



White-faced Heron
Photo Noël Young

Brown Brood Frogs (Bibron's Toadlets) – June 12th Monthly Meeting

Bibron's Toadlet, *Pseudophryne bibronii*, also known as the Brown Brood Frog because of the way the male guards the eggs prior to hatching, is a small frog (22-32mm long) endemic to south-eastern Australia. Its range extends from Adelaide in an arc through Victoria and NSW to about Brisbane. Their habitat is woodlands, grassy woodlands and the southern mallee in areas where small, but long-lasting, pools of water may be found in winter and spring. Male Bibron's Toadlets call from March until June which is the best time to detect their presence. In Victoria this species is listed as Endangered under the Flora & Fauna Guarantee Act. The Castlemaine area is a hot spot for this Toadlet.

Our guest speaker in June, Max Sonnemann from Deakin University, started his talk by telling us a bit about these frogs. First, they are slow moving and don't jump which means they rely on other defensive strategies such as playing dead while showing off their black and white patterned undersides. Each individual has a unique pattern on the belly, rather like a fingerprint. Or they might flash their bright orange armpits or legs. If all this fails, they are poisonous! These frogs can synthesise their own poisons known as pseudophrynamines as well as utilising poisons obtained from their diet of insects.

But, like many frogs, these frogs are endangered and the main causes are

much the same everywhere – loss of habitat, climate change and chytrid fungus. Chytrid fungus is a highly transmissible fungal disease that spreads through water, survives best at high humidity and low temperatures and reproduces in the skin mucus of amphibians. In *Pseudophryne* frog species, peak infection and mortality occurs at metamorphosis.

Chytrid is fatal for many frog species and has caused the extinction of some Australian frogs, but the effects vary and some frog species are resistant. The Common Eastern Froglet, *Crinia signifera*, for example, is both resistant to the fungus and a carrier which can spread the fungus in the environment where it can infect other frog species.

The Castlemaine Field Naturalists Club acknowledges the Dja Dja Wurrung community as the Traditional Owners and Custodians of the Country where we meet and study the natural environment. We pay our respects to their Elders, past, present and future.

As part of a larger project, under the direction of Professor Don Driscoll and Dr Jawad Jilani, Max conducted a study to assess the effects of environmental watering, site selection, climate and chytrid on the survival of these frogs. This work is significant as there are other members of the *Pseudophryne* genus that are also endangered or critically endangered due to the same threats.

The study was conducted across 4 locations (Fryerstown, Bendigo, Seymour and Merton) with half the sites at each location receiving additional water in the 2022-2023 season and the other sites being controls. No sites were watered in the following years.

All sites are surveyed twice during the breeding season and all frogs found are measured, weighed and swabbed for chytrid. The unique belly markings make it possible to identify individuals across surveys and to assess their health.

One of the first findings was that the rate of chytrid infection was lower when the frogs had better body condition. This correlation may be due to the metabolic demands caused by the infection that result in frogs with poorer condition or it may be that individuals with better body condition are more resilient and/or better able to clear the pathogen. Laboratory tests have shown that frogs in poorer condition are more susceptible to infection.

Over the study period, body condition correlated with the year, with highest condition in 2022 and lowest in 2023. 2023 had the highest rainfall during the breeding season with conditions that favoured chytrid. There may also

be a climate factor involved as historic data (pre-chytrid) indicates that frogs from warmer climates are larger in dry years, possibly as a mechanism to reduce desiccation. On-going monitoring of these study sites may help answer this question.

At each of the study sites tiles had been laid out to provide habitat for the frogs. Frogs were most easily found under the tiles although searches of the complex natural habitat also resulted in some captures. The tiles also provided ideal breeding habitat. Earlier studies had found that chytrid infection was highest under tiles at watered sites and lowest at dry sites, with wet sites generally having higher probability of infection.

From a management perspective, these results show that tiles are good for conservation monitoring. Recaptures have shown that some individuals have overcome chytrid infection. Tiles also provide a warmer environment which makes it easier for the frogs to overcome chytrid which does not survive higher temperatures. Seven days above 20°C or one day above 25°C is sufficient to allow some frogs to clear the disease.

Bibron's Toadlets have a fairly long tadpole stage. Eggs are laid in late autumn and early winter and are guarded by the males until their wetland fills with water and the eggs hatch. They then require about 120 days for the tadpoles to mature and metamorphose during which time their wetland must continuously hold water. This compares with Common Eastern Froglet where the egg to metamorphosis takes just a few weeks. In our area, most pools will dry out before metamorphosis is complete with most young dying

before maturity. However the frogs are adapted to the variations in the environment and naturally high tadpole mortality.

The study shows that environmental watering should not be done outside drought conditions because of the elevated chytrid risk but may be useful to prevent key breeding sites from drying out during extreme drought conditions.

Two of Max's study sites were affected by the Longwood East bushfire in early 2026. At these sites the fire was patchy and killed some large trees but some riparian areas were unburnt. Following the fire, the level of calling was roughly the same in unburnt sites as before the fire but there was approximately 40% reduction of calling at a burnt site. Frogs probably survive the fire by going underground in soil cracks or burrows made by yabbies, spiders or other animals. Post fire they will be more vulnerable due to the loss of plant litter on the ground which provides protection for the frogs and habitat for their prey.

How to help.

The best way to help the survival of these frogs and all other frog species is to record their presence using FrogID; <https://www.frogid.net.au/> or iNaturalist; <https://inaturalist.ala.org.au/home>. You do not need to be able to identify the species to make a record on these apps. We do not know the full extent of their range around Castlemaine so all records add to our knowledge and can help with the management of their habitat.

Euan Moore

Reference:

Driscoll, Don A., Muhammad Jawad Jilani, and Laura Stanic. 2026. "Environmental Watering Elevates Chytrid Infection Probability in Frogs." *Ecosphere* 17(3): e70447. <https://doi.org/10.1002/ecs2.70447>



Left: Bibron's Toadlet belly, from Fryerstown.

Right: Bibron's Toadlet emerging from an abandoned burrow, Fryerstown.

Photos provided by Max Sonnemann





Bibron's Toadlet pair in amplexus (mating)



Bibron's Toadlet tadpole from Bendigo

Photos provided by Max Sonnemann

Yung Balug Museum, Boort – Excursion 13th June 2026

This memorable excursion to Boort was well attended by 22 members and guests. Fortunately, the forecast rain held off until late in the day. On arrival we were welcomed by Paul and Cathie Haw, along with a delicious morning tea that included wattle-seed scones Paul had made using seed of *Acacia victoriae* and *A. hakeoides* harvested from his trial plots of Wattles. Also grown is Oat Kangaroo-grass *Themeda avenacea*.

Paul initially described how boyhood curiosity and his wartime experiences in Vietnam led to a deep passion and respect for local Aboriginal culture. Paul then guided us through the varied collection of donated artefacts held within this “keeping place”. The efforts made to display these items and Paul’s knowledge regarding indigenous practices, the use of tools, their manufacture and origins certainly made an impression on our group.

A poignant moment was Paul showing us a local brick marked by a footprint from the now locally extinct Spotted Quoll, with wonderful images of the Yung Balug Clan displayed behind Paul. These photographs were captured in the 1850-60s by pastoralist John Hunter Kerr - his adjoining homestead roof visible through the museum window. After admiring carved Emu eggs, boomerangs, shields and more, we moved on to another building housing beautifully crafted hunting nets, dilly bags and baskets, along with

reference books donated by centenarian Diana Collier, an anthropologist based in Bendigo. Incidentally, Paul co-authored a fascinating book “Footprints across the Loddon Plains” that is based on comprehensive research.

We then walked around the garden where Paul and Cathie were cultivating indigenous food plants and a large collection of *Eremophila* species, growing well on the sandy soils of the lunette of Lake Boort.

After lunch at Nolens Park in Boort, Paul led our convoy to the opposite side of Lake Boort where we walked a short distance to see several ancient Black Box (*Eucalyptus largiflorens*) scar trees. Many of these had succumbed to inappropriate water regimes after the lake was converted from seasonal wetland to water storage with the construction of control gates and levee banks.

However, many still showed scars and basal hollows (created by stone axes) used to smoke out resident possums. The trees had probably survived for more than a century after the bark was removed as indicated by the amount of growth that had occurred around the scars. Other trees had family ownership marks, or larger scars where bark was harvested for a coolamon or to protect a buried body from Dingoes. Steel axe marks near the base of these scars were made by Europeans for extracting rabbits from trunk hollows.

Before returning to our vehicles, we passed a large cooking mound some 15 metres across. Just below the surface are hand-formed clay ‘heat beads’ marked by holes where grass was incorporated to prevent the clay exploding when curing in the cooking fire.

Our final stop was Pinks Road reserve. Paul and other conservationists managed to save this small patch of Northern Plains bushland from becoming part of the vast Olive plantations that dominate the area. There was a lush growth of Kangaroo grass (*Themeda triandra*). There were several fungi species and although only a few herbs and one *Acacia* was in flower at the time, Paul explained that several orchids and many other wildflowers would be seen soon. Photos by our group of fungi and plants on the day can be seen on [iNaturalist here](#).

A documentary about the Yung Balug Museum titled the ‘Lake of Scars’ can be accessed (for a small fee) at <https://www.docplay.com/shows/lake-of-scars>.

The museum is reliant on donations. 100% of donations are used to house the artefact collection, of which only part is currently displayed. Bank details for donations are at <https://www.yungbalugmuseum.com.au/donate>

Sue Luke



1-3 left: The museum

Paul with woven artefacts and reference books. Photo Sue Luke

Cooking heat beads and a brick with Spotted Quoll footprints.

Stones for cracking nuts and preparing grains. Photos 2&3 Jenny Rolland

4-6 above: Scar tree site, Lake Boort

Paul Haw explaining about a scar tree. Photo Euan Moore

Marker scar denoting clan ownership, at base of tree. Photo Geraldine Harris

Cooking mound near lake edge. Photo Sue Luke

7-9 below: Pinks Road Reserve

Pinks Road reserve. Photo Jenny Rolland

Common Everlasting (*Chrysocephalum apiculatum*). Photo Geraldine Harris

Prickly Cryptandra (*Cryptandra tomentosa*). Photo Euan Moore



Bolstering Bursaria for Butterflies at Kalimna Park

By Britt Gregory, North Central CMA

The North Central Catchment Management Authority's Protecting Eltham Copper Butterfly project aims to help avoid extinction of this very special local species.

The Eltham copper butterfly (ECB) was once widespread in dry open forests from Melbourne to Western Victoria. Land clearing for urbanisation, farming, climate change, and planned burns have resulted in only three known populations in Victoria Bendigo/Castlemaine, the Wimmera, and near Eltham in Melbourne.

The Bendigo/Castlemaine population is found mostly within National Parks and public reserves.

Our project team is working with land managers to improve the quality of habitat through weed control, revegetation, fencing and signage.

We can't protect them if we don't know where they are, so we're monitoring known populations and searching for potential habitat and new colonies. We are raising awareness of the species through workshops, communication materials and community events.

Planned burning is a threat to the survival of the species and its habitat in the Castlemaine area. We're planning a broadscale sweet bursaria planting program in Kalimna Park, east of Kalimna Tourist Road.

The site was chosen as under the Joint Fuel Management Program; this part of the park is classified as a 'landscape moderation zone' (LMZ) where ecological outcomes are considered alongside fuel reduction fire management objectives. As a result, planned burns in this zone are less frequent and not as intense as those in other fire management zones in the area.

You can learn more about the Joint Fuel Management Program on the Live JFMP map [here](#).

Sweet bursaria is the required food plant for ECB caterpillars and it is now understood that dense patches of sweet bursaria are optimal. While sweet bursaria already grows here, adding to the density aims to encourage ECB to further populate this part of the park as a refuge.

Seed for the project was collected locally and 1,800 seedlings grown specifically for this site. There's been a lot of planning for this project but come August you'll see the new plants appear. Biodegradable guards were chosen and while this is an attempt to deter herbivores from browsing, some losses are expected.

Ongoing monitoring will determine if the butterflies approve and if their numbers increase in Kalimna Park.

Want to get involved? We can't protect them if we don't know where they are. You can help by letting us know of any previously unrecorded ECB colonies using iNaturalist. Sign up, log in and join in the search for new populations: inaturalist.ala.org.au

We thank Parks Victoria for their continued partnership and help to



Sweet Bursaria seedlings ready to plant

achieve our project objectives. Thanks to the Castlemaine Field Naturalists and Friends of Kalimna Park for their guidance and deep knowledge of the park during planning.

Find out more about the North Central CMAs Eltham Copper Butterfly Project here:

nccma.vic.gov.au/projects/biodiversity/

This project is funded by the Australian Government's National Heritage Trust and delivered by the North Central CMA, a member of the Commonwealth Regional Delivery Partners panel.



Eltham Copper butterfly on Sweet Bursaria.
Photo by Gareth Pellas

Forest Creek Revitalisation Project

- Forest Creek Fridays

North Central Catchment Management Authority (NCCMA) has recently created Forest Creek Fridays in response to requests from locals to be involved in the revitalization project.

Already there has been significant progress on the ground with this project. To date, it has:

- Removed 3,000 m³ of sediment
- Installed 280 m³ of rock
- Created three deep habitat pools and a low-flow channel
- Planted 9,000 riparian plants upstream

The next phase of the project will focus on 12 months of targeted weed control ahead of further revegetation planned for spring 2027.

Get involved: Forest Creek Fridays

North Central CMA project staff (Tess and Charlotte) will be in the creek on the first Friday of each month. They invite anyone interested to join in a 2-hour relaxed, drop-in working bee, with a different focus each month.

Details:

- **When:** First Friday of each month (starting Friday 3 July)
(Our first session will focus on removing emerging gorse seedlings)
- **Time:** Drop in anytime between 9:00-11:00am
- **Where:** Meet at the deep pool in Forest Creek, Greenhill Ave, beside Tutes Cottage (Google maps pin: <https://maps.app.goo.gl/Ym8WBmsjDBxs2z9a6>)
- **What to bring:** Gardening gloves, a shovel and/or trowel (if you have them), and a smile.
- **Site conditions:** These events welcome all ages and abilities. *Please note: Forest Creek has slopes, stairs and uneven ground. Parents are responsible for children's supervision and safety around water at all times.

Event updates: bookmark this link - [Forest Creek Fridays](#)

Enquiries: Charlotte Webb (NCCMA Project Officer)

M: [0412 474 557](tel:0412474557)

E: Charlotte.Webb@nccma.vic.gov.au



Observations



Geraldine Harris: A pair of Yellow Robins is visiting our garden regularly. And, we found this rubbish dumped in the Muckleford Bushland Reserve off Muckleford School Road. You can just see the rubbish in the bush behind the 'No Dumping' sign! We have reported it on the Snap, Send, Solve app.



Kerrie Jennings

Hooded Robin: These birds are quiet, shy little black-and-white robins of lightly wooded areas. Just to the NE of Baringhup, we are fortunate to have them reside and breed in the Blue Hills area.

Our regular sightings of these little birds bring much joy to our outings. Even more so this time, as there were 3 males and 2 females – the most we have ever seen together.

While the female is brownish-grey, the male is dressed in striking black and white plumage, including a dark 'hood' that gives the bird its name.



Euan Moore Seen on a walk near Sailor's Falls, Daylesford.



Cortinarius austrovenetus
Green Skinhead



Far left:
Phellodon niger
Black Tooth

Left:
Baeomyces heteromorphus
Small fruiting bodies from a lichen crust on the root ball of a fallen tree.

Peter Turner

Left: *Geastrum triplex* Saucered Earth Star - There have been many of these around Munro Court recently including in the middle of our gravel driveway!

Centre: Greenhood rosettes in Kaweka Reserve on 8th June.

Right: A moth in the kitchen.



Peter Turner

We saw this on the base of a very large Radiata pine at the northern end of the Gardens. Joy's book p 106 has a photo that looks very similar.

Phaeolus schweinitzii Dyer's Mazegill.
"Rare in this area. On base of pine stumps".



Mez Woodward

Spider is Common Cymbacha - *Cymbacha ocellata*

Butterfly Common Grass Blue, so tiny! *Zizina otis*



From the Committee

It has been a busy month! In addition to planning for the SEANA meeting here in October, we have been working with the Mount Alexander Shire Council, DEECA (the Department of Energy, Environment and Climate Action) and other environmental groups on various initiatives.

With Connecting Country and FOBIF (Friends of the Box-Ironbark Forests) we are co-signatories of a letter to Council making recommendations about the **Biodiversity Strategy** that is being drafted at present. The main points made in the letter, which was drafted by Stephen Oxley, the President of the Connecting Country Board, are that the strategy must extend beyond land that is directly managed by council, and there needs to be strong governance around delivery of the strategy. Council has also been provided with key resources built up by us over decades.

DEECA has advised that ***Grevillea obtecta* phosphite spraying** for *Phytophthora* is likely to be over next summer and autumn, when pre-burn data will be collected. Euan Moore has been given access to the phone app to be used for monitoring so that he can test it. We will be looking for volunteers to help with field work when the time comes.

Lou Citroën attended a **Connecting Country activity** on our behalf at the Chewton Town Hall on Saturday, 20 June. The activity, called *The Adaptation Game*, was a group interactive discussion forum, led by a facilitator, the aim of which was to discuss various scenarios to test resilience and adaptation to a range of 'what-if' emergency situations (fire, flood, etc).

New members

We are delighted to welcome new members Christine Henderson, Holly Watson-Reeves and Lee Wattle who joined in May.

Coming Events in July

Monthly Meeting: Friday 10th July, 7.30pm **by Zoom**

“Using research to conserve Australian snakes”

Speaker: Professor Rick Shine AM FAA FRZS (Macquarie University)

Like many other kinds of animals worldwide, snakes in Australia are in trouble: many populations are declining. In order to reverse that trend, we need to understand why it's happening and find evidence-based ways to conserve snake populations. In this talk, eminent researcher Professor Rick Shine describes research projects that have addressed that aim – and in some cases, have shown that the causes – and solutions - for snake decline are very different from what we might have imagined.

How to join the Zoom meeting – **Register in advance** by clicking on the following link or copying this url into your browser:

https://us06web.zoom.us/meeting/register/TunOya_ISbOoe77E7EgA9A

After registering, you will receive a confirmation email containing information about joining the session.

We recommend joining 5 – 10 minutes before the meeting to avoid congestion at 7.30pm.

Observations: Members and visitors are invited to share their interesting observations at the meeting. Please email any photos to illustrate your report as uncropped JPEG file(s) to **Jill Williams** (jilliwill33@gmail.com) by noon on the day of the meeting.

Excursion: Saturday 11th July, **9.30am**

“Fungi search at Bullarto”

Leader: Joy Clusker

Following some welcome showers of rain, the fungi are putting on a show. This month we are privileged to have as leader Joy Clusker, co-author of the excellent guide to identification of the “Fungi of the Bendigo Region”. Joy will take us to some fungi hot spots in the tall, damp forests around Bullarto, sharing her knowledge of where to find fungi and how to identify them. We are sure to find a good range of amazing shapes, colours and sizes of fungi. Since the light fades early at this time of the year, we will start early and take a picnic lunch.

Meet: for car-pooling and **9.30am** departure at the northern end of the car park, north of the Railway Goods Shed, Kennedy St. Castlemaine.

Or meet at 10.15am at the intersection of Babbington Rd and Daylesford-Trentham Rd ([Google Maps](#)). Approximate travel time from Castlemaine is 40 min.

Bring: water, snacks, clean sturdy shoes, chairs, lunch. Also, a small mirror for viewing the underside of fungi caps and a kneeling mat or knee pads would be useful.



Rick with 4-lined snakes Croatia 2023

Photo by Terri Shine



Mycena interrupta, Pixie's Parasols.

Photo by Joy Clusker



Superb Fairywren male.

Photo Noel Young

Program

Monthly meetings are being held on-line via Zoom again during the winter months (June, July and August) commencing at 7.30pm. Please register in advance (see "Coming Events" page) to receive the link for joining the meeting.

Excursions are held on the Saturday following the monthly meeting and leave from the northern end of the car park north of the Railway Goods Shed, Kennedy St. at 1.30pm unless stated otherwise.

See "Coming Events" page for details on July activities.

Fri 10th July, 7.30pm

Meeting (Zoom) "Using research to conserve Australian snakes"

Speaker: Prof Rick Shine (Macquarie Uni)

Sat 11th July, 9.30pm

Excursion: "Fungi search at Bullarto"

Leader: Joy Clusker

Fri 14th August, 7.30pm

Meeting (Zoom) "Plume moths"

Speaker: Donald Hobern

Sat 15th August, 1.30pm

Excursion: ANZAC Hill, Maldon

Leaders: Phil & Judy Hopley

Mon 17th August, 9.00am

Roadside clean-up.

Meet Tait's Decorative Iron, corner Willy Milly Rd and Pyrenees Highway.

Leader: Geoff Harris

Fri 11th September, 7.30pm

Meeting (Uniting Church Hall) "Birds and litter"

Speaker: Hannah Faraone (Federation Uni)

Combined meeting with Birdlife Castlemaine District and Connecting Country Feathery Festival.

Visitors are welcome at club activities

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Membership

Includes the monthly newsletter, Castlemaine Naturalist. (Membership forms on CFNC website)

Single \$35, Family \$50

Pensioner or student: Single \$25, Family \$30

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Email items: newsletter.cfnc@gmail.com

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The Nodding Greenhood *Pterostylis nutans* is the emblem of the club. Design by Rita Mills.

Disclaimer: The opinions expressed in this newsletter are those of the contributors and not necessarily those of the club.