



No. 1

February 2014

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Welcome to the Entomological Society of Victoria newsletter

The ESV has a long and distinguished 87-year history of contributing to knowledge of, and the promotion of, Victorian insects, beginning in the 1920s: "On April 5, 1927 fourteen people interested in entomology met at the East Malvern home of the late Mr F.E. Wilson for the purpose of forming an entomological club..."

So began The Entomologists' Club, now known as the Entomological Society of Victoria. The focus of the early years of the club were "excursions – rambles they are often called in the Minutes – made to places such as Heathmont, Millgrove, Frankston, Ringwood, Blackburn, Noble Park and Ferntree Gully."

"Membership of the Society in the years 1927-1940 was from 25 to 40, although attendance at meetings fell to a very low ebb at times...Because of the pressures of the war the Society lapsed about 1942 and was not re-established until 1961 when Mr J.C. Le Soeuf arranged a meeting at the National Herbarium Hall for this purpose."

Today's membership is consistently over 100, continuing the tradition of excursions, publications, presentations and the general promotion of all things entomological. Le Soeuf is commemorated with the award named in his honour, most recently awarded to Peter Marriott, the Society's Immediate Past President. The Society's logo, a Greengrocer Cicada, drawn by the eminent naturalist, artist and ESV Past President Charles McCubbin, is an entomological icon of southeastern Australia, and the subject of this edition's bug profile.

The Society's first publication in 1965, 'Wings and Stings', was replaced in 1971 by 'The Victorian Entomologist', fondly known as 'The Bulletin', in which hundreds of significant and original articles have been published. This newsletter is designed to add an informal element to the formal scientific tone of the Victorian Entomologist. If you would like to contribute to the newsletter, please do so by emailing president@entsocvic.org.au.

As an entomological enthusiast, this is your Society. In addition to suggestions for excursions and presentations, we're always keen for volunteers to help out with the Society's activities. The first and foremost suggestion we're seeking is a name for the newsletter – please email me at the above address.

Patrick Honan, President, Entomological Society of Victoria

Reference: Rushworth, G., 1966, An Historical Outline of the Entomological Society of Victoria, Wings and Stings, 2:5-7.

Visit to AgriBio, Bundoora, October 2013
with Latrobe University and Department of Environment and Primary Industries



Meet your ESV Council

Maik Fiedel

Current occupation

Aquatic Technician and Animal Keeper at AquaCore, Monash University, and Part-time Keeper at Live Exhibits Unit, Melbourne Museum

A brief outline of your entomological career

I've been keeping all kinds of animals, especially insects, since before I can remember. Back in eastern Germany I had hundreds of enclosures with live insects from almost every continent, and I maintained and bred invertebrates for the Frankfurt Zoo and Johnsdorf Butterfly House. I was also an active member of a Phasmid Study Group and Mantid Study Group, and did fieldwork in Spain for environmental consultants.

Since moving to Australia, I maintain a large collection of invertebrates, reptiles and birds at home, and look after more than 110 different species of animals at Melbourne Museum.

Your first entomological memory?

I remember being four or five years old, getting bees and wasps stuck in my thongs, running through the clover fields on the farm in Eibau, Saxony. My first serious memory of insects is buying a mantis at an insect expo for five Deutsch Mark, and from there I never looked back.

The one insect you've always wanted to find?

The Big Devil's Flower Mantis, also known as the Queen of Mantids (*Idolomantis diabolica*) from Kenya, Tanzania and Mozambique in Africa, around Lake Victoria. I've kept them in captivity, but I would love to find one in the wild.

What's the entomological achievement you're most proud of?

The Mantis Study Group and I brought Big Devil's Flower Mantids back from the edge of extinction and established the first captive population of this species. We sourced from local butterfly farms in Kenya, imported them into Europe and eventually bred thousands in captivity, all from a single ootheca. They are extremely rare (or extremely localised) in the wild, but are now plentiful in captivity. It was a close thing – additional animals from a different locality were imported but none of the offspring survived.

A recent achievement is finding a female Gargantuan Stick Insect (*Ctenomorpha gargantua*) near Cairns (pictured), one of only a handful that have ever been collected, after finding a male the year before. The female is now



the only one lodged in any Museum in the world. She produced a dozen eggs before she died, so I'm looking forward to trying to rear those in captivity.

What excites you about your work?

I've always loved small creatures – the smaller majority. There's something about them that I find irresistible. So any time I get to look after insects in captivity I find exciting. However, I'm just as excited at being out in the bush or on field trips, finding unusual species and even the occasional rare one. There's always something to be found – the excitement of the unknown.

What's the most challenging thing about entomology?

The most challenging thing is also the most exciting – there are so many more species to discover and so much more to learn about the species we do know about, that we'll never get to the end of it, at least not in my lifetime.

What advice would you give someone wanting to be an entomologist?

You need to keep up your passion – every day is a new learning experience. It's good to network with other entomologists and enthusiasts.

ESV Council:

Patrick Honan	(President)
Peter Carwardine	(Vice President & Excursion Secretary)
Steve Curle	(Hon Secretary)
Ian Endersby	(Hon Treasurer)
Linda Rogan	(Hon Editor)
Peter Marriott	(Immediate Past President)
Councillors:	Dr Ken Walker
Peter Lillywhite	Maik Fiedel
Daniel Dobrosak	Joshua Grubb

Victorian Alps Bioscan, November 2013
with Parks Victoria and Museum Victoria



For sale

Robert Glasson (robert.glasson@yahoo.com) wishes to sell his insect collection, the bulk of which comprises material from Papua New Guinea.

The collection is located at Minnamurra, on the South Coast of New South Wales. The collection is housed in two 7 drawer entomological cabinets, six 10 drawer cabinets and ten 14 drawer cabinets (a total of 214 drawers). All of the drawers in the 7 and 14 drawer cabinets have a naphthalene recess and the 10 drawer cabinets are protected with fumicels containing naphthalene. All specimens are pinned and labelled with the date and location of capture and the collector's name and all of the PNG Butterflies have been identified to the best of my ability. I am interested in selling the collection as a whole and the base price is \$50,000 (the replacement cost of the cabinets) plus a negotiable premium for the insects.

There are two 14 drawer cabinets of Australian insects, mainly Butterflies ie (8 drawers of Family Papilionidae, 5 drawers of Family Pieridae, 9 drawers of Family Nymphalidae, 1 drawer of Family Lycaenidae, 2 drawers of Moths, 1 drawer of Cicadas (Order Hemiptera) and 2 drawers of Beetles (Order Coleoptera). All of the Butterflies have been classified as have some of the Moths.

The six 10 drawer cabinets contain Insects from Papua New Guinea (PNG) ie 41 drawers of Birdwings (*Ornithoptera* species), 4 drawers of Birdwings (*Troides* species), 13 drawers of Beetles (Order Coleoptera), 1 drawer of Dragonflies (Order Odonata) and 1 drawer of Phasmids (Order Phasmida).

A bank of six 14 drawer cabinets all contain PNG Insects, mainly Butterflies ie 64 drawers of Family Nymphalidae, 17 drawers of Family Papilionidae and 3 drawers of Moths.

A 14 drawer cabinet contains PNG Butterflies ie 2 drawers of *Graphium* species, 10 drawers of Family Pieridae and 2 drawers of Family Lycaenidae.

Another 14 drawer cabinet contains 7 drawers of Moths (4 drawers of Family Saturniidae, 2 drawers of Family Uraniidae and 1 drawer of assorted Moths), 3 drawers of Family Papilionidae, 2 drawers of Family Nymphalidae and 2 drawers of Beetles (Order Coleoptera)

One 7 drawer cabinet contains Birdwing Butterflies ie 6 drawers of *Ornithoptera* species and 1 drawer of *Trogonoptera* species.

The other 7 drawer cabinet contains PNG Butterflies ie *Graphium* species.

I also have digital photos of each drawer which are too large to email, however I can post a disk containing these photos to you if you are interested and able to provide a mailing address.

Around the societies

Butterflies and Other Invertebrates Club

Excursion to Kalbar – the Scenic Rim (one hour west of Brisbane)
10am, 1-2 February 2014
RSVP: Ross Kendall
07 3378 1187
ross@butterflyencounters.com.au
by 30 January

The Entomological Society of Queensland

Annual General Meeting
1pm, 11 March 2014
Ecosciences Precinct, Boggo Road,
Dutton Park, Qld
k.ebert@uq.edu.au

Butterfly Conservation South Australia

Dr Peter McQuillan – Moths –
Stories from the Past
6.15pm, 1 April 2014
Clarence Park Community Centre
72-74 East Avenue, Black Forest, SA

Dr Peter Lang – Jewel Beetles and
Plants
6.15pm, 1 July 2014
Clarence Park Community Centre
72-74 East Avenue, Black Forest, SA

The Society for Insect Studies

Jean Weiner – Honorary Curator of
Foreign Lepidoptera, Australian
Museum
7.30pm, 11 February 2014
Australian Museum
6 College St Sydney

Alex Roach – Common Grass Yellow
Butterflies
7.30pm, 8 April 2014
Australian Museum
6 College St Sydney

John Tann – Atlas of Living Australia
and what you can do
7.30pm, 10 June 2014
Australian Museum
6 College St Sydney

Bugs in profile

Greengrocer Cicada *Cyclochila australasiae*



On warm evenings at this time of year, Greengrocer Cicadas can be heard singing in unison in the

thousands throughout Victoria. Greengrocers are one of the best-known Australian insects, due to their large size, abundance during summer and ear-piercing song.

Adult males and females are similar in appearance but males have a pair of round rigid flaps under the abdomen which cover their sound-producing organs. Females also have a noticeable slit at the end of the abdomen which is absent in males.

Other names

This species has several colour forms and a variety of common names which refer to each form. These are Yellow Monday for the yellow form, Chocolate Soldier for the dark tan form, Blue Moon for the turquoise form and Masked Devil for a darker form with various levels of black pigmentation. The latter is also called Black Prince in some areas. In times past this species was referred to as Lamplighter or Green Locust, and they are still sometimes incorrectly called Locusts.



Distribution and abundance

Greengrocer Cicadas occur from South Australia along the east coast to southeast Queensland. They are generally not found inland further than the western slopes of the Great Dividing Range, and seem to be most common and widespread in suburban areas, particularly around Melbourne.

Food plants

Adult cicadas feed by drawing sap from foodplants through a stout proboscis under the

head. Native plants include a range of eucalypts, as well as Brush Box (*Lophostemon conferta*), Paperbark (*Melaleuca linariifolia*), Turpentine (*Syncarpia glomulifera*), Flame Tree (*Brachychiton acerifolium*) and Silky Oak (*Grevillea robusta*). They are also common in suburban gardens feeding on plants such as Liquidambar (*Liquidambar styraciflua*), Weeping Willow (*Salix babylonica*), Poplar (*Populus nigra*) and English Oak (*Quercus robur*), Jacaranda and Camphor Laurel.

Life cycle

Before laying eggs, the female inserts her proboscis (called a rostrum) into small dead and



dying branches of the foodplant or other plants. If suitable, she then cuts rows of slits in the branch with the tip of

her abdomen and inserts her eggs, sealing the slits afterwards with a small amount of froth that hardens when dry. The eggs are creamy white and up to 3mm long. She may lay 200-300 eggs in several branches over more than one tree, and the process may take more than three hours.

Upon hatching, the white spider-like nymphs drop to the ground and begin to burrow downwards, feeding on sap from roots but generally remaining within one metre of the surface. They feed on a range of plants from several families. Their front legs are modified for digging and they move around in the soil, digging deeper if food is scarce or if their path is blocked by a boulder or other obstacle. This stage of the life cycle lasts about seven years.

Nymphs emerge from the ground after dusk from September onwards but peak emergence occurs between November and early December. They prefer to emerge on warm evenings following rain. The nymph climbs the nearest obstacle, usually a tree or fence, and stops between two and four metres from the ground, then the adult slowly emerges from the nymphal skin. This remarkable process takes several hours and the adult hangs for several more hours from the old skin as the wings expand and dry. The adults fly off the following morning, leaving behind the old skin.



Adults may live six weeks or more, but the average life is probably much shorter. In many years the majority of cicadas have died by the end

of December. However, in some years they may continue emerging and surviving until mid-April, although this is very rare. Every seven years or so there is a massive emergence which, in some parts of Victoria, leads schools to keep their students inside at lunchtime due to the painfully loud presence of cicadas within school grounds.

Song, Courtship and mating

Only the males sing, and they do so to attract females. The sound is produced by large membranes (called tymbals) on the underside of the abdomen, which are clicked in and out at very high speed to produce one long sound.

Males produce a range of calls, most more complex than the human ear can appreciate. They sing within the canopy of trees, moving around the branches singing quietly until they find a suitable location then sing loudly for a time in short bursts, each lasting about one and a half seconds. They then sing continuously for an hour or more without a break, ending again with a series of short bursts. Large groups of males sing together in chorus and will synchronise their bursts at the start and end of the song, and sometimes in between. Singing increases as the temperature rises, and may continue throughout the day when hot and sunny, particularly at dusk. They will also sing late into warm nights.

The noise generated by a large group of cicadas approaches that of a jet engine, and frequently exceeds the noise levels allowed by suburban councils. Calls can reach 120 decibels, which is close to the pain threshold of the human ear, and is at the middle of our best hearing range. They do not commence singing until the air temperature exceeds 18°C.

Females are attracted to males by their singing and the pair will undertake a short courtship before mating, probably involving the release of pheromones by the female. Most cicadas mate more than once in their life, with episodes of egg

laying in between, and mating may last three hours.

Behaviour

Adults can be reluctant to fly until severely disturbed. They are not strong fliers and are usually outmanoeuvred by birds, but on warm days males are sometimes able to escape birds on the wing. They spend most of their time feeding during the day, either in the outer parts of the canopy in late morning and early afternoon, moving to the thicker branches as the afternoon progresses.

As its life ends, a cicada will drop from the tree and lie on its back with its legs curled up, males 'singing' during this time with a slow, quiet series of clicks which may continue uninterrupted for several hours. This noise is a result of the nervous system shutting down and is easily distinguishable from the full song used during courtship.

Natural enemies and defence

Nymphs may be attacked by the parasitic larvae of Rhipicerid beetles. The beetle larva is attached by its head to the outside of the cicada nymph with its mouthparts penetrating the nymph's body wall, feeding on the internal fluids. There is never



more than one parasite on each nymph, and the nymph is eventually killed by the parasite, which then drops off to pupate and later emerge as an adult beetle.

Adults are a favourite food of many birds. In years when cicadas are particularly

abundant, large numbers of birds may gather to feed on them, picking cicadas out of the trees and chasing them through the air. Greengrocers are also eaten by bats, small marsupials, spiders which build large webs during the day, and predatory insects such as the large Cicada Killer Wasp. Cicadas are particularly susceptible to predation immediately after moulting when soft and immobile. They rely on camouflage to protect them from birds and, when present in large numbers, are sometimes able to successfully repel predatory birds with their ear-piercing song.

International entomological conferences 2014

Conference: 21st Biennial International Plant Resistance to Insects Workshop

Location: Marrakech, Morocco

Date: 14-18 April 2014

Contact: ipri2014logistics@gmail.com

Conference: The International Conference on 'Insects to Feed the World'

Location: Wageningen, The Netherlands

Date: 14-17 May 2014

Contact: www.wageningenur.nl/en/show/Insects-to-feed-the-world.htm

Conference: The XVII Congress for the International Union for the Study of Social Insects

Location: Cairns, Australia

Date: 13-18 July 2014

Contact: info@iussi2014.com

Conference: The International Society of Hymenopterists

Location: Cusco, Peru

Date: 20-25 July 2014

Contact: www.cebioperu.org/courses/hymenopterameeting.php

Conference: The Invertebrates in Education and Conservation Conference

Location: Rio Rico, Arizona, USA

Date: 22-26 July 2014

Contact: Erin.Sullivan@Zoo.org

Conference: The 10th European Congress of Entomology (ECE 2014)

Location: York, UK

Date: 3-8 August 2014

Contact: ece2014@royensoc.co.uk

Conference: Seventh International Conference on the Biology of Butterflies

Location: Turku, Finland

Date: 11-14 August 2014

Contact: niklas.wahlberg@utu.fi

Conference: XXV International Congress of Entomology

Location: Orlando, Florida USA

Date: 25-30 September 2016

Contact: www.ice2016orlando.org

Conference: The 62nd Annual Meeting of the Entomological Society of America

Location: Portland, Oregon

Date: 16-19 November 2014

Contact: www.entsoc.org/entomology2014

Articles of interest

Battle scarred ants can't tell friend from foe From: Melbourne University News October 2013

Novel research shows damage to fine hairs on ants' antennae's hinders the ability to determine who is a nest mate and who is a threat to the colony.

Professor Mark Elgar and his team at the Department of Zoology, University of Melbourne has shown that the right level of ant aggression depends on the density of the fine hairs on the antennae.

The researchers conducted experiments with the tropical weaver ant, a notoriously aggressive species that builds nests in trees. To identify friend from foe a worker ant brushes her antennae across the other ant. If they don't share the same odour, the worker will attempt to maim and kill the intruder.

Professor Mark Elgar said, "We have shown if the hairs on the antennae have been damaged by battles or normal wear and tear, then the ants ability to detect the right message and respond appropriately is compromised. Surprisingly, this is not age related."

In the highly social ant world, protecting the nest from enemies is crucial for survival so the antennae play a critical role.

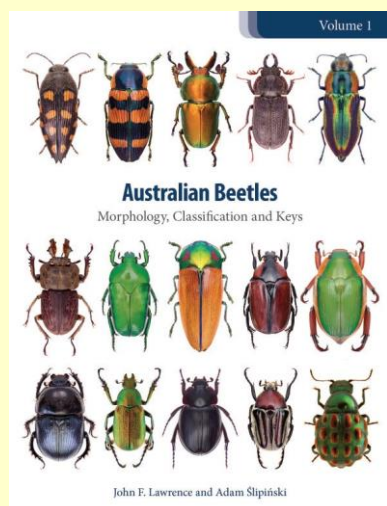
"We know that seeing and hearing in humans depends upon the condition of our eyes and ears, which often deteriorate with age, but we wondered whether this is a problem for lots of other species," said Professor Elgar.

Antennae condition is vital to the social communication system of ants. Insects also rely on their antennae to find food, mates and safe places for their offspring, so their antennae must remain in excellent condition. For ants, it's more of a number game; errors can be tolerated in large colonies.

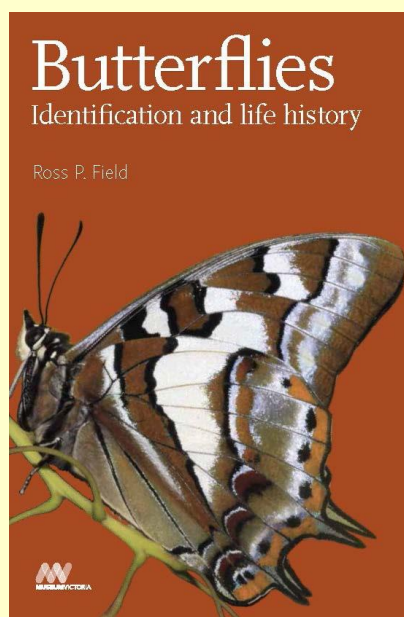
"The significance of the condition of the chemical receptor organ for animal communication is not widely appreciated," says Professor Mark Elgar, "our study highlights the potentially devastating impact of failing to detect a message".

Their study on insect antennae was published in the American Naturalist.

New entomological publications

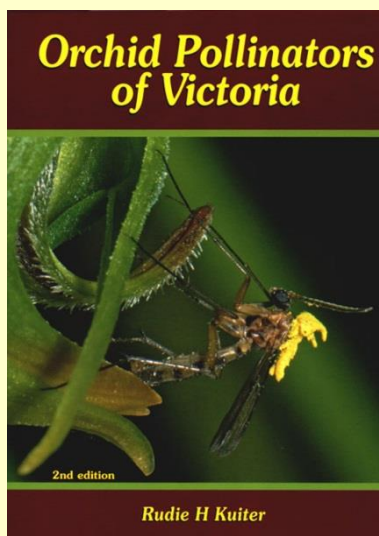


576 pages, colour illustrations,
colour photographs.
CSIRO Publishing
Hardback – October 2013
ISBN: 9780643097285
AU \$195

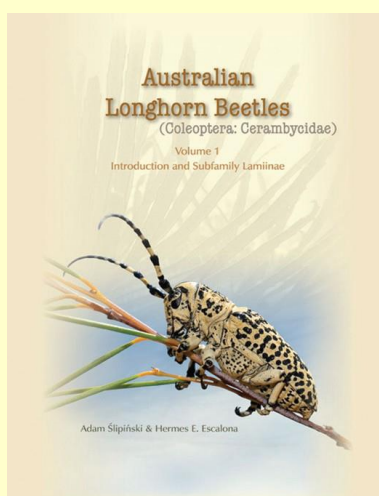


See review by Mark Hunting,
Victorian Entomologist, Vol.43,
No.6, December 2013

312 pages, colour photographs
Publisher: Museum Victoria
Paperback – July 2013
ISBN: 9781921833090
AU \$29.95

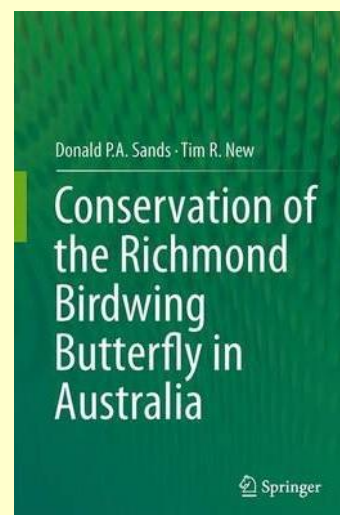


118 pages, 550 colour
photographs
Publisher: Aquatic
Photographics
Paperback – 2013
Second edition
AU \$18.00



Review by Laurie Cookson to
be published in the next
edition of the Victorian
Entomologist.

504 pages, colour plates
CSIRO Publishing
Hardback – December 2013
ISBN: 9781486300037
AU \$150



200 pages
Publisher: Springer
Hardback – September 2013
ISBN: 9789400771697
AU \$399.99

Coming Soon:

Rentz, D.C.F., A Guide to the
Cockroaches of Australia,
CSIRO Publishing

Australian entomological conferences 2014

Conference: Australian
Entomological Society

Location: Shine Dome,
Canberra ACT

Date: 28 September - 1
October 2014

Contact:

sally.brown@sallybcc.com.au

Conference: Invertebrate
Biodiversity & Conservation
Conference (combined with
the Society of Australian
Systematic Biologists, and
Australian Systematic Botany
Society meetings)

Location: Sydney NSW

Date: 1-6 December 2013

Contact:

sally.brown@sallybcc.com.au

Visit to Jell's Park, Glen Waverley, December 2013
with Friends of Jell's Park



From the archives...

Notes, and observations recorded since the summer of 1917

**By C.G.L. (Llewellyn) Gooding
Warragul, Victoria**

*Published in 'The Victorian Entomologist'
Vol.2, No.5, October 1972*

It was on December 15th, 1917, when many miles out in the bush, and watching for bush-fires, that I first found this rare species of butterfly.

I drove my axe into a dry stump to have a short spell from the oppressive heat of the bush fires, when I noticed two butterflies on the side of the stump, these two specimens, both females are still in my collection. The butterflies were quiet, and allowed me to take them off with my fingers, the stump was swarming with ants of the *Iridomyrmex* genus.

I opened one side of the stump with my axe, and saw two larvae which I could not recognise, I strapped the stump together with a piece of wire, intending to come back to it later.

Bush-fires, are mighty masters, and there were sterner things to attend to that day, beside collecting butterflies. The area was completely burnt out the following day, so I had to make a fresh start to find the butterfly again.

I visited the area several times during the following weeks, and on one occasion saw two specimens of *Pseudodipsas cuprea* flying high over these partly dead trees presumably on a "mating flight", but none would come down to feed on blossom.

This area was cleared by the bull-dozers, and ploughed up the following year, so once again I had to make a fresh start.

During the summer of 1937 I saw what I thought to be a specimen of *Pseudodipsas cuprea* flying high over a tree of Peppermint Eucalypt, this convinced me that I must investigate that tree.

The following day, I felled that tree, and carefully split open all the dead limbs, which were swarming with the *Iridomyrmex* ant.

I found two larvae of *Pseudodipsas cuprea*, in separate borer holes, one a little more than half

grown, the other one about $\frac{3}{4}$ grown. I placed these two larvae, in separate borer holes, which were infested with the *Iridomyrmex* ant, on a *Cootamundra* acacia tree in my garden.

This acacia tree had a large dead top swarming with the *Iridomyrmex* ants, and in the ensuing years...I bred a series of *Pseudodipsas cuprea* from the same tree.

This seemed to me to be a long journey from that hot summer day in 1917.

The successful conclusion in this life-long search for *Pseudodipsas cuprea*, and the discovery of its life history, gives any Naturalist a lot of pride, which rather makes up a little for the disappointment of being robbed of the pleasure of naming the butterfly, and describing it.

At the time I gave several specimens of *Pseudodipsas cuprea* away to collector friends. I should not have done this, for at that stage my health was giving my family, and myself some concern.

In some strange way the ants feed the tiny minute larva, in much the same way as they feed their own young, until the larva are strong enough to attack the ant pupa, and young ants, by sucking the juices from their bodies.

It is indeed a strange relationship!

Editor's note:

*The Copper Ant Blue, originally described by Don Sands in 1965 and revised as *Acrodipsas curprea* by the same author in 1980, is found up the east coast from Melbourne to southeast Queensland. The attendant ant is *Crematogaster*.*

The Entomological Society of Victoria's e-newsletter is edited by Patrick Honan, President. Contributions are welcome:
president@entsocvic.org.au

Visit the website: www.entsocvic.org.au

Upcoming events

18 February – The Urban Macroinvertebrate Monitoring Program, Melbourne Water

15 April – AGM – Butterflies: Identification and Life History – Dr Ross Field

17 June – Members' presentations

19 August – The Lord Howe Island Stick Insect – Rohan Cleave

Requests to the ESV

From Professor David Emery University of Sydney

We require Victorian cicadas for a current study on distribution and diversity – “Describing the distribution, song, phenology and diversity of cicada species within several current species groups”.

Time is of the essence as the greengrocers emerged in early December and many smaller species came out before Christmas and these only last a couple of weeks at best (providing they don't get scorched by the heat that you are having at present)!

We are keen on any cicadas, but those middle-sized (4-5cm) and small (<4cm) are really quite precious to determine nationwide distributions. At this point, we could run with anyone collecting dead specimens. For capture, cicadas can be handled as they do not bite. They are best caught by a net or after coming to fluorescent or UV light during the evening and night (they will fly off after dawn warms them up).

For storage:

- 1 Cicadas can be stored in boxes etc away from cockroaches and posted in a protective box to keep them safe during transport.
- 2 Live cicadas are best simply frozen and stored in a freezer box (like an ice-cream tub) until ready to be shipped. I can supply return express-post bags and boxes/tubes that enable freshly-thawed cicadas to be thawed, let stand for 1-2h and then rolled in a tissue, inserted into a tube or box and posted quickly so that they reach us quickly without rotting or discolouring. If “fresh”, I can then inject preservative to hold colour here or decide whether to preserve a leg for DNA analysis.
3. Cicadas could be posted to myself at:
Dr David Emery,
McMaster Bldg B14
Faculty of Veterinary Science
University of Sydney,
Sydney. NSW 2006.

We are happy to;

Provide a report with information such as distribution maps, on the searches and receipt of cicadas (annually or whenever required)

Provide copies of any papers or reports emanating from the specimens sent

Lodge specimens of any new cicadas or type specimens from newly described cicadas in the Victorian Museum with paratypes in the AM or ANIC as well as post the data into “Atlas of Living Australia”.

Sincerely and in appreciation,

PROF DAVID EMERY

Chair: Livestock immunoparasitology

Faculty of Veterinary Science

The University of Sydney NSW 2006

T +61 2 93513102 M +61 400 842402

Email david.emery@sydney.edu.au



From Sebastian Pohl University of Melbourne

I recently started a postdoctoral position at the University of Melbourne in the group of Prof. Mark Elgar. We will investigate the chemical communication between *Jalmenus* butterflies and its *Iridomyrmex* attendant ants. We want to sample various populations across the range of our focal species (*Jalmenus evagoras*) and populations of other *Jalmenus* species, and we plan to chemically analyze the cuticular hydrocarbon profiles of both partners in this mutualistic relationship, as well as the caterpillars' secretions.

Part of my work will be done at Harvard University, and Dr. Rod Eastwood from the Museum of Comparative Zoology at Harvard suggested that I contact you with regard to the expertise of your members. I would like to ask whether you could bring me in contact with any of your members working in this field, and who would be so kind as to provide me with some information about potential sites (preferably with the corresponding GPS data) where we might find *J. evagoras* or populations of other species within the genus *Jalmenus*.

If you have any further questions, please do not hesitate to contact me.

sebastian.pohl@unimelb.edu.au

Articles of interest

Dragonfly inspires germ-slaying nanosurface

From www.news24.com
October 2013

Paris - Imagine a hospital room, door handle or kitchen countertop that is free from bacteria - and not one drop of disinfectant or boiling water or dose of microwaves has been needed to zap the germs.

That is the idea behind a startling discovery made by scientists in Australia.

In a study published on Tuesday in the journal Nature Communications, they described how a dragonfly led them to a nano-tech surface that physically slays bacteria.

The germ-killer is black silicon, a substance discovered accidentally in the 1990s and now viewed as a promising semiconductor material for solar panels.

Under an electron microscope, its surface is a forest of spikes just 500 nanometres (500 billionths of a metre) high that rip open the cell walls of any bacterium which comes into contact, the scientists found.

It is the first time that any water-repellent surface has been found to have this physical quality as bactericide.

Last year, the team, led by Elena Ivanova at Swinburne University of Technology in Melbourne, were stunned to find cicada wings were potent killers of *Pseudomonas aeruginosa* - an opportunist germ that also infects humans and is becoming resistant to antibiotics.

Looking closely, they found that the answer lay not in any biochemical on the wing, but in regularly-spaced "nanopillars" on which bacteria were sliced to shreds as they settled on the surface.

They took the discovery further by examining nanostructures studding the translucent forewings of a red-bodied Australian dragonfly called the wandering percher (Latin name *Diplacodes bipunctata*).

It has spikes that are somewhat smaller than those on the black silicon - they are 240 nanometres high.

The dragonfly's wings and black silicon were put through their paces in a lab, and both were ruthlessly bactericidal.

Smooth to the human touch, the surfaces destroyed two categories of bacteria, called Gram-negative and Gram-positive, as well as spores, the protective shell that coats certain times of dormant germs.

The three targeted bugs comprised *P. aeruginosa*, the notorious *Staphylococcus aureus* and the ultra-tough spore of *Bacillus subtilis*, a wide-ranging soil germ that is a cousin of anthrax.

The killing rate was 450 000 bacterial cells per square centimetre per minute over the first three hours of exposure.

This is 810 times the minimum dose needed to infect a person with *S. aureus*, and a whopping 77 400 times that of *P. aeruginosa*.

If the cost of making black silicon is an obstacle, many other options are around for making nano-scale germ-killing surfaces, said the scientists.

"Synthetic antibacterial nano-materials that exhibit a similar effectiveness... can be readily fabricated over large areas," they wrote.



STOP PRESS

Unfortunately Dr Martin Steinbauer has had to withdraw from his February presentation, advertised in the Society Bulletin, and will present at a later date.

Fortunately another speaker has kindly agreed to step in.

The February presentation will now be '**The Urban Macroinvertebrate Monitoring Program**' by Priya Crawford-Wilson and Eddie Tsyrlin, Melbourne Water.