All photos: M. Campbell)

GARDENS FOR WILDLIFE MANNINGHAM

Are you interested in having a garden to support wildlife?

Gardens for Wildlife are a network of community members and council/shire officers from across Victoria supporting each other to involve local residents, schools and businesses to care for and conserve the native plants and animals of our communities.

We invite you to an information evening to begin the process of working with the Council to bring Gardens for Wildlife to Manningham.

When: Thursday April 27th

Where: Now and Not Yet café. 148-150 Yarra St Warrandyte

Time: 7.30 pm

Registration is required due to limited space.

Please email jennahmrose@outlook.com

CITY NATURE CHALLENGE (CNC)

The City Nature Challenge is a global event organised by the California Academy of Sciences and the Los Angeles County Natural History Museum. Started in 2016 as a challenge between Los Angeles and San Francisco, it has grown rapidly. It is a bioblitz-style competition where cities are in a contest against each other to see who can make the most observations of nature, who can find the most species, and who can engage the most people.

The FNCV organised the CNC in 2020 taking in a few local government areas in the east of Melbourne. We were then joined in 2021 by eight eastern councils plus the Entomological Society of Victoria to form the

"Melbourne – Eastern Metropolitan area"

The dates for the 2023 City Nature challenge are

Friday 28th April to Monday 1st May

Further uploads & identifications:

Tuesday 2nd May to Sunday 7th May

Results announced: Monday May 8th May

Please watch out for events to join, or simply observe indigenous species in your own area and enter them on iNaturalist. If you would like to lead an activity for the 2023 CNC please contact

Sue Bendel possum56@gmail.com (representative for FNCV)

Extracts from SIG reports given at the last FNCV Council Meeting

Botany Group: Meeting Thursday 16th March:

Ruth Scharley told the story of a project to revegetate at an urban park. Nettleton Park, Glen Iris, sits where Back Creek joins Gardiners Creek. Weedy trees, such as willows and elms were removed. Melbourne Water and local government were involved, but it all started after the drought when five neighbours set out to make changes. Working bees to weed and plant followed. Indigenous nurseries, Ecological Vegetation Classes (55 and 641) and an on-site shed all contributed to a success story of co-operative effort for the park. Thirteen people attended.

Ken Griffiths

Geology Group: Meeting Wednesday 22nd March: Graham Patterson chose the older rocks to introduce his presentation on the landforms of the coast from Point Lonsdale to South Australia. Exposed both west and east of Cape Otway, the Eumeralla Formation is about 106 million years old, deposited in a rift valley as Australia was splitting off from Antarctica. Dinosaur footprints were found there in 2019. In contrast, at Anglesea, rocks are from 34 MYA. Near Portland, limestone is from 8 to 16 MYA. When the sea level was lower, such as during the recent ice age, sand was blown on-shore and formed rock strata. Graham showed photos of many spectacular rock features of this coast, and explained their causes. 26 people attended.

Ken Griffiths

Day Group: Meeting Tuesday 28th March:

The Geology of Building Stones – observations in Victoria and England. Speaker: Rob Hamson. Nineteen people attended. A report of this meeting will be published in FNN 341

Terrestrial Invertebrates Group:

Meeting Wednesday 15th March:

We had about 10 people attending a very interesting meeting. Members first discussed some of the invertebrates they had seen. Wendy gave an account of the life cycle of the Painted Apple Moth. Max Campbell then gave a fascinating talk on Flies. A detailed report of the meeting appears in FNN on pages 11 and 12.

Excursion to Cranbourne Gardens and Bushland Reserve: Sunday 19th March

Ten members participated. The morning was spent at the Australian Garden. Lunch was taken at the Springybark Picnic Ground. (See below photo: Wendy Clark) The afternoon was spent at the wetlands. A more detailed report appears in FNN on pages 9 and 10.



Vale Bruce Fuhrer 1930–2023

We were saddened to learn of the death of Bruce Fuhrer on 31 March 2023, at the age of 93. Bruce was well known to many members, for his photographs, publications, and numerous talks to Club meetings.

Bruce joined FNCV as a country member—while living in Portland, western Victoria—in August 1961, and was awarded honorary membership at the AGM in May 2001. Soon after joining, he moved to Melbourne, and soon became chairman of the Botany Group, a position he held for three years. During this time the club undertook one of its most successful ventures, the publication in conjunction with AH and AW Reed of *Flowers and plants of Victoria*, to which Bruce contributed a substantial number of photographs.

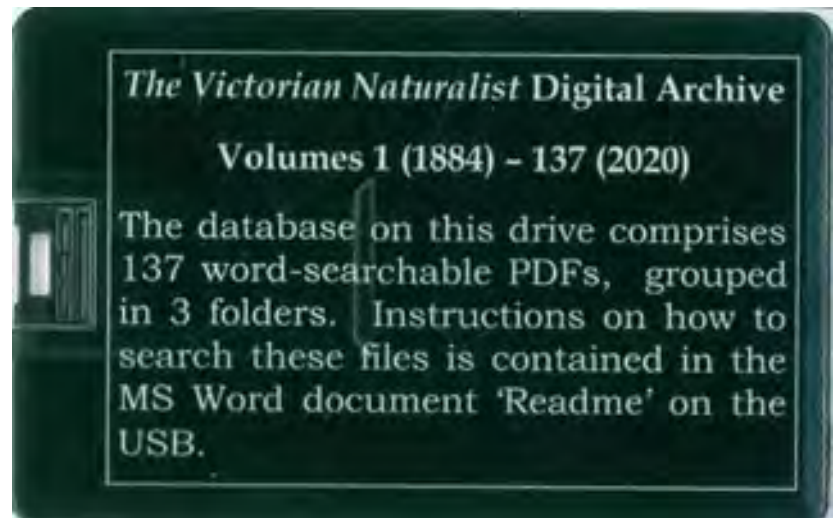
Between 1980 and 2010, Bruce was sole or co-author of ten books on a range of natural history topics, including fungi, seaweeds, mosses, and wildflowers (of Victoria, and south-western Australia). Through his long membership of the Club he was a frequent speaker to club meetings, and the leader of many field excursions. He also contributed two articles in 1993 to *The Victorian Naturalist*.

Bruce was awarded the Australian Natural History Medallion in 1989, for his contribution to Photography (Botany).

The President and Council of FNCV extend their condolences to Bruce's family.

A more detailed tribute will be published in a forthcoming issue of *The Victorian Naturalist*.

Digital archive of *The Victorian Naturalist* now available



The FNCV is pleased to make available an easily accessible digital archive of all issues of *The Victorian Naturalist*, from volume 1, no. 1 to volume 137, no. 6. These 137 volumes of the journal have been scanned and placed on a business card USB, in searchable PDF form. A copy of the Adobe Reader is required to access these files. For users who may be unfamiliar with searching in this way, there is a 'Readme' file on the USB for guidance.

These USBs can now be purchased through the FNCV Bookshop. The cost is as follows:

Members — \$70 (inc. GST)

Non members — \$88 (inc. GST)

To purchase a copy of the Archive, please:

- telephone—(03) 9877 9860;
- come into the FNCV hall at 1 Gardenia Street Blackburn, on Monday or Tuesday;
- send an email to bookshop@fncv.org.au; or
- submit an order for a copy.

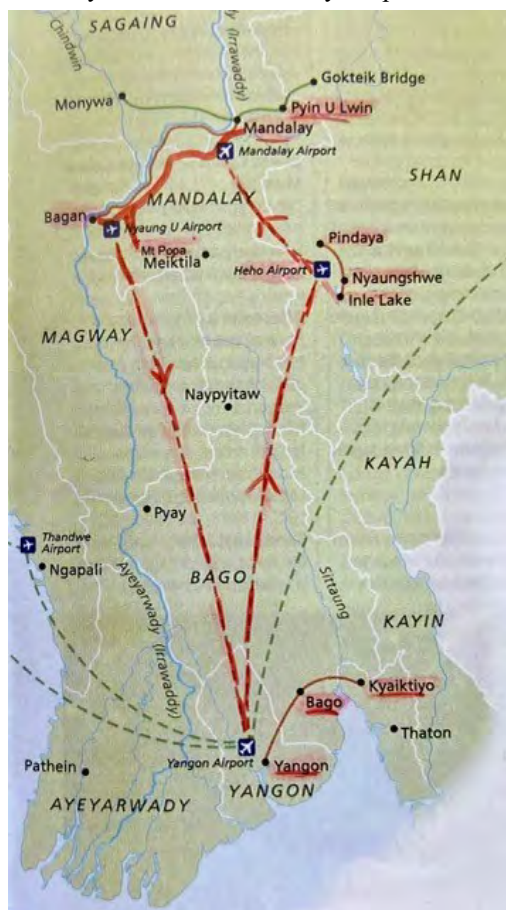


Day Group

Travels in Myanmar before the military takeover. Speaker: *Eve Kolar*

The 55 million population of Myanmar live mainly in the fertile southern delta and the semi-arid plains of the interior flanking the Ayeyarwady (Irrawaddy) River and its tributaries. In the far north on the Chinese border lie the eastern Himalaya peaks, rising to 5900m. To the west, Myanmar is bordered by Bangladesh and India, to the east China, Laos and Thailand. Ninety percent of the population are Buddhists with Buddhism dominating every part of life.

The Burmese speaking Barmars comprise about 68% of the population. They are descended from Indo-Tibetan nomads who conquered the central plains in the 9th and 10th centuries AD. In the regions are a mixture of minority peoples, including the Rakhines, Mon, Karen, Kachin, Chi and Shan. Large numbers of Indians came as workers in the British colonial era when Myanmar was known as Burma. The eleventh century rulers of ancient Bagan established a feudal society that lasted until the British annexation in 1885. Achieved independence in 1948. A brief attempt at democracy died with the military coup of 2021.



Eve's trip to Myanmar packed so much in, including travels by plane, bus and boat, it is only possible to outline some of the places visited.

In January 2017 Eve flew from Thailand to Myanmar's largest city, Yangon, (Rangoon), population 5.5 million. The Shwedagon Pagoda in Yangon is the most revered site in the country. Legend has it that hairs of the Buddha are enshrined inside the stupa. Its 99m steeple is covered in lots of pure gold.

(photo below-right)

From Yangon, the tour group drove 84km north-east to Bago, visiting the Htaukkyan War Cemetery, attended by the Commonwealth War Graves Commission, on the way. At Bago they visited the magnificent 1000-year-old Shwemawdaw Pagoda, (showing



signs of earthquake damage from 1917) and the huge reclining Shwethalyaung Buddha.

A short flight to Heho in the north-west, and a bus ride, took the group to Pindaya. Highlights were: Aungban fresh food market; roadside scenes on the way to Pindaya; the Buddha filled Pindaya Caves; Leg-rowing fishermen on Inle Lake and the 11th to 12th century Thein Pagoda complex. Inle Lake is 22km long and 11 km wide. Legend has it that the Intha people fled from southern Myanmar in the 14th century and the Shan ruler forbade them from settling on land, so they settled on the lake. **(Photo page 8)**

Mandalay, situated on the Ayeyarwady, is the second largest city. Visits in the city and its surrounds encompassed: Amarapura, the old capital and the 150 year old U Bein teak bridge; Mahamuni Temple, Burma's second most revered shrine - the Buddha is covered in gold leaf, real gems and jewellery; Shwenandaw Kyaung (Golden Palace Monastery), one of the very few to survive

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(Continued from page 7)



ous because of troops of macaque monkeys. **(Photo below)**

Myanmar showcases a wealth of beautiful crafts, including woven lotus stem threads - seen in villages around Lake Inle; Lacquerware seen in a factory in Bagan - a black tar-like tree resin is scratched away and colour added; thanaka paste (sandalwood) that has various uses including as a sunscreen; silk weaving, paper making and fine gold leaf produced by pounding with a mallet.

Next the group drove to Bagan and the most important tourist site in Myanmar: the Bagan Archaeological Area where there are over 2200 Buddhist monuments dating from the 10th to 14th centuries when it was the imperial capital. Setting off with 18 other balloons on an early morning balloon ride over Bagan, allowed spectacular views below of many temples, villages and workers going about their daily life.

Absolutely amazing was a visit to the Kyaiktiyo Golden



the WW2 bombing; Kuthodaw Pagoda, a UNESCO Memory of the World site and known as the largest book in the world and the huge Royal Palace rebuilt by the army in the 1990s after being bombed during the Japanese occupation. The Royal Palace was originally built by King Mindon in the mid 19th century. It was used by the British after they removed King Thibaw and Queen Suphayalat in 1885.

A drive to Maymo, a cooler hill town, two hours from Mandalay brought many reminders of the colonial era including the historic Candacraig hotel, now called Governor House and the National Kandawgyi botanical gardens.

The tour took a boat trip on the Ayeyarwady River. The Mingun Pagoda was commenced in 1790 to house a Buddha tooth but was left unfinished. The remains were badly damaged by an earthquake in 1839.

From Mt Popa, the view of Taung Kalat, a volcanic plug, is a spectacular sight. Its 777 steps lead to a small monastery perched on the top, but the climb is hazard-



Rock Temple where a Buddha hair is enclosed in a pagoda on a delicately balanced rock. Only men can access the rock to add more gold foil. **(Photo left).**

On the return to Yangon at the final stage of the trip, further exploration of the city included catching the circuit train out into the countryside for three hours, visiting markets, pagodas and the National Museum of royal regalia.

On behalf of the Day Group I would like to thank Eve for once again taking us along with her on another visit to a little-known place. Her photography and eye for detail are second to none. She has also prepared a fabulous photo book documenting her trip which was a great help to me in producing this report. I knew very little about Myanmar but through Eve's presentation, I have gained a lasting impression of the depth of its history, the beauty of its countryside, the friendliness of its people and above all the magnificence of its Buddhist culture.

Joan Broadberry



Terrestrial Invertebrates Group

Excursion to Cranbourne Gardens and Bushland Reserve March 15th 2023

Ten members arrived at Cranbourne Gardens on a drizzly start to the day. We headed into the Australian Garden first hoping that we would see a significant number of species as these gardens are watered. The insect life was sparse, but what we saw was interesting. The highlight of the morning was a large Emperor gum caterpillar, which is rarely seen these days and hasn't been seen often for at least 20 years. It was well photographed, and much discussion was had on the reasons behind its drop in numbers.

In the afternoon, we headed to the bushland section and had lunch at Stringybark Picnic Ground. We walked towards the wetlands and saw a good range of invertebrates, but all in low numbers. Only a few spiders were seen, some colourful moths, beetles, Bush Cockroaches, Yellow Flat Worm and more. An Echidna and a Black Wallaby were also observed.

A selection of photos can be seen below. A more complete list is available at: <https://www.inaturalist.org/projects/fncv-2023-cranbourne>

Wendy Clark All photos: W. Clark

Images this page from the Australian Garden, next page from the Bushland Reserve.



Giant Sugar Ant *Camponotus intrepidus*



Shellenberg's Soldier Bugs hatching
Oechalia shellenbergii



Beautifully arranged juvenile Mottled Cup Moths
Doratifera vulnerans



Photographing the Emperor Gum Caterpillar



Emperor Gum Caterpillar *Opodiphthera eucalypti*



Lacy Emerald *Eucyclodes insperata*



Lydia Lichen Moth *Asura lydia*



Bess Beetles or Passalid Beetles. *Aulacocyclus edentulus*.
These beetles live under logs and protect their larvae.



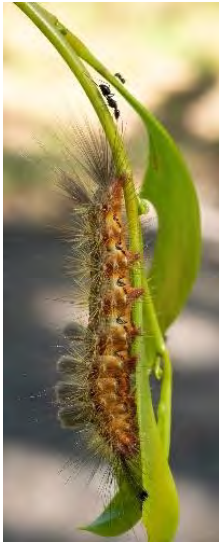
Australian Wood Cockroach *Panesthia australis*



Member of Felt Scales, a type of gall. Family Eriococcidae *Apiomorpha conica*

Terrestrial Invertebrates Group Meeting Wednesday 15th March 2023

It was good to be back in the hall and meeting in person again. We had about 10 people attending a very interesting meeting. Wendy chaired the meeting and started by asking members what they had seen. Chinese junks, Imperial Blue Butterflies, Orb Weaving Spiders, Jumping Spiders, weevils, and more were reported and discussed. Wendy showed photos of the life cycle of the Painted Apple Moth that she had been monitoring, highlighting the size difference between the male moth and female wingless moth. This size difference also showed up in the caterpillars. She also brought along the newly hatched caterpillars (hundreds of them) and the wingless female moths.



Painted Applemoth female 3.5cm



Painted Applemoth female 2cm with eggs



Painted Applemoth male 1cm



Newly hatched caterpillars

An Introduction to Flies *Speaker: Max Campbell*

The speaker for the night was Max Campbell who gave us a fascinating talk on Flies. It was an introduction to where they fit in the insect world as well as anatomy and aids to identification. He discussed formations of mouth parts and antennae structure. Wing structure and the veins in them was also shown as an important part of identification.

Max then took us through the different types of flies in the Order Diptera, their life cycles, habitat, and food. Many have different habitats for the larvae vs the adult e.g. an aquatic larva and a land-dwelling adult. He went through all the families and discussed their attributes and habits. It was accompanied by many excellent photos, anecdotes, and observations.

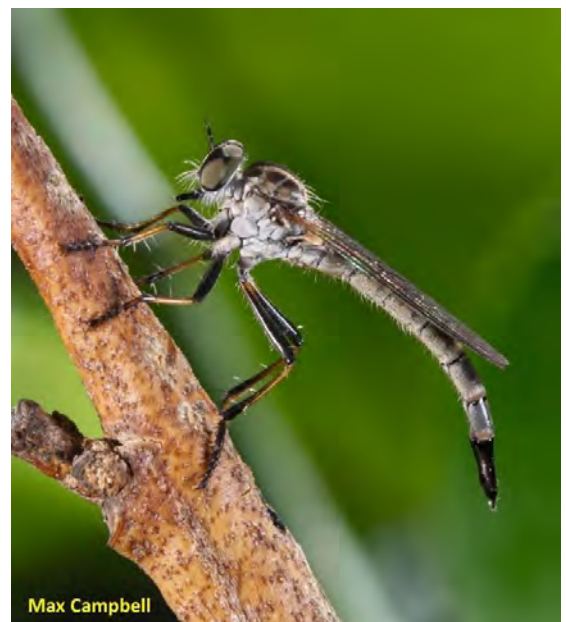
Some adaptations of flies were particularly interesting. From wingless flies living on mammals like bats, to the Bot Fly which adapted to its environment by laying its eggs on a Blow Fly which would then carry them to the intended victim. This came about because horses recognised the threat of the Bot Fly and pranced and shook them off, so they had a low success rate. By usurping the unthreatening fly to carry its eggs to the horse, the Bot Fly got a higher success rate of planting its eggs.

Here are Some Points of Interest

Insects can be loosely broken up into those that cannot fly (Apterygota) and those that can fly (Pterygota = Exopterygota + Endopterygota).

- A collective term for all of the fliers is flies, both verb and noun.
- The Native Americans referred to honey bees as "The white man's flies."
- There are many flies in our vocabulary which is not surprising as there are so many flying insects.

Insects such as Mayflies, Damselflies, Dragonflies, Stoneflies, Alderflies, and Caddisflies have four wings, and their larvae are aquatic. The Fireflies, Snakeflies, Sawflies and Scorpionflies, also have four wings, but their larvae are terrestrial.



Robber Fly—family Asilidae

(Continued on page 12)

(Continued from page 11)

Diptera

What we call flies are in the order Diptera. These have two wings and two 'drums' which are modified wings that help stabilise flight among other things. Their larvae can be aquatic or terrestrial.

Diptera are of great economic importance

- They are a basic food source for ecosystems
- Principal pollinators on earth
- Clean-up organisms (bodies and dung)
- Disease transmission – active and passive
- Parasitism of live-stock and humans
- Fly strike of live-stock
- Medical use
- Forensic science

The Brachycera – a suborder of Diptera

The Brachycera, the name meaning ("short-horns"), are a suborder of Diptera including the more highly specialized flies which have palpi with one or two joints and usually short antennae with one or never more than six joints (such as the horsefly, robber fly, and housefly). Most Diptera belong to the Brachycera, a group characterized by the reduction or fusion of antennal segments to eight or fewer and by modifications to the larval head and mouthparts. With about 80,000 described species, this group contains many of the best known flies, such as houseflies and fruit flies. Their most distinguishing characteristic is reduced antenna segmentation.

Flies as Pollinators

At least 75% of pollination may be attributable to Diptera.

Wendy Clark



Common drone fly—family Syrphidae
Photo: Max Campbell



Bristle Fly—family Tachinidae
Photo: Max Campbell



Syrphid Hover Flies feeding on nectar and pollinating.