



Understanding  
Our Natural World  
Est. 1880

# Field Nats News No 332



Newsletter of the Field Naturalists Club of Victoria Inc.

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Governor of Victoria

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August 2022

## From the President

There is a relatively high level of COVID infection in the community at large and within the FNCV community. The last Day Group meeting resulted in a significant number of COVID infections, so I urge everyone attending meetings indoors to wear approved face masks to minimise the risk to yourselves and to others.

The symptoms are usually mild to moderate for vaccinated people, but we have many members with other health issues for whom the infection may be more serious if not life-threatening. Many of us may have partners who are compromised, so taking infection home is to be avoided at all cost. Unfortunately, many members do not come to meetings because there is no assurance that masks will be worn by everyone. The infection, whether mild or not, is a major interruption for anyone who contracts it. A significant number of people have ongoing symptoms and the increase in infections is clearly locking up our hospitals and health services.

Masks are an effective and inexpensive way of minimising infections at gatherings so, please consider wearing them, if not for yourself, for the safety of others.

We often encounter aphids of various kinds on our garden plants throughout the year. They are generally regarded as unwelcome pests and tempt us to eradicate them, but they are far more interesting and complex than they appear to be. Notwithstanding our insecticides, they are subject to attack by parasitic wasps (Photo 3 page 4), fungi, lacewing larvae, plant poisons and hover fly larva. Nonetheless, they seem to withstand many threats and adverse changes in their environment and their colonies grow as you watch them pop out endless numbers of cloned off-

(Continued on page 4)

## FROM THE EDITOR

**The due date for Field Nats News is always the first Tuesday of the month. For FNN 333 this will be: Tuesday 2nd August.**

Use [joan.broadberry@gmail.com](mailto:joan.broadberry@gmail.com)

**However, as the editor will be away from 8th to 22nd of August any items for inclusion in FNN 333 sent after 7th August should be emailed to both**

**Gary Presland**  
[presland@archaeologist.com](mailto:presland@archaeologist.com)  
and  
[joan.broadberry@gmail.com](mailto:joan.broadberry@gmail.com)



Photo 1. A female aphid and her numerous clones

| Index  | Page  |
|--|-------|
| From the President   | 1,4-5 |
| Calendar of activities - August 2022   | 2     |
| Members' news, notices, photos & observations  | 3     |
| <b>Fauna Survey Group News:</b> Equipment Day  | 5     |
| <b>Day Group News:</b> Missing the forest for the trees.   | 6-7   |
| <b>Fungi Group News:</b> Foray to Mortimer Picnic Ground   | 8-9   |
| FNCV's first Trivia Night  | 9     |
| Extracts from SIG reports given to Council; Working with children check needed for Parks Vict volunteers | 10    |
| Bush Stone-curlews   | 11-12 |



## 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.*

### August 2022

**Monday 1<sup>st</sup> – Fungi Group Meeting: Member's Night Show and Tell.** Contact: Melvin Xu [fungifncv@gmail.com](mailto:fungifncv@gmail.com)

**Tuesday 2<sup>nd</sup> – Fauna Survey Group Meeting: Review of nest box programs for native wildlife in Victoria.** Speaker: Phoebe Macak, Wildlife Ecologist, Arthur Rylah Institute for Environmental Research Contact: Ray Gibson 0417 861 651; [rgibson@melbpc.org.au](mailto:rgibson@melbpc.org.au)

**Monday 8<sup>th</sup> – Marine Research Group Meeting: To be advised.**  
Contact: Leon Altoff 0428 669 773; 9530 4180 AH

**Wednesday 17<sup>th</sup> – Microscopy Group. Practical Meeting: Compound, dissecting and digital microscopes set up for your use.** BYO specimens or view our slide collection with guidance and help with identification.  
Videos of live microscopic organisms. Contact: Philippa Burgess 0409 866 389

**Thursday 18<sup>th</sup> – Botany Group Meeting: To be advised.** [botany@fncv.org.au](mailto:botany@fncv.org.au)  
Contact: Ken Griffiths [botany@fncv.org.au](mailto:botany@fncv.org.au)

**Monday 22<sup>nd</sup> – FNCV Council Meeting: 8 pm via Zoom.** Apologies and agenda items to Wendy Gare [admin@fncv.org.au](mailto:admin@fncv.org.au) Max will email councillors the link.

**Tuesday 23<sup>rd</sup> – Day Group Meeting: Via Zoom. September 1<sup>st</sup> will be Wattle Day.** Speaker: Dr Gary Presland. Zoom will be active from 10.45 am speaker at 11 am. Please register as early as possible with Max Campbell [mcam7307@bigpond.net.au](mailto:mcam7307@bigpond.net.au) or Joan Broadberry [joan.broadberry@gmail.com](mailto:joan.broadberry@gmail.com) 9846 1218. Max will email the link. Registering is not a commitment. You do not have to use the link if your plans change. Friends and family (including non-members) are always welcome at the Day Group, so please join us on Zoom..

**Wednesday 24<sup>th</sup> – Geology Group Meeting: To be advised.**  
Contact: Ken Griffiths [geology@fncv.org.au](mailto:geology@fncv.org.au)

**Friday 26<sup>th</sup> – Juniors Group Meeting 7.30 pm: Birthday Party. Advance registration required.** Contact: Dr Patricia Amaya [juniors@fncv.org.au](mailto:juniors@fncv.org.au)

### COVIDSafe

Members are advised that they should NOT attend FNCV activities if they are at all unwell.

Wearing a well fitted mask and maintaining physical distancing are strongly recommended. Please reread the first paragraphs of *From the President FNN* p1.

With the current wave of Covid19 variants it may be that some meetings will be cancelled or held via Zoom. **For this reason it is advisable for members intending to go to a FNCV meeting to register with the contact person so that they can be kept informed if arrangements change.**

If you prefer not to register, please keep a close eye out for updates from the office and check with the contact person close to the meeting date.

### CANCELLATION

13th –14th August: the **Biodiversity Symposium**, mycology, ( fungi) advertised in the last calendar of events, has been cancelled because of the current wave of the highly infectious strains of Covid19. It will be rescheduled at a later date.



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](mailto: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:**

Catherine Luxford, Stephanie Black, Greg Bellion, Anne Bellion, Katherine Smedley, Dylan Osler, Jessica Vize, Nick Morgan and Aidan Fitt.

## Queen's Birthday Honours

Our warmest congratulations to FNCV member Terri Allen who was awarded the OAM for services to conservation and the environment in the recent Queen's Birthday honours. Terri, from Wonthaggi, joined the club in 1993.

**Editor:** Terri, our apologies for overlooking your well deserved award. FNN's normally very reliable spies were obviously having an off day.

## Vale Dr Beth Gott (1922–2022)

Beth joined FNCV in 1979 and maintained her membership until 2019. In that period she contributed to Club activities in a variety of ways.

Dr Gott was an ethnobotanist by profession, attached to the Botany Department of Monash University. Her primary area of study was in the use of plant resources by Aboriginal people in Victoria. She was always willing to make available to a wider audience her specialised knowledge on the subject. On a number of occasions, Beth spoke in detail on this subject to meetings of the FNCV. This she did firstly in February 1984, to a monthly Club meeting; and then twice to the Botany Group—in August 1995, and again in June 2001.

In July 1992, Beth led an excursion for FNCV members, visiting Monash University Gardens. Included within the area was an Aboriginal plants garden that she had established, adjacent to the Biology building.

Our deepest condolences are extended to Beth's family and friends.

## Thank you to all those who helped produce FNN 332

Joan Broadberry, Wendy Gare, Sally Bewsher, Pat Grey and Sheina Nicholls.

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24,557 followers

*The views and opinions expressed in this publication are those of the authors and do not necessarily reflect those of the FNCV.*

[bookshop@fncv.org.au](mailto: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.





(Continued from page 1)

spring without the need for sexual reproduction (Photos 1 & 2). The aphid body that you see comprises many genera of symbiotic bacteria. The aphid's diet of plant fluid does not include a source of nitrogen but symbiotic bacteria, like *Buchnera aphidicola*, produce amino acids for them. Bacteria such as, *Serratia sp*, protect the aphids from heat and others, *Hamiltonella sp*, protect them from parasitoid wasps while *Regiella* expands their dietary range. *Regiella*, *Rickettsiella*, *Rickettsia* and *Spiroplasma* help protect aphids from fungal pathogens. The role of other symbionts is yet to be investigated. So, the aphid we see is a holobiont, comprising many bionts (symbionts) or Operational Taxonomic Units (OTUs). Like all organisms, most if not all, insects have bacterial microbiomes comprising many other integrated OTUs. Biodiversity is clearly a very complex matter. Microbiomes also assist in the breakdown of toxins in the diets of many organisms. Koalas survive on a eucalypt diet because of the detoxification services provided by their microbiome. Humans are also holobionts, incorporating a complex microbiome that is only now being better understood; the new research supporting improved health and medical outcomes.

The largest biont is generally termed the "host" but need not be considered as the most important member of the aggregation since all partners contribute to survival. The environment may act in different ways upon the individual bionts and the survival of the holobiont may be impacted by the loss of any biont. Therefore, natural selection and overall fitness depend upon all of the bionts to some degree. Corals need their zooxanthellae and the latter require light to survive and produce their sugars via photosynthesis so increased water turbidity affects the health of corals overall.

Symbiosis, once thought to be the exception, is now considered to be the rule for life on Earth. Understanding our natural world has taken on a new dimension. The level of complexity is unknowable since we don't know how many organisms exist, let alone the number of critical interactions they have. Most of these interactions are essential to the survival of the entire holobiont so regenerating damaged ecosystems is a far more challenging project than commonly believed; as is the "recreation" of extinct species (and their microbiomes).

Recent studies of fungi have clearly demonstrated the complex role that these organisms play in the smooth running of ecosystems. Decomposition, soil formation, recycling and food resource in addition to complex symbiotic relationships with other organisms are just some of the "services" attributed to fungi. Most of the Earth's plants require fungal symbionts for their survival and fungal partnerships with algae (to form lichens) assists in the formation of soil from weathering rocks. The fungal mycelium permeates entire ecosystems and facilitates life as we know it. Its broader impact as a "wood wide web" of resource distribution and communication is still being unravelled, revealing many hitherto unknown relationships and roles.

Our ideas of what a species actually is, are changing. The concept of species has always generated controversy and lengthy debate leading to the generation of numerous definitions. The organisms to which we attach labels are far more than the phenotypes or forms that meet the eye. They are heavily impacted by their microbiomes and symbionts. Morphology, physiology, behaviour, reproduction, food assimilation, pathogen resistance, climate resistance and survival in general are affected by the other bionts comprising the holobiont. It seems that we may have been misunderstanding our natural world. Yet another of those inconvenient truths?

The restoration of destroyed ecosystems is far more complex and unmanageable than those who willingly undertake their destruction would have us believe. To restore anything requires a complete understanding of what is to be regenerated. Since we do not know how many species live on Earth, nor understand the true complexity of their associations it is a far better plan to stop the destruction of what little remains before it is too late. In the light of new evidence, the notion that "offsets" can be a reasonable



Photo 2. A new clone just delivered



Photo 3. A mummified aphid showing the exit hole of a parasitoid wasp.

(Continued on page 5)

(Continued from page 4)

compromise, or alternative, is becoming an untenable proposition.

**Max Campbell**  
All Photos Max Campbell

#### Further reading.

Sheldrake, Merlin (2020). *Entangled Life. How Fungi make our worlds, change our minds and share our futures.*

The Bodley Head, London.

Koide, Roger T. (2022). *On Holobionts, Holospecies, and Holoniches: the Role of Microbial Symbioses in Ecology and Evolution.*

*Microbial Ecology*, April 8<sup>th</sup>, 2022.

Online: <https://europemc.org/article/med/35396623>

McLean, Ailsa H.C. *etal* (2016). Insect symbionts in food webs. *Phil. Trans. R. Soc. B* 371: 20150325



**Photo 4.** There is far more to an aphid than what is seen by the naked eye.



## Fauna Survey Group



### EQUIPMENT DAY

The Fauna Survey Group held a committee meeting followed by their annual equipment day on Saturday 9th July. A dozen members helped clean, mend, sort, relabel, count and check their equipment.

Thanks to all who helped out.

**Sally Bewsher**  
All photos: S. Bewsher







## Day Group

***Missing the forest for the trees.***  
**The ecology of the Box-Ironbark Forest of the**  
**Heathcote Region.**  
**Speaker: Dr Mary Gibson**



## Anatomy of a Forest

### Maria Gibson & John Patykowski

John Patykowski was Mary's PhD student before she retired from Deakin University as Senior Lecturer in Environment and Ecology. Mary dipped into his work for a presentation given to the FNCV Day Group on 28th June 2022.

Her talk examined some of the invisible processes enabling forest existence, with a focus on the Heathcote/Graytown Box

(Continued on page 7)



(Continued from page 6)

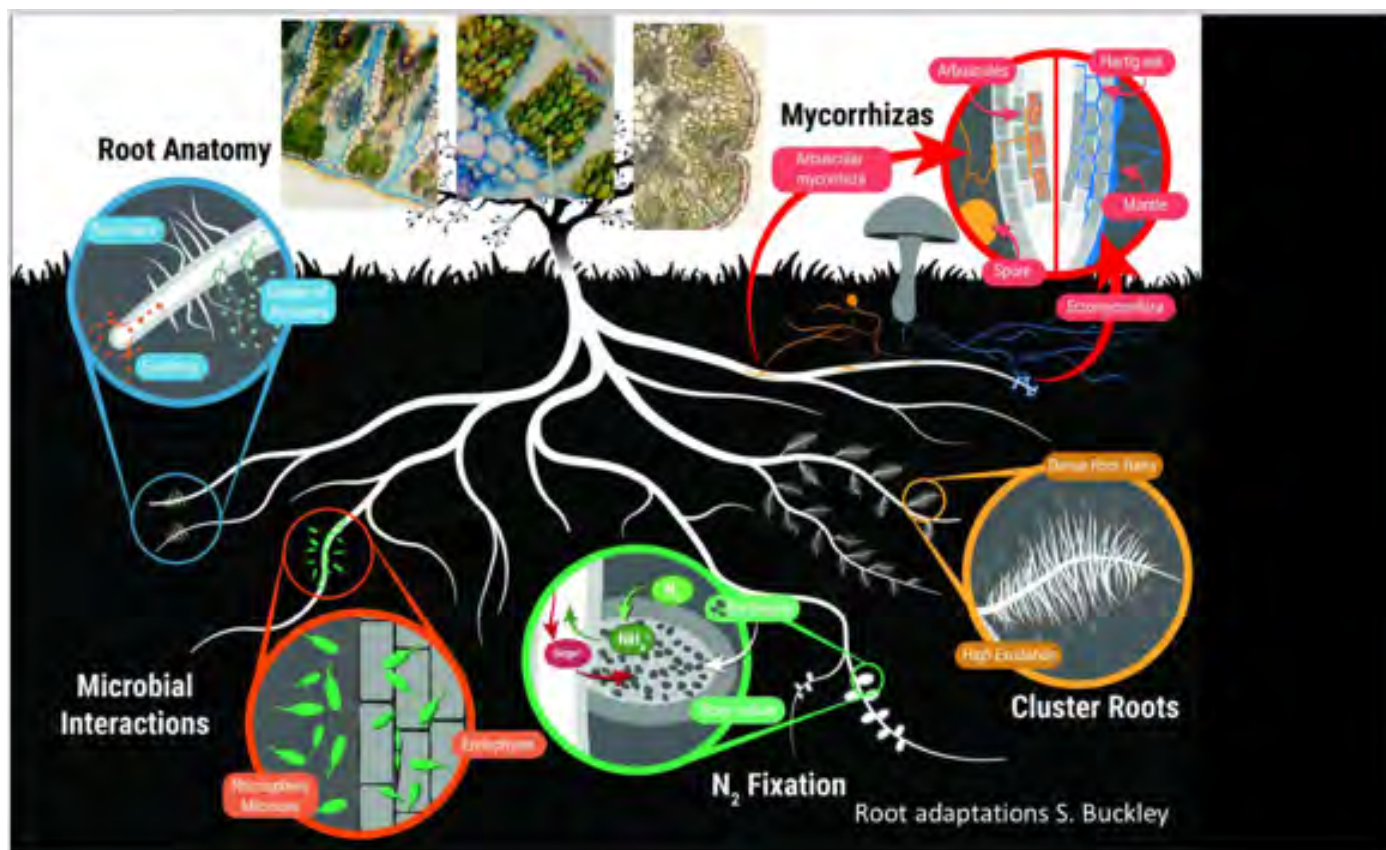
Ironbark forests (BIF) near Bendigo. Plant nutrient acquisition strategies and conservation/recycling, keystone species, the wood wide web, and leaf adaptations with regard to water conservation were examined to provide a glimpse of how such processes are integrated and work collectively to promote forest stability and maximise forest functional capacity. Three broad groups of nutrient acquisition strategy were identified in the 42 plants examined: adaptations to root morphology (proteoid roots: 2 spp.), biotic associations (nitrogen fixers: 12 spp.; mycorrhizal associations: 25 spp.; hemiparasitism: 2 spp.) and carnivory (1 sp.).

These roles were briefly explained as was their importance and those of associated plants along with the leaf nutrient dynamics of the species involved and their contribution to the forest. Australian proteoid species are well known for their high levels of recycling leaf phosphorous from senescing leaves; however, Alpine Grevillea *Grevillea alpina* behaved more like Chilean proteoids and returned much higher proportions of phosphorous back to the forest floor through their senescent leaves than occurred on average.

Not only do nitrogen fixers release nitrogen in excess to their needs into the soil via the roots, but, for most species, their senescent leaves also made large contributions to soil nitrogen dynamics, particularly Gold Dust Wattle *Acacia acinacea*. Cherry Ballart *Exocarpus cupressiformis* and Rough Mint-bush *Prostanthera denticulata*, although not nitrogen fixers, also made notably higher than average nitrogen contributions to the soil via senescent leaves. Box Mistletoe *Amyema miquelii* and Cherry Ballart *Exocarpus cupressiformis* were identified as species of prime importance for the forest's litter nutrient dynamics. Behavioural adaptations of Eucalypts showed how water usage and loss was minimized during summers. This promotes biodiversity in that other species can use that water and, therefore, persist in the forest. Morpho-anatomical adaptations were shown to be numerous and included isobilateral leaves, modified stems functioning as leaves, and small leaf size. Gorse Bitter-pea *Daviesia ulicifolia* was a particularly interesting plant as it had proteoid roots, fixed nitrogen and had the modified stems mentioned above.

The graphic below gives an overview of many of the interactions covered in the presentation.

Dr Mary Gibson



The Day Group meeting titled, *You can't see the forest for the trees*, opened up ways, new to many of us, of looking at forests ecology. It was fascinating to learn how plants, fungi, microbes and trees co-operate together to create a healthy forest. Questions asked at the conclusion of the meeting and feedback from the Day Group audience indicate that that Mary's presentation was much appreciated. I would like to add a special thank you for the report Mary provided for FNN, for allowing us to publish some of the slides used in her talk and for her fabulous support of the Day Group over many years.

Joan Broadberry





## Fungi Group

### Foray Mortimer Picnic Ground, 15th May 2022

The FNCV Fungi Group met on Sunday the 15<sup>th</sup> of May for their second foray of 2022 at Mortimer Picnic Ground, Gembrook. The day was cool and mostly sunny, which was perfect weather for a foray. The area had 10 millimetres of rain in the week preceding the foray, so conditions were slightly damp and humid. The foray area is a damp sclerophyll forest with riparian forest adjacent to William Wallace Creek. Part of the track walked is through damp heathy woodland to the south of Gembrook-Tonimbuk Road.

The group started the day walking counter clockwise along the Mortimer Nature Walk. *Hymenoscyphus* were gregarious and extensive in first 50 meters of the track, which made the forest floor look like someone had splattered white paint all over it. These were not the only Ascomycetes observed in this area; the beautifully coloured *Chlorociboria aeruginascens*, with green-blue mycelium and *Scutellinia* sp. were also observed.

Further up the track, observations of note include the fractal-like *Tetrapyrgos olivaceonigra* (Figure 1), the delicate *Mycena lazuline* (Tiny Blue Lights), and distinctive *Podoscypha petalodes* (Wine Glass Fungus).

During lunch, the group collected and described a *Crepidotus* sp. herbarium specimen. Melvin Xu provided instruction on how to describe a fungus specimen using scientific language and how to collect samples for genetic sequencing (Figure 2).

In the afternoon, the group split up to explore different tracks around the picnic ground. The drier tracks offered little diversity compared to the damp riparian pockets and were largely dominated by agarics. *Cortinarius* spp. were prevalent, especially *C. rotundisporus*, which was more common in the heathy forest. An unusual *Cortinarius*, first thought to be *C. archeri*, was observed in the damp sclerophyll forest (Figure 3). Although it shared the distinctive purple colour of *C. archeri*, it differed in that the cap had scales at the top and it lacked a glutinous cap and stipe. The cap instead was distinctly fibrillose, with fine brown hairs around the margin.

In the wetter areas, a greater diversity of fungi was observed. Several species of clubs and corals were observed, including representatives from the *Clavulina*, *Phaeoclavulina*, and *Ramaria* genera. The elusive *Craterellus undulatus* (Sinuous Chanterelle) was also found 600 metres north from the picnic ground along Triangle Road (Figure 4).

In comparison to the 2021 foray at the same location, there is some consistency regarding the species observed. The widespread distribution of the invasive *Favolaschia claudopus* (Orange Pore Fungus) was recorded again, reminding us all of the importance of boot sterilisation in between sites to reduce the spread of this weed. A number of *Mycena* species were recorded during both



Figure 1: The fractal-like *Tetrapyrgos olivaceonigra*.  
Photo: Hamish Beshara



Figure 2: Fungi Group members describing a *Crepidotus* sp. herbarium specimen.  
Photo: Carol Page.

(Continued on page 9)





Figure 3: An interesting unidentified *Cortinarius* sp.  
Photo: Hamish Beshara.

(Continued from page 8)

forays, which is expected given the genus' variety of species. *Russula* common to sclerophyll forests also made a return, which are a familiar colourful sight during the colder months. The Fungi Group will continue to return to Mortimer Picnic Ground to document fungal diversity over time.

**Hamish Beshara**

### Corrections:

The Fungi report of the weekend foray to Tara Bulga National Park, published in FNN 331 p7 was written by  
Tobi May and Hamish Beshara

The fungi report *Modelling the biogeographic patterns* published in FNN 331 p6 was written by Anna Brady



Figure 4: *Craterellus undulatus* (Sinuous Chanterelle)  
Photo: John Eichler.

## FNCV's first Trivia Night 16/7/22

able evening of competition and socialising. Unfortunately a resurgence of Covid19 variants, as so often happens these days, affected the attendance, but two teams (masked) fought it out on the night with everyone going home a winner. The evening ran very smoothly and we hope this is just the first of many trivia events, giving an opportunity for FNCV members from various groups to get to know each other and have fun.

A FNCV trivia night has been in the planning for over two years. FNN would like to acknowledge the amount of time and effort put in by Barbara Burns, Max Campbell and Philippa Burgess to achieve what was an enjoy-

The next few issues of FNN will include some of the trivia questions used for you to challenge yourself. We will begin with those from the general knowledge section that one or more of the teams did not get right. (Answers: see p12)

1. Where is the Sea of Tranquillity?
2. What is the main ingredient of a mince pie?
3. What is the last letter of the Greek alphabet?
4. What is acrophobia the fear of?
5. Who composed the nutcracker suite?
6. What two cities represent letters in the phonetic alphabet?
7. Which artist painted *Guernica*?
8. What is the floral emblem of Tasmania?
9. On what continent do Aardvarks live?
10. What scientist was awarded the Nobel prize for physics in 1921?

**Joan Broadberry (Photo: J. Broadberry)**



## Extracts from SIG reports given at the last FNCV Council Meeting

### Geology Group Meetings: Wednesday 25<sup>th</sup> May

Ken Griffiths presented: *Exploring virtual night skies with Stellarium*. While stepping through some useful features of the Windows PC software version, a number of bright objects of different kinds were illustrated. Arcturus: red and bright, Alpha Centauri: actually a binary, readily 'split' with small telescope. The Jewel Box open cluster is near Beta Crux, and faintly visible to the naked eye. Binoculars, or better, a telescope show it well. The Hyades is a big open cluster that you can photograph in the summer. Stellarium can zoom from a narrow telescope view to a 5 degree wide binocular/camera view. The nebula of Orion is 6 times the area of the moon, which Stellarium illustrates. And by changing the date to January, Stellarium simulates the position of the Orion constellation, high in our southern sky in summer. The star theta 1 Orionis C, one of the 4 Trapezium cluster, is a mighty powerhouse in the cradle of new stars that the Orion nebula is. It is notable that Galileo recorded his observation of the Trapezium in 1617. Finally, Stellarium showed us: the stunning Carina nebula complex, The Large Magellanic Cloud galaxy and the Omega Centauri globular cluster. Eleven attended.



### Wednesday 22<sup>nd</sup> June

Perry Vlahos continued from April with Part 2 on *How astronomers revealed secrets of the universe*. Copernicus, in 1543, published a book on how the Earth orbits the Sun. Tycho Brahe recorded accurate measurements of planetary movements, which Kepler borrowed to correct the idea of Brahe that the Sun orbits the Earth. All this before telescopes were invented. Halley's Comet is recorded as sighted from the Tower of London in the 1066 Bayeux Tapestry. The extreme elliptical orbits of comets around the Sun as one focus implied the Oort Cloud, described in 1950 though not seen, well beyond the furthest planets. The direction of a comet's tail evidences solar wind, much studied these days. William Herschel 200 years ago built big telescopes, supported by George III in England. But his discovery of an infra-red band beyond the visible rainbow spectrum of light led to Fraunhofer in 1815 using diffraction slits to reveal the chemical elements (metals) in light sources, such as stars. Finally, Perry explained how in the mid 19th century the observed Doppler Effect of sound waves was applied to the developing understanding of the electro-magnetic spectrum: the famous red shift in the light of nebula was observed in the 1860s. In the 1920s, the expanding universe was described. The 'Big Bang' theory of the origin of the universe got widespread support by the 1960s. Eighteen attended.

Ken Griffiths

### Microscopy Group Meeting: Wednesday 15th June 2022.

Dissectors and compound microscopes were available for members to view many specimens, Botany, Marine, Geology, Entomology, Fauna, Fungi as well as man-made macro items. Max Campbell showed videos of freshwater micro invertebrates. Two members new to Microscopy attended, one was a newly subscribed member to FNCV. Six members attended.



Philippa Burgess

### Botany Group Meeting: Thursday 16<sup>th</sup> June



Ken Griffiths presented on *Why Proteaceae do not need fungi*, following the publications of Mark Brundrett, of Perth. Fungi typically form mutualisms with most plants, providing minerals and taking sugars. There are several kinds of hyphae/root cell configuration. Brundrett has surveyed world-wide work on most plants, at species and family level. 8% of plants world-wide are not mycorrhizal, but Australia has a higher percentage. Brundrett attributes this to the long time family evolution through poor soils and a drying climate. The Proteaceae are known to resist fungal invasion, so it is not just that there are no fungi in their habitat. Part 2 will look at cluster roots, and Proteaceae distribution. Seven attended.

Ken Griffiths

## REMINDER—WORKING WITH CHILDREN CHECK NEEDED FOR PARKS VIC VOLUNTEERS

From 1st July 2022 Parks Victoria has introduced a requirement for all volunteers who participate in activities on the Parks Victoria estate to hold a current Working with Children Check (WWCC). If you are in the process of obtaining a WWCC, you can continue volunteering while your check is being processed. You must then upload it to the ParkConnect system once you have received it. However, after 1 July 2022, if you have not taken any actions to obtain a WWCC, you will no longer be authorised to undertake volunteering on the parks and reserves estate. It is not too difficult, please use the websites below for help.

[How to apply for a WWCC via the Department of Justice website](#) (please right-click link)

[How to apply for a WWCC via Service Victoria app](#) (please right-click link)

[How to upload your WWCC card on ParkConnect](#) (please right-click link)

[How to upload your WWCC card on ParkConnect short video](#) (please right-click link)

[Frequently Asked Questions \(FAQs\)](#) (please right-click link)

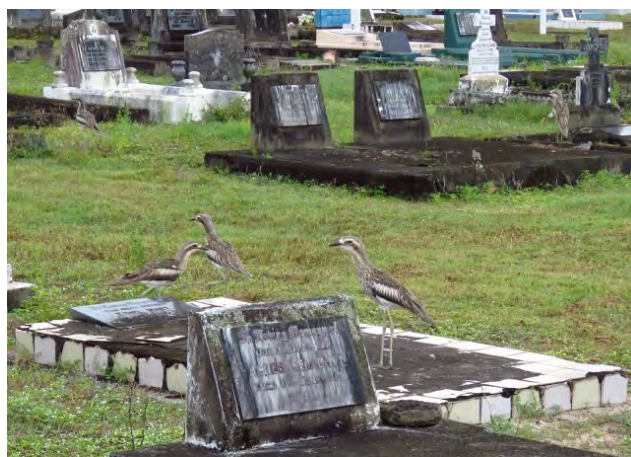
Alternatively you can contact your local staff member or our volunteer team [volunteer@parks.vic.gov.au](mailto:volunteer@parks.vic.gov.au)



## Bush Stone-curlew (*Burhinus grallarius*)

The Bush Stone-curlew, sometimes called the Bush Thick-knee, is listed as common in Queensland, endangered in New South Wales, vulnerable in South Australia and threatened in Victoria. On a recent holiday based in Cairns I was amazed to see them in large numbers in urban areas. At least a hundred roost during the day in the Cairns cemetery. Zoom into the first photo on the right and you should be able to see ten. There are five in the close up image of the same area. My guess is that they perceive the grey of the grave stones as excellent camouflage.

Even more astonishing, on a visit to the supermarket in a busy local shopping centre, I counted 17 in a relatively small patch of grass close to a McDonalds sign. *Below*. You will notice the trunk of the thin tree is the same in both photos. I couldn't get all 17 into one image but I counted carefully. It seems Bush Stone-curlews in tropical Australia show a remarkable tolerance for urban environments and proximity to humans.



Historical records indicate that Bush Stone-curlews were widely distributed over almost the whole of Australia (including Tasmania) apart from arid deserts or rainforests. The question that puzzled me was, **“Why are these birds abundant in parts of Cairns and northern Australia, but have almost disappeared from southern Australia?”** To answer it I needed to

Bush Stone-curlews are endemic, nocturnal, ground-dwelling birds. They have grey-brown feathers with dark streaks, prominent white eyebrows, large yellow eyes and long legs. Their favoured habitat is open plains and woodlands, where they stalk slowly at night in search of invertebrates, spiders, frogs, reptiles or small mammals. Bush Stone-curlews are capable of flight, but rely mainly on camouflage to evade detection. During the day they stand quietly in the shade under cover, or squat on the ground in the leaf litter. *See internet image below*. If disturbed they crouch or walk away slowly, then freeze. This works well against predators that hunt using motion, such as eagles, but not for predators that use scent to hunt such as foxes, dogs and cats.



The Bush Stone-curlew's call is an eerie high-pitched wail. This ghost-like noise is their night time contact call and may be given by several birds in a chorus, ending in a high pitched crescendo. Rendered as *weer-loo*, it is occasionally heard during the day.

Most Stone-curlew pairs stay together in the same territory throughout their life. They prefer 'untidy' landscapes covered in fallen timber and debris. However, it seems

(Continued on page 12)



(Continued from page 11)

that, even in Victoria and NSW, they utilize open, grassy areas for their daytime roost if there are adjacent to treed or woodland areas in which to feed at night. Open roosting areas provide good visibility for predators and, as already mentioned, they have a high tolerance for the presence of humans. In Queensland and right across the north here are many reports of Stone-curlews being long-term residents of backyards, caravan parks and sports grounds.

Bush Stone-curlews lay their eggs in a shallow scrape in the ground. In many cases the same nesting sites are re-used in successive years but may be abandoned if the surrounding grass becomes too tall, or disturbance of their nests is too severe. The eggs are mottled grey-brown and are incubated by both parents, with the off-duty bird usually standing guard nearby. The chicks can walk almost as soon as they hatch. The pair often lay two clutches of eggs in a season.

Although once common throughout the southern states including Victoria, only small remnant populations of Bush Stone-curlews remain. Older people brought up in the country, including in towns, vividly remember the spine-tingling nocturnal calls they heard when they were children.

Referring back to my question, the answer, sadly, is the same one that applies to the decline in numbers of nearly all wildlife species, both in Australia and overseas. Bush Stone-curlew numbers have crashed in the south principally due to habitat destruction. The clearing the land for agriculture, the planting of crops, mining, logging and the expansion of towns and cities has led to the removal of a huge amount of the pre-European woodland. Paddocks used for grazing have been planted with exotic grasses and left with few remaining trees so that fallen branches and leaf litter are minimal. Further hazards are the disturbance of nests and eggs by stock and more frequent bushfires.

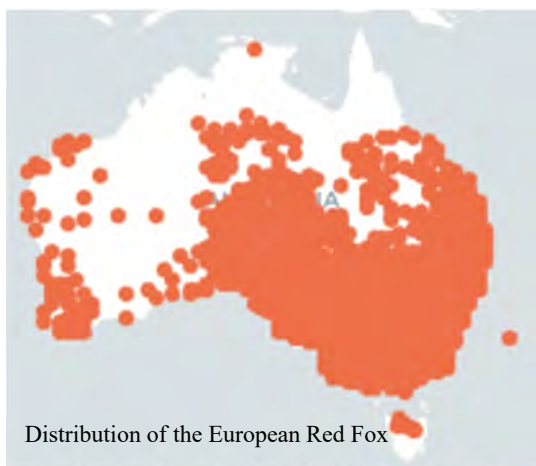
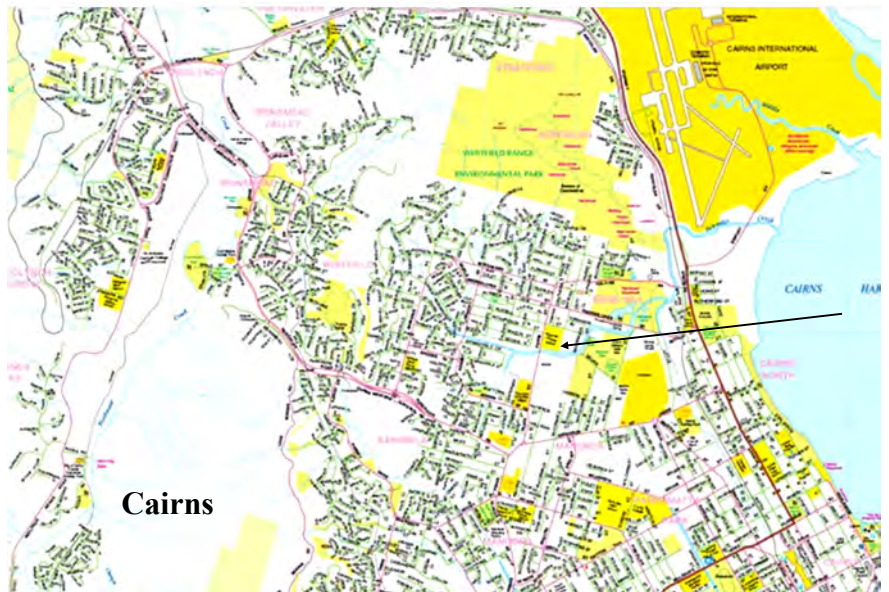
Tropical Australia is, as yet, not nearly as closely settled as are the southern states. Despite land clearing for crops such as sugar cane and cattle grazing, much of its forest remains. Even in urban areas there is often a patchwork of woodland. On the map of Cairns shown above, the areas coloured yellow show many strips of forest crisscrossing the suburbs. Zoom in on the tip of the arrow, (apologies for the amount of zooming required in this article) and you will see a blue line in the area of the shopping centre I visited. The woodland adjacent to this waterway provides suitable habitat for Stone-curlews to feed at night as do the often untidy tropical gardens of residents. They choose their daytime roost on nearby lawns in order to keep watch for predators. Of course the warmer climate means that insects, frogs, reptiles etc. are more plentiful year round, another important point of difference to southern Australia, particularly during the colder months.

As well as loss of habitat, critical to the demise of Bush Stone-curlews in the south has been predation by foxes, cats and dogs. European Red Foxes do not do well in the tropics. The accompanying map shows that they are largely absent from the north. Predation by dogs and cats and disturbance of nests are still present, but the devastating toll caused by foxes is absent.

Unfortunately, we now live in the Anthropocene era. Finding a large population of any bird, animal or insect is something to enjoy but, sadly, not something to be complacent about. Bush Stone-curlews will face many problems in the tropics as the human population grows and land clearing, predation, nest disturbance and bushfires increase.

As I finished writing this article today 19/7/22, I opening *The Age* newspaper and read in the *State of the Environment* report that a panel of 32 experts listed land clearing as a top cause of wildlife losses. The report said that between 2000 and 2017, there were 7.7 million hectares of land cleared across Australia and 93% of the vegetation was felled without federal approvals for threatened-species habitats. Good luck Bush Stone-Curlews.

Joan Broadberry (All photos unless otherwise indicated: J. Broadberry)



Distribution of the European Red Fox

#### ANSWERS TO TRIVIA QUESTIONS:

1. On the moon. 2. Dried fruit (not as one team said, *mince*.)
3. Omega 4. Heights 5. Tchaikovsky 6. Lima & Quebec
7. Pablo Picasso 8. Tasmanian Blue Gum 9. Africa
10. Albert Einstein.

/10