



Blotched satin moth (*Thalaina angulosa*)
Photo: Steve Williams

Mysteries of the Life Cycles of Moths

Our April Monthly Meeting speaker was Steve Williams, a self-professed "mothylated spirit"! Steve Williams' day job is an agricultural scientist with the State Government of Victoria. In the evenings he spends many hours with a moth sheet recording the species of nocturnal invertebrates that live on his bush block near Bendigo.

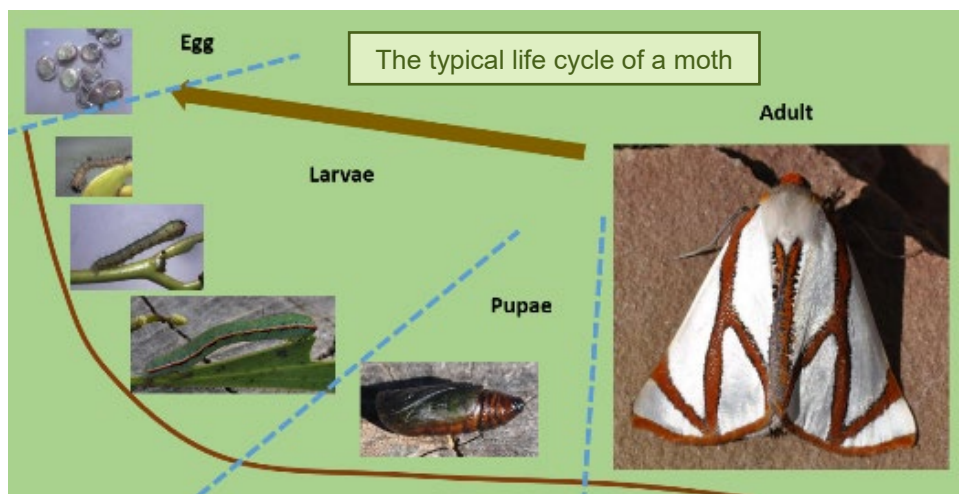
Steve's setup involves the use of a white sheet and a bright light that emits light in the UV wavelengths as well as visible light. Traditionally entomologists have and still use mercury vapour lights however these require a 240 volt power source. More recently smaller LED lights which emit a combination of wavelengths and can be run off a mobile phone power pack have become available. We set up a demonstration moth sheet using one of the LED lights outside the hall for the duration of the talk.

Steve has been using this setup almost nightly for the past 15 years.

Specimens are collected in plastic vials and kept until the following day when they are photographed. Gently cooling the captive moth in the refrigerator can make it a more cooperative subject until it warms up again. This allows detailed photos to be taken from a variety of angles, including underside, which helps with identification.

Selected female moths may be kept and induced to lay eggs. This enables the full life cycle to be studied. In most cases the work that Steve does is the first time that the life cycle has been studied.

Having managed to get the female to lay eggs we now know what the eggs look like. However, because this is done in captivity we may not know



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.

where they would normally be laid. Steve gains some idea of the likely food plants by putting various types of plant in the container with the female and observing where the eggs are deposited.

Once the caterpillars hatch from the egg the challenge is then to provide them with suitable food. This may involve presenting the caterpillar with multiple food sources and seeing which one it eats. Having identified the appropriate food, the supply is maintained until the caterpillar is fully grown and forms a pupa where it undergoes metamorphosis into the adult moth. The entire process from egg to adult may take from weeks to months depending on the species. Some species may have two generations per year while others only one, and some life cycles may extend over several years.



Steve at the moth sheet. Photo: Jenny Rolland

All the insects that come to the moth sheets are recorded on a field sheet which includes species name, number of individuals, arrival time, departure time and notes. This information along with that from the breeding program is entered into a database.

This extensive work has contributed to the information in the Moths of Victoria (MoV) series of booklets and CDs which have detailed photos and notes for many of our moths. There are currently nine volumes to the MoV series which is published by and available from the [Entomological Society of Victoria](#).

Australian invertebrate fauna is relatively unstudied compared to that of Europe or North America. This is due to the lack of observers and the relatively small number of entomologists able to identify the

species that are recorded. CSIRO estimates that there are around 20,000 species of moths and butterflies in Australia of which only approximately 11,000 species have been formally described.

This means that anyone with an interest in this group of insects has a good chance of making discoveries such as range-extensions or finding an undescribed species. Steve described a few of his discoveries including *Psychanisa baliodes* (first record for Victoria, previously known from NSW), *Unadillides distichella* (first record for Victoria, two prior records from SA and Tasmania), *Leptogeneia bicristata* (1st record for Victoria, 2nd record for Australia) and *Acrocercops* sp. (undescribed and potentially a new species). Another moth, *Nematobola orthotricha*, is known from three preserved

specimens in the Australian National Insect Collection (ANIC) maintained by CSIRO, but Steve's photo is the first known photo of a living specimen.

Studies on a local moth, *Proteuxoa sanguinipuncta*, demonstrated how climate change can have major impacts on a species. The life cycle of this species is linked to the growth of grasses

immediately after the autumn break. Eggs hatch immediately before or during the break so that caterpillars can feed on the new grass. They continue feeding during the winter and spring and enter diapause (a period of

suspended development) in late spring which lasts until autumn when the adult moths emerge from the pupa. It appears that diapause is of a fixed length with the moth having an annual life cycle.

In the summer of 2011/2012 adult moths emerged from January – March with most emerging in March (normal timing). Spring 2012 was relatively dry resulting in early start to diapause and emergence starting in December 2012 and peaking in January 2013 (2 months early). At the same time, dry conditions resulted in a weak autumn break in 2013 which did not coincide with the eggs hatching. Less food for the larvae in 2013 resulted in a population crash in 2014.

Scenarios such as this will become more frequent as climate change causes more erratic and greater extremes of temperature and rainfall.

Fire management in our forests and grassy woodlands can also have a detrimental effect on invertebrate populations. Grassy woodlands, in particular have a high floristic diversity that also supports a high diversity of moths. As in the above example, the moth life cycle is relatively fixed to the growing cycle of their food plants. Spring and autumn fires impact around 90% of species. It is only those species where the larvae live underground that are less affected.

Following Steve's talk most of the audience moved outside to see what species had been attracted to the moth sheet and light that we had set up in the car park. We had about a dozen species present, two of which are shown below.

Euan Moore



Two of the moths attracted to the moth sheet that night.

Left: Varied Grey Moth, *Hypobapta tachyhalotaria* (photo: Jenny Rolland).

Right: Mitre Satin Moth, *Thalaina inscripta* (photo: Euan Moore).

Forest Creek Restoration by Castlemaine Landcare Group – April Excursion led by Christine Kilmartin

Following on from Christine's presentation at our March General Meeting (see the [April edition of Castlemaine Naturalist](#)), a large group of CFNC members and visitors gathered for a first-hand view of the work of the Castlemaine Landcare Group and other agencies along the Happy Valley stretch of Forest Creek over the previous more than 20 years. This tour had to be rescheduled from March due to the high temperature.

Not surprisingly, there were several from other Landcare Groups, keen to hear the stories of the successes and challenges of this work. We started at the Montgomery Street grasslands with a view over the now well-vegetated valley below, and reflected on the image that Christine had shown in her talk of a tree-less and gorse-infested valley back in 1985. As we walked down the path to the creek, we could see good patches of Kangaroo Grass (*Themeda triandra*) and heard about the sun orchids that appeared in spring in the fenced-off area. With lowland native grasslands now recognised as endangered ecosystems across Victoria, protection and nurturing of remnant grassland patches such as here is especially valuable.

At the bottom of the hill, we joined the Leanganook Track which winds along beside Forest Creek. The now quite tall eucalypts such as Red Gum (*Eucalyptus camaldulensis*), Yellow Gum (*E. leucoxylon*) and Yellow Box (*E. melliodora*) and several wattle species are from the early plantings and provide excellent habitat for a diverse range of birds. Mistletoe Birds were heard at several points and seen enjoying the fruit of the Wireleaf Mistletoe (*Amyema preissii*). Red Gums were regenerating from seeds washed down from upstream and taking root where leaf litter had accumulated.

We walked further along to "Rabbit Flat" on a river terrace where more recent plantings had had excellent success

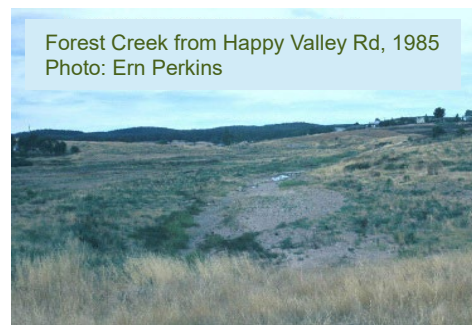
due to careful preparation of deep holes into the river gravels to enable the roots to access the water table. Banksias, Hakea, Hop Bush and wattles were thriving.

Turning back along the track, we stopped to view the waterholes that had formed naturally in the creek due to rocky outcrops or as a result of excavation by the CLG. Christine explained how valuable these were as refuges for aquatic wildlife including birds such as Crakes, Rails and Reed Warblers. Further down Forest Creek, evidence of Rakali had been observed. Managing the over-accumulation of silt and exuberant growth of *Phragmites* and *Typha* (bulrush) in the pools is one of the tasks of the recently funded [Forest Creek revitalisation project](#).

We detoured several meters to the side of the track to view a geological feature of note - an impressive example of an anticline. This was somewhat hidden behind a good crop of vegetation which had grown on the silt heap taken from the nearby excavated pool.



The IFF site - patches of daisies, grasses and herbs are establishing. Photo: Jenny Rolland



Forest Creek from Happy Valley Rd, 1985
Photo: Ern Perkins



The group enjoying the walk along a well-treed track beside Forest Creek with Christine (front right). Photo: Lou Citroën

We then moved south along the track to the "Indigenous Food and Fibre" (IFF) site, where plants were being selected based on the Dja Dja Wurrung "Country Plan". This area faces particular challenges from flooding, poor soils and grazing animals. In the recent 2022 flood, large areas of recent plantings were washed down-stream or buried under river gravel. The little top-soil that had been there was also washed away.

However, with repeated hard work by the CLG, patches of grasses, daisies and other native herbs and forbs are establishing. Pockets of planted Nardoo are also surviving in the creek. Being more open and grassy, this area is a popular grazing ground for the local Eastern Grey Kangaroos, and different temporary fencing around planting patches is

being trialled to give initial protection.

Of course, throughout the tour, the ever-present challenge of weeds was apparent. Re-emergent gorse, blackberries and larger woody weeds such as prunus trees are tackled by cutting and painting the stumps with herbicide, while large swathes of *Phalaris* are slashed and sprayed by contractors. Many working bees involve brush-cutting of *Phalaris* and weeding of the widespread wild radish (*Raphanus raphanistrum*), and smaller patches of Stinkwort (*Dittrichia graveolens*) and St John's wort (*Hypericum perforatum*).

Unfortunately, some earlier plantings included the Early Black Wattle (*Acacia decurrens*) from eastern NSW in their mix before this was recognised as an invasive weed for our area, and Cootamundra wattles (*Acacia baileyana*) have spread into the area. The group was shown examples of the foliage of these

wattles to help distinguish them. The FOBIF "[Wattles of the Mount Alexander Region](#)" book is an excellent resource for further information on these wattles.

We concluded our walk back at the Grasslands and reviewed our bird list for the afternoon (see below). We also were reminded of the need to take time out to reflect on the achievements of Landcare work when the weeds and planting failures seem daunting. In the case of Forest Creek, the transformation from the devastation from the goldmining era to the present healthy riparian corridor enjoyed by both wildlife and the local community is a credit to the Landcare group and its supporters.



Wireleaf Mistletoe with [just visible!] Mistletoe Bird feeding on berries.
Photo: Mez Woodward

Jenny Rolland

Please add your photographs of the flora and fauna of the area to the [iNaturalist Forest Creek Restoration project](#) to help monitor improvements in biodiversity. Further information about the CLG can be found on their [website](#).

Excursion Bird list

Australian Magpie	House Sparrow	Red Wattlebird	Wedge-tailed Eagle
Brown Thornbill	Mistletoe Bird	Spotted Pardalote	Weebill
Common Bronzewing	Musk Lorikeet	Sulphur-crested Cockatoo	Welcome Swallow
Crimson Rosella	New Holland Honeyeater	Superb Fairywren	White-browed Scrubwren
Grey Shrike-thrush	Rainbow Lorikeet	Tree Martin	Yellow Thornbill

Alert! Nurseries selling potentially invasive weeds

Readers are urged to check that the plants they are buying for their gardens are not potentially invasive weeds. For example, many nurseries stock varieties of *Gazania* and *Agapanthus* - very pretty and hardy, but liable to escape from gardens, spread down roadsides and into bushland.

[Invasive Species Council](#): "The majority of Australia's weeds have been introduced deliberately, and most of them have escaped from gardens (garden escapees), doing terrible damage to our natural environment". Weeds "can be as destructive as land clearing - displacing and threatening native species and transforming ecosystems".

Read more about this problem and how plants are assessed for being invasive weeds in the recent (6 April 2025) [ABC News Story](#).

Check: plants that are known to be environmental weeds on the [Arthur Rylah Institute's "Advisory list of environmental weeds in Victoria"](#).

Choose: suitable native plants for your garden using Cassia Read's excellent guide, the [Plant Selector](#) database (<https://ci.org.au/plantselector/>).



Gazania.
Photo: Bec James, DELWP

April Observations



Brown-headed Honeyeaters. Photo: Jill Williams

Waiting for rain!



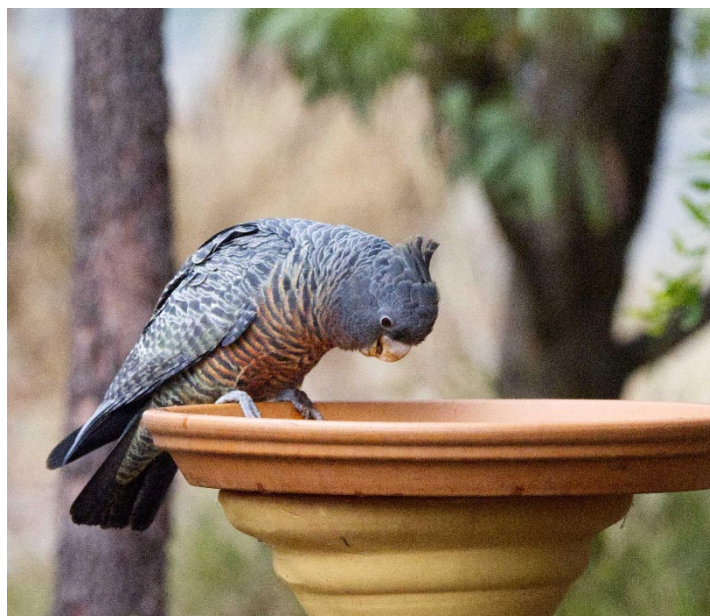
Our creek (Barkers Creek) has completely dried up except for a few deep waterholes.
Photo: Geraldine Harris

Gang Gang Cockatoo (*Callocephalon fimbriatum*).
One of 4 to visit the bird bath recently.
Endangered (EPBC Act).
Photo: Jill Williams

Rare visitors to local bird baths



Eastern Rosella (*Platycercus eximius*).
Photo: Peter Turner





A large Eastern Brown Snake on our property, sitting in a depression sunning itself. If you look closely it seems to have a large bulge back from the head (possibly a rabbit kitten). Photo: Geraldine Harris



Geometer Moth larva. Name derived from the ancient Greek – ‘Geo’ the earth and ‘Meter’ to measure, and their looping (measuring) mode of progression. Photo: Jill Williams



Near sunset one evening in early March this beautiful large (100mm wingspan) moth was flapping slowly amongst the trees, probably searching for a mate. It is a male of the *Abantiades* genus, one of the rain moths, probably *A. labyrinthicus*. Their caterpillars live and pupate underground, feeding on tree roots, and often emerge after rain, although in this case there was no rain for weeks before or after. (Right: just emerged). Photos: Mez Woodward



Freckled Duck (*Stictonetta naevosa*). Listed as a threatened species under Victoria's Flora and Fauna Guarantee Act. One of 38 observed on the safe haven of Hepburn Lagoon, 07 04 2025 Photo: Jenny Rolland

From the Committee

Committee members have been busy lobbying a range of organisations on issues to do with the environment. We have written to the Department of Energy, Environment and Climate Action in our ongoing attempt to protect our local habitat from ill-planned burns and we are seeking a meeting with them. We have supported a submission from the Baringhup Landcare Group regarding a proposed large hornfels quarry just north of Baringhup, and have sent a letter to Mount Alexander Shire Council about problems caused by storm water runoff from construction sites. We attended Council's climate change forum on 26 April and with Birdlife Castlemaine we are preparing to lobby stockists of second-generation anticoagulant rodenticides (SGARs) in an attempt to get them to only sell less harmful products so as to reduce the impact on native wildlife, particularly owls and raptors.

And a **reminder: if you have not yet renewed your membership, please do so.** Your support helps us provide an interesting program of speakers and excursions and in our efforts to protect our local environment.

Cathrine Harboe-Ree, Secretary

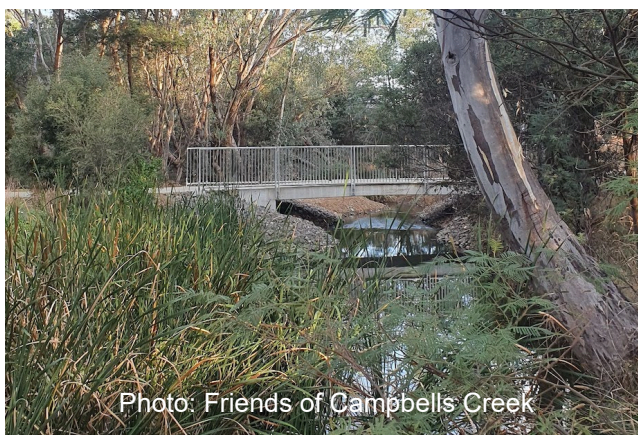


Photo: Friends of Campbells Creek

Campbells Creek Trail link completed!

Work has now finished on building two bridges to link the Campbells Creek Trail, avoiding the Honeycomb Road detour. The walking and cycling trail is now uninterrupted from Forest Street, Castlemaine, to Campbells Creek Park, Campbells Creek.

Jase Haysom advises that the Campbells Creek Trail map on the Cartography Community Mapping website has been updated to show the new route

https://ccmaps.au/campbells_creek/campbells_creek.htm.

Coming Events in May

Monthly Meeting: Friday 9th May, 7.30pm

Uniting Church Fellowship Room, Lyttleton St.

“Talking Turtles”

Speaker: Graham Stockfeld (President, Turtles Australia)

Graham has been devoted to freshwater turtle conservation for around 15 years. His talk will cover the three species of freshwater turtles we have in Victoria and will outline some of the conservation work Turtles Australia is engaged in.

To allow attendees to get 'up close and personal' with these gorgeous creatures, he will bring living examples of all three species.

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

Excursion: Saturday 10th May, 1.30pm

“Photographing flowers, grasses and insects for effective iNaturalist identification”. Red, White and Blue mine.

Leader: Jill Williams

An opportunity to join with expert field naturalists to gain experience in photographing fauna and flora species including key characteristics to maximise the likelihood of getting your observations identified from photos submitted to iNaturalist.

Whether you prefer to use a smart phone, a point and shoot digital camera or a digital SLR camera with interchangeable lenses, we will endeavour to provide you with guidelines and tips to achieve these results. It will be helpful for you to download the iNaturalist app onto your phone before the day.

Meet: for car-pooling and **1.30pm** departure at the northern end of the Car Park north of the Railway Goods Shed, Kennedy St. Castlemaine. Or meet at the Red White and Blue Mine Picnic Area in Muckleford Forest – click [here](#) for directions.


Bring: your phone or camera for photographing, water, snacks, **clean** sturdy shoes, chairs, afternoon tea.

Roadside Clean-up: Monday 12th May, 9am

Time to check our stretch of the Pyrenees Highway!

- Meet at 9am near Tait's Decorative Iron, corner of Willy Milly Rd and Pyrenees Highway.
- Garbage bags and safety vests supplied. Wear sturdy footwear and bring your own gloves and water.

Please contact Geoff Harris (mob 0418 392 183) if you can help with the clean-up.



Eastern Spinebill on Salvia
Photo: Lou Citroën

Program

Meetings: 7.30pm, 2nd Friday of the month except for January.

Venue: Uniting Church Hall (UCH), Lyttleton Street, Castlemaine except during winter (June-August) when they are held by Zoom.

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 more details about May events.

Fri 9th May, 7.30pm

Meeting (UCH) “Talking Turtles”

Speaker: Graham Stockfeld (President, Turtles Australia)

Sat 10th May, 1.30pm

Excursion: “Photographing flowers, grasses and insects for effective iNaturalist identification”. Red, White and Blue mine.

Leader: Jill Williams

Mon 12th May 9.00am

Roadside Clean-up

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

Fri 13th June, 7.30pm

Meeting (Zoom) “How light pollution impacts wildlife”

Speaker: Kelly Clitheroe (President, Dark Skies International Assoc. Vic.)

Sat 14th June , 1.30pm

Excursion: “Street trees of Castlemaine – part 2, and Forest Creek revitalisation project”. Greenhill Ave.

Leader: Cathrine Harboe-Ree

Fri 12th-Sun 14th September, Wedderburn weekend – book your accommodation early; see our March newsletter for more details.

See our website calendar of events for further dates and activities:

[Calendar of Events – Castlemaine Field Naturalists Club](#)

Visitors are welcome at club activities

Castlemaine Field Naturalists Club Inc. #A0003010B

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Membership – fees due 1st April

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

June edition deadline: **30th May**

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

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