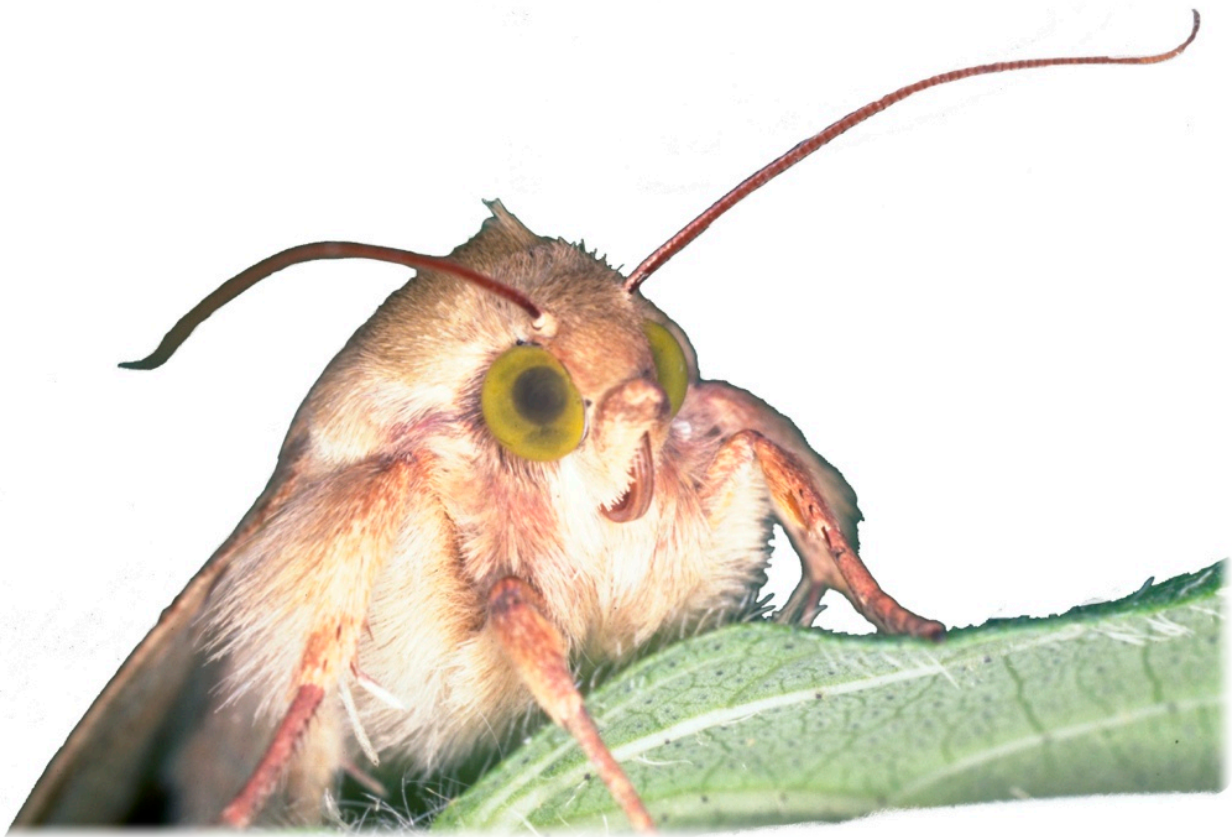


Entomological Society of Queensland

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Entomological Society of Queensland

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Front Cover: A photograph of the Old World Bollworm, *Helicoverpa armigera*, a cosmopolitan species found naturally in Africa, southern Europe, across Asia and in Australia. *H. armigera*, together with *H. punctigera* (found only in Australia) are major pests of many crops in Australian agriculture, particularly cotton, and is very well adapted to exploit agricultural systems, being highly polyphagous and mobile, highly fecund and having a capacity for strategic diapause. *H. armigera* is particularly damaging through its capacity to rapidly evolve resistance to pesticides, which it has done successively in Australia. For the last 20 years it has however, been well managed with transgenic Bt cottons accompanied by a pre-emptive resistance management strategy. In the last few years *H. armigera* has been confirmed to have invaded South America where it is causing havoc to cropping and moving northwards towards the USA. Interesting times ahead. Photo by Cheryl Mares, CSIRO Entomology, Narrabri. Used with permission.

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Entomological Society of Queensland

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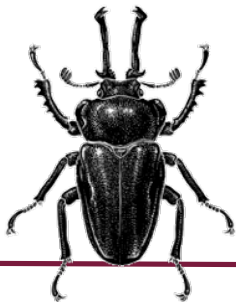
The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. The Society promotes liaison among entomologists through regular meetings and the distribution of a *News Bulletin* to members. Meetings are announced in the *News Bulletin*, and are normally held on the second Tuesday of each month (March to June, August to December). Visitors and members are welcome. Membership information can be obtained from the Honorary Secretary, or other office bearers of the Society. Membership is open to anyone interested in Entomology.

Contributions to the *News Bulletin* such as items of news, trip reports, announcements, etc, are welcome and should be sent to the News Bulletin Editor.

The Society publishes **THE AUSTRALIAN ENTOMOLOGIST**. This is a refereed, illustrated journal devoted to Entomology in the Australian region, including New Zealand, Papua New Guinea and the islands of the South Western Pacific. The journal is published in four parts annually.

EMBLEM: The Society's emblem, chosen in 1973 on the 50th anniversary of the Society, is the King Stag Beetle, *Phalacrognathus muelleri* (Macleay), Family Lucanidae (Coleoptera). Its magnificent purple and green colouration makes it one of the most attractive beetle species in Australia. Other common names include Rainbow, Golden and Magnificent Stag Beetle. It is restricted to the rainforests of northern Queensland. Emblem illustration by Sybil Curtis.

The issue of this document does **NOT** constitute a formal publication for the purposes of the "International Code of Zoological Nomenclature 4th edition, 1999". Authors alone are responsible for the views expressed.



Entomological Society of Queensland

Minutes for General Meeting

Tuesday, April 9th, 2019

Held in the Seminar Rooms, Ecosciences Precinct,
Boggo Rd, Dutton Park.

Meeting open: 1:03pm

Attendance (47):

Members (29): Stephen Frances, Geoff Monteith, Don Sands, Gary Fitt, Cate Paull, Des Foley, Brendan Trewin, Mark Schutze, Justin Bartlett, Liam Bromley, Mike Muller, Tim Heard, Jessa Thurman, Nadine Baldwin, Peter Samson, Lyn Cook, Claudia Schipp, William Arnold, Bernie Franzmann, Kathy Ebert, Richard Zietek, David Exton, Andrew Hayes, Natalia Medeiros De Souza, Ngon Hoc Le, Rebecca Nagy, Andrew Hulthen, Vivian Sandoval, Penny Mills.

Visitors (18): Christine Horlock, Dean Beasley, Zakeel Cassim, Abu-Baker Siddique, Nga Trom, Melina Miles, Shiromi Basnayake, Peter Ulcovic, Hazel Parry, Nicole Forrest, Claire Phillips, Kathy Braithwaite, Lilia Costa Carvalhais, Runmeng Chen, Fiona Filardo, Trevor Volp, Adam Quade, Nick Macleod.

Minutes: The minutes of the last meeting were circulated in News Bulletin 47[1] March 2019. Moved the minutes be accepted as a true record: Penny Mills, Seconded: Cate Paull, Carried: All.

Nominations for membership approved by council:

General Members:

Sandra Pearce

Student Members:

Ehsan Sanaei (UQ)

Matthew Connors (JCU)

Joel Fostin (USC)

Joel Johnson (CQU)

General Business:

None.

Main Business:

Phyllis Weintraub (Volcani Institute, Israel) presenting on “*Symbiotic bacteria associated with a phytoplasma vector*”. Gary Fitt provided the vote of thanks.

Next meeting:

The next meeting will be on 14th May, presented by Nancy Schellhorn on the topic of “*The journey to RapidAIM*”. Note that the meeting is scheduled to be held in the ESP Library due to seminar room upgrade.

Meeting closed: 1:52pm.



A gorgeous female *Onchestus gorgus* displays her wing patterns. Spotted by Will Arnold and Kathy Ebert near Booroobin State Forest, 2 April 2019. Photo: Will Arnold.

At our next meeting...

***“ The journey to
RapidAIM”***

presented by Dr. Nancy Schellhorn

Co-inventor and Co-founder

RapidAIM Pty Ltd

More than 30% of the food produced never makes it past the farm gate, and of that ~ 13% is due to loss from insect pests. This is even after management with insecticides, of which the vast majority of spray never reaches the intended target. One of the greatest barriers to better pest management is knowing when and where are pests in the crop, farm and region. Technological change in real-time insect monitoring is helping to remove this barrier. The changes are largely driven by macro-economic trends of increased cost of labour, international agricultural trade, shifting consumer demand, and a confluence of new hardware technologies that free computation from the desktop. Real-time insect monitoring can provide early detection of pests, targeted control, and validation that control is working. Nancy will talk about the RapidAIM technology that she and her colleagues invented, the journey of forming a company, commercialising their technology, and rolling out grids of RapidAIM sensors across the country.



Dr Nancy Schellhorn is a co-inventor and co-founder of RapidAIM automated insect monitoring. RapidAIM provides a service of real-time pest detection for targeted insect pest control and validation. RapidAIM can remove barriers to insect detection and monitoring, pest data input, communication, and coordinated pest control.

Prior to co-founding RapidAIM Pty Ltd, Nancy was a Principal Research Scientist with CSIRO in Brisbane Australia where she developed and lead research into the concept of pest-suppressive landscapes; a means to design, measure and manage the agricultural landscapes to capture the ecosystem services of pest control.

Join us!

Tuesday 14th May

at 1 pm.

Ground floor Library at EcoSciences.

Tea & coffee following.

All welcome!



Symbiotic bacteria associated with a phytoplasma vector

*presented by Dr Phyllis G. Weintraub
Department of Entomology, Gilat Research Center, Israel*

shown to have an obligate association with the primary symbiont *Sulcia*.

The genus *Candidatus Phytoplasma* spp. are wall-less, reduced-genome, phloem-limited bacteria (Fig. 1) that are responsible for hundreds of plant diseases worldwide. These plant pathogens are transmitted by a relatively small number of phloem-feeding species in the Hemiptera: leafhoppers (Auchenorrhyncha: Cicadellidae), planthoppers (Auchenorrhyncha: Fulgoroidea) and psyllids (Sternorrhyncha: Psyllidae). Phytoplasmas have been documented to have a range of effects on their hosts from beneficial (i.e. increased tolerance to low temperatures, life span, fecundity, etc.) to detrimental (reduced life span, fecundity, offspring size, etc).

As science advances technologically, our world becomes more and more complicated with interactions popping up where none were expected. With the newly invented microscope, Robert Hooke actually viewed and engraved a drawing of bacteria in a louse in 1665. In the late 1860s, Anton de Bary defined symbiosis as “the living together of parasite and host”.

Intracellular symbiotic bacteria are found in all arthropods feeding on nutritionally depauperate food; such as wood and blood. However, there are many other poor food sources such as xylem and phloem sap, which contain little more than water and some sugar but scarcely any source of proteins or amino acids. These symbiotic bacteria may influence their host's biology and ecology in various ways. Non-pathogenic symbionts can be divided into two groups: 1) Primary symbionts, which are located in specialized cells called bacteriomes, supplying essential nutrients and are strictly transmitted from mothers to their offspring; 2) Secondary symbionts, which are diverse in terms of their location, function and transmission modes. All Hemiptera tested so far are associated with diverse and dynamic interactions with symbionts. The Auchenorrhyncha have been

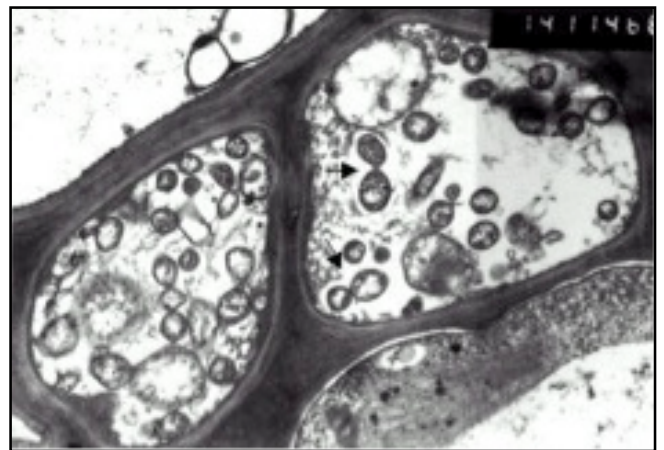


Figure 1. Phytoplasma in carrot phloem.

To test for a possible correlation between specific symbiotic bacteria and the efficiency of phytoplasma transmission, the diversity of symbionts was assessed. Leafhoppers were collected in



Figure 2. Healthy carrots on left, infected carrots on right with adventitious roots and witches-broom leaves.

phytoplasma-infected carrot fields (Fig. 2) using vacuum sampling, placed in alcohol and identified to species. An initial screening was conducted to determine the array of symbiotic bacteria using the fingerprinting technique Denaturing Gradient Gel Electrophoresis (DGGE). In addition to the primary symbiont *Sulcia*, which was detected in all of the leafhopper species tested, the analysis showed the presence of *Arsenophonus*, *Wolbachia* and an unknown *Rickettsia*-type originally thought to be *Diplorickettsia*. Because this is the first time the *Rickettsia*-type was discovered, it was further characterized in the leafhopper and phytoplasma vector, *Orosius albicinctus* (Fig. 3). To further



Figure 3. *Orosius albicinctus*.

determine the phylogenetic affiliation of this newly discovered bacterium, the nearly-full sequence of the 16S rDNA coding gene as well as the *rpoB* gene, encoding the β -subunit of RNA polymerase, were sequenced. Comparison of these gene sequences to those reported in various databases has confirmed that the symbiont was in the genus *Rickettsiella*.

A colony of *O. albicinctus* was established from leafhoppers collected and established on common bean plants. To test for the infection rate of *Rickettsiella*, the presence of that symbiont was tested in 100 males and 100 females with species-specific primers. The infection rate of *Arsenophonus* was also tested, and *Sulcia*-specific primers were used as a positive control. *Arsenophonus* was detected in 18% of the males and 21% of the females and *Rickettsiella* in 64 and 65% of males and females, respectively. It was thus established that *Rickettsiella* is quite common in the *O. albicinctus* populations in Israel. To determine the localisation of the various symbionts within their host, male and female adult leafhoppers were dissected, fixed, hybridised with species-specific fluorescence probes and viewed under a confocal microscope (Fig. 4A, B). Symbionts were seen in the midgut and accessory gland of the ovaries, but not in the salivary glands, foregut, hindgut and malpighian tubules, testis, and oocytes. CT images revealed that the bacteriomes were actually anchored close to the membrane between the first and second abdominal segments (Fig 4 C,D).

Orosius albicinctus is a polyphagous leafhopper, found in a number of agricultural crops, flowers, vines, vegetables and herbs, as well as weeds. It is an established vector of phytoplasmas in Europe and the Middle East transmitting Sesamum Phyllody, Lucerne witches'-broom, Purple Top and more. *Arsenophonus* is known from a range of hosts including Diptera, Hemiptera, Hymenoptera and Neuroptera, and was previously recorded in the planthoppers *Cixius wagneri* and *Pentastiridius leporinus*. It has also been found associated with plant diseases like marginal chlorosis of strawberry

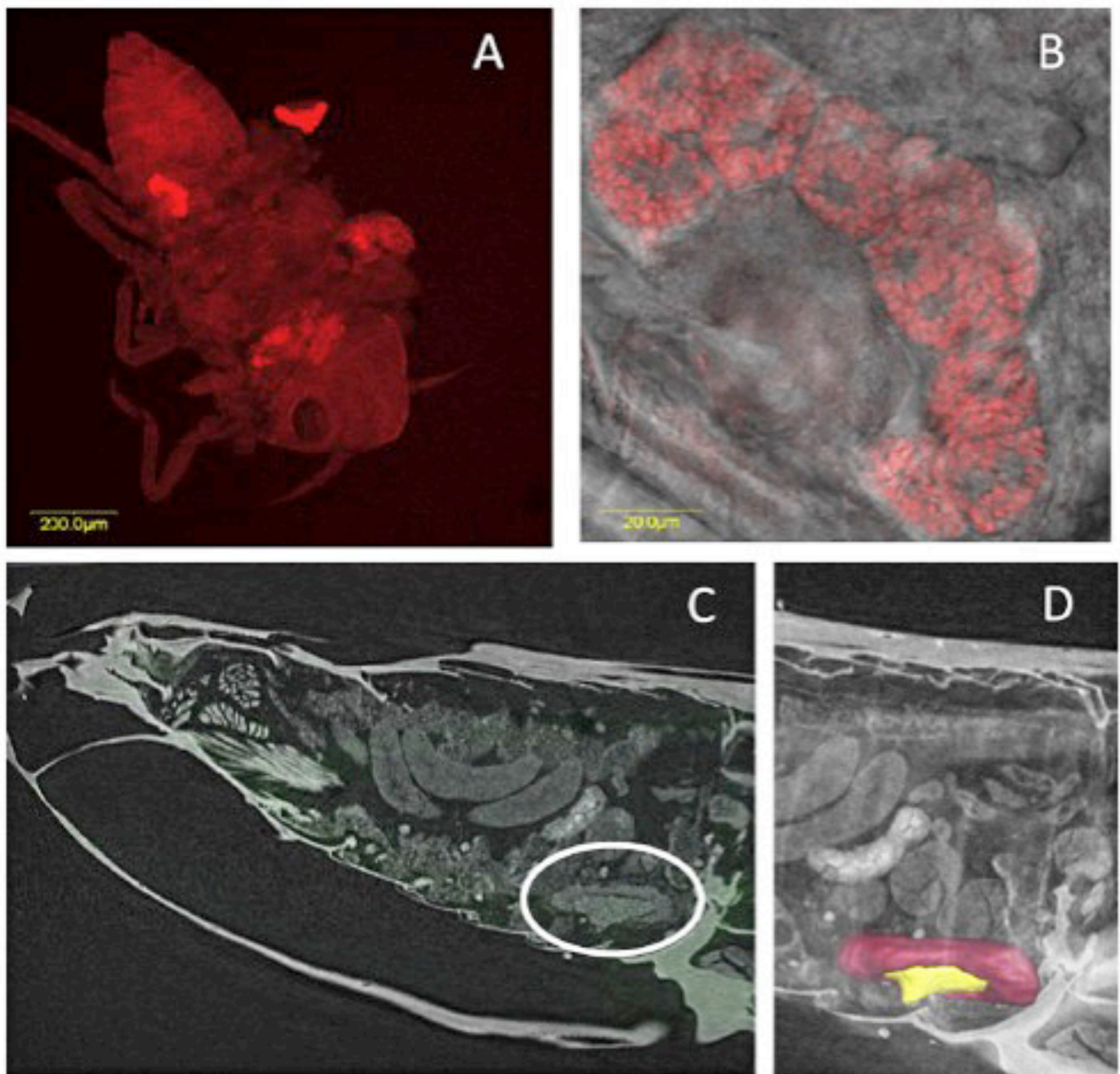


Figure 4. Bacteriomes in *Orosius albicinctus*. A. Confocal image of bacteriome in 1st instar nymph. B. Close-up of a bacteriome *in situ*. C. CT image of a bacteriome *in situ*. D. 3-D color-enhanced CT image of a bacteriome.

and “syndrome basses richesses” in sugar beets. The influence of *Arsenophonus*, *Rickettsiella* and even *Sulcia* on the ability of various leafhopper species to transmit phytoplasma remains to be tested.

References

Iasur-Kruh, L., Weintraub, P.G., Mozes-Daube, N., Robinson, W.E., Perlman, S.J. Zchori-Fein, E. 2013. Novel *Rickettsiella* bacterium in the leafhopper *Orosius albicinctus* (Hemiptera: Cicadellidae).

Applied and Environmental Microbiology 79:4246-4252.

Weintraub, P.G., Hoch, H., Muhlethaler, R., Zchori-Fein, E. 2014. Synchrotron X-ray micro-computed tomography as a tool for *in situ* elucidation of insect bacteriomes. *Arthropod Structure & Development* 43:183-186.



Stingless Bee Honey Unique Properties

***Presented by Dr. Norhasnida Zawawi
Senior Lecturer
University Putra Malaysia and
Honorary Senior Fellow
Queensland Alliance of Agriculture
and Food Innovation (QAAFI)***

Honey has been an important natural food product since ancient times and is known for its nutritional and therapeutic values. It is mostly produced from liquid plant exudates which are gathered, modified and stored by different types of bees. The honey produced by stingless bees is gaining increasing popularity among consumers in Australia and Malaysia.

Honey produced by stingless bees is known by various other names such as Meliponine honey, pot-honey (commonly used in Australia) and also kelulut honey (commonly used in Malaysia).

The distinct acidic taste and thin fluidity of stingless bee honey suggests that the physicochemical properties might differ from other honeys. Stingless bees often collect nectars from multiple flowers within just 500 metres of their hives including small flowers from weed plants. This means that the compounds in the honey can vary greatly.

In my research, I'm interested in looking at the different characteristics of stingless bee honeys produced by *Heterotrigona itama* and *Geniotrigona thoracica* which are common in Malaysia whilst also comparing them to the honey produced by the species *Tetragonula carbonaria* and *Tetragonula hockingsi* which are natives to Queensland. My initial findings are summarised in Table 1.

There is great variability in the colour and sugar contents of the stingless bee honeys from both countries. However, all of the honeys have water content far exceeding the limit of 20% which is currently the CODEX guideline for honey and the pH values are consistently lower than the European bee honeys. The electrical conductivity and ash values indicate that the Queensland honeys contains more total minerals compared with the Malaysian honeys. Honeys from *G. thoracica* shows remarkably low content of fructose suggesting that other sugar or sugars could be the main compound in this honey.

My findings show the uniqueness of stingless bee honey properties across species and origin. Their unique properties suggests that there should be a food standard dedicated to regulate them separate from the European bee honeys.



Geniotrigona thoracica, a stingless bee from Malaysia.
Photo credit: Eunice Soh

Table 1. Honey comparisons between Australian and Malaysian stingless bees.

	<i>T. carbonaria</i>	<i>T. hockingsi</i>	<i>H. itama</i>	<i>G. thoracica</i>
Colour, Pfund (mm)	436.4 (±131.5)	365.7 (±116.2)	230.4 (±111.6)	148.5 (±58.8)
Total Soluble Solid (°Brix)	72.921 (±0.884)	73.244 (±1.166)	70.16 (±1.494)	70.027 (±2.142)
Water (%)	25.479 (±0.85)	25.151 (±1.155)	28.159 (±1.454)	28.297 (±2.084)
Electrical conductivity (mS/cm)	0.6105 (±0.112)	0.6984 (±0.052)	0.2943 (±0.047)	0.3186 (±0.057)
Ash (g/100g)	0.2704 (±0.064)	0.3209 (±0.03)	0.0887 (±0.027)	0.1026 (±0.033)
pH	3.6 (±0.064)	3.627 (±0.13)	3.186 (±0.154)	3.068 (±0.038)
Free acidity	167.76 (±32.81)	125.4 (±40.9)	211.5 (±93)	235.6 (±95.8)
Sugars:				
Fructose (g/100gm)	19.13 (±4.09)	19.16 (±3.58)	15.97 (±6.05)	5.37 (±1.398)
Glucose (g/100gm)	12.457 (±1.777)	12.301 (±2.278)	13.86 (±5.71)	18.5 (±24.9)

The History Corner...

Mabel Theodore HOBLER (1871-1925)



Born Crescent Lagoon, near Rockhampton, daughter of George Barnard, who was an English-born naturalist and grazier.

Grew up with three brothers in a family of enthusiastic naturalists who developed an extensive collection on their property, "Coomooboolaroo", near Duaringa. Married F. H. Hobler in 1891 and lived on stations he managed in central Queensland until they purchased their own property, "Kilrock", near Jandowae. Collected beetles and sent to Queensland Museum and to South Australian Museum where A. M. Lea described the weevil *Apion hoblerae*. Following husband's death in 1921 she moved to Brisbane until her death in 1925. Was active in the Queensland Naturalists' Club and published several articles on Coleoptera in the *Queensland Naturalist*.

Biography: Janetzki, H., 1997. Mabel Hobler pp. 24-25. In McKay, J.(ed.) *Brilliant careers: women collectors and illustrators in Queensland*. Queensland Museum, 80 pp.



Entomology News

from Queensland and beyond...

F. A. Perkins Prize in Entomology

The F. A. Perkins prize in Entomology was established in 1965 as a tribute to Frederick Athol Perkins, the first UQ Lecturer in Entomology (1926). He was also the first Head of the Department of Entomology and a founder of the Entomological Society of Queensland. Upon his retirement in 1965, his past and present students, his entomological and University colleagues and his other friends contributed to make this prize. This prize is awarded each year to the student with the highest mark in second level entomology (Insect Science, BIOL2205). The winner for 2018 is Danyelle Miller. The award was presented to Danyelle by Dr Margie Mayfield, the current Head of Biological Sciences, at the annual Jiro Kikkowa Lecture on 21 March 2019.



Danyelle Miller, recipient of the F. A. Perkins Award for 2018

NEW website: Taxonomy Australia

The Australian Academy of Science has launched a new website for Taxonomy Australia. The purpose of the website is to increase awareness of how

important taxonomy and biosystematics are as a foundation to other sciences. There are already some fantastic posts on invertebrate taxonomy such as “Chocolate biscuits and Doctor Who: Ten new species of wasps” by Erin Fagan-Jeffries from the University of Adelaide, and a post about Jeremy Wilson (Griffith University) and his latest descriptions of “Exquisite trapdoors”. Check it out!

www.taxonomyaustralia.org.au

Danyelle writes:

“Whilst I have always been enchanted by nature, it is only recently that I have begun to fully appreciate the wonder and significance of insects. During the course of my studies at the University of Queensland, subjects in entomology, and more broadly in biology, have lead me to begin to understand something of their functional significance. I am fascinated by their central role in so many ecosystem processes and I have developed a vivid appreciation of the intricacy of their structures and how beautifully they are adapted to their purpose. I am becoming increasingly involved in volunteer work and I look forward to furthering my studies and contributing to our understanding of insects and ecology more broadly.”

Well done, Danyelle!



Euoplos thynnearum, one of the new trapdoor spider species described by Jeremy Wilson from Mary Cairncross Reserve.

Photo: K. Ebert

Mary Cairncross BioBlitz

A BioBlitz was held from the 27-31 March at Mary Cairncross Scenic Reserve near Maleny to launch a five-month biodiversity exhibition at their Rainforest Discovery Centre. A diverse group of tree-climbing arborists, scientists, artists and volunteers spent five days exploring the biodiversity of five towering fig trees. The scientific survey team looked at

bryophytes, arboreal vertebrates, fungal and vascular endophytes, lichens, bats, birds and insects from the ground up to the canopy with the help of a fantastic team of arborists. ESQ members, Geoff Monteith and Kathy Ebert, surveyed the insects, looking specifically for dung beetles using ground and arboreal pitfall traps baited with different types of baits. Twelve species of dung beetles were collected, but only in ground traps. (Apparently the dung beetles at Mary Cairncross don't like to fly very high!) However, the aerial traps collected several different types of flies. Several artists, volunteers from the local area and students from the University of Sunshine Coast were on hand to help out with trapping and also to record the event through art and visual media. Each artist had a visual diary which they used to record each day's activities. Although the weather started out quite wet, the rain



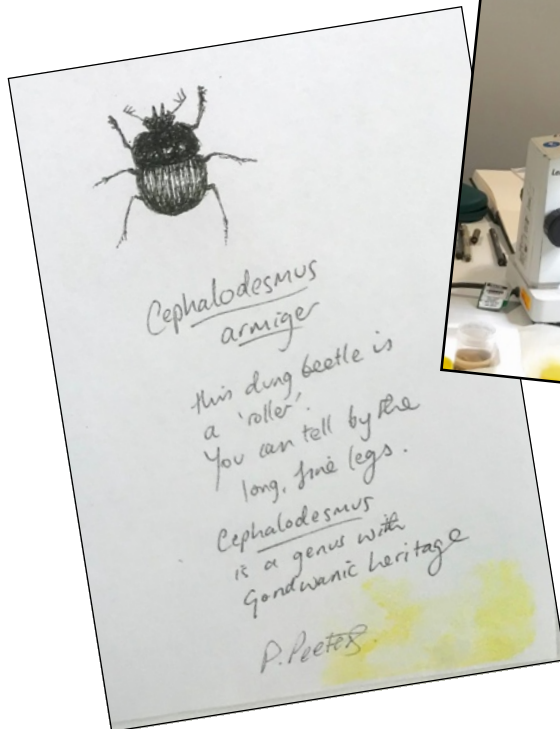
Clockwise from the top: One of the survey trees; Geoff Monteith setting an aerial pitfall trap; Kathy Ebert baiting an aerial survey trap; one of the traps as seen from up in the tree; the survey tree's information sign.

Photo credits: Sandra Pearce, Adam West, Kathy Ebert.

cleared up for the last two days. All in all, it was a fantastic event and a great opportunity to connect with a variety of people and share information with volunteers, students and the public. Everyone was quite interested to learn more about dung beetles!

Artwork and biodiversity displays will be in the Mary Cairncross Rainforest Discovery Centre until the end of August.

BioBlitz artist, Sandra Pearce (right) paints insects collected during the BioBlitz: top right: a bat fly (*Nycteribiidae*) collected from a blossom bat (*Pteropus scapulatus*) and a dung beetle (*Cephalodesmus armiger*, (far right). The artist journals will become part of the biodiversity exhibit.



BioBlitz artist, Paula Peeters (left) sketches a dung beetle (*Cephalodesmus armiger* - far left) collected during the BioBlitz.



Above: a local dung beetle (*Cephalodesmus armiger*) surveys the leaf print artwork by Leisa Gunton.

ESQ Aroona BugCatch 2019

2-3 March 2019



Aroona BugCatch 2019: left to right: Geoff and Rosalind with Inca (dog), Liam Bromley, Caz & Brendon Trewin with Maddy, Nicole Forrest (Liam's mum), Stacey MacLean, Kathy Ebert, Amatzia Genin, Renee Rossini (QTFN), Daniela Genin, Will Arnold, Nina, Penny Mills, Chrissy Williams, Jessa Thurman, Andrew Maynard, Nellie Pease, Tommi, Poppy Pritchard, Runmeng Chen, Colleen Foelz. *Absent:* Andrew Walker, Sam Robinson. Photo: Tanya Pritchard, QTFN.

The Aroona BugCatch was declared a successful and enjoyable event. The event was organised by Penny Mills (ESQ/UQ) and Renee Rossini from Queensland Trust for Nature (QTFN) and UQ's Ecology Centre. The event was fully catered and held at the Aroona Homestead which is situated on 2000 hectares in the Little Liverpool Range, 70 km west-southwest of Brisbane. QTFN's aim for Aroona is to facilitate research in order to demonstrate that wildland conservation and cattle grazing can co-exist. The property has several threatened species and remnant bushland. The aim of the BugCatch was to build a preliminary invertebrate species list for the property.

Twenty-six people attended the BugCatch to look for arthropods and enjoy a weekend in relaxed company with like-minded people. Attendees included Renee

Rossini and Tanya Pritchard from QTFN, several ESQ members and their families, UQ biology students, visiting scholar Dr Amatzia Genin and wife, Daniela, and Andy Walker and Sam Robinson from UQ's venom research lab (see photo above).

We surveyed two sites: one in the open eucalypt woodland adjacent to grazing paddocks, and the other in remnant dry rainforest. Malaise traps, flight intercept traps and baited pitfalls were set up at each site. Lots of direct searching took place and we ran a light sheet in the evening.

Andy Walker and Sam Robinson were on the lookout for anything venomous for their venom research. Liam Bromley collected 28 different species of spiders! Kathy Ebert collected several species of native dung beetles including the showy,

metallic *Onthophagus dandalu* and the horned *Onthophagus thoreyi*. The special *Cephalodesmus quadridens*, which cultivates its own dung substitute, was found in the dry rainforest. We also found the introduced dung beetles *Euoniticellus intermedius* and *Digitonthophagus gazella* in the paddocks.

Orthopteroids were very abundant! Jessa Thurmann and Andrew Maynard found a variety of grasshoppers, stick insects and praying mantises. Brendon Trewin surveyed the mosquitoes.

Everyone was keen to learn and helped out with great enthusiasm! Thanks to everyone who generously shared their photos - there were too many too include them all, but you can see more in Colleen Foelz's reflection on page 44.



Dung beetles: above left: the introduced *Digitonthophagus gazella*; bottom left: *Onthophagus dandalu* and above right: *Onthophagus thoreyi*.



Above: Grass stick insect, *Austrosipyoidea carterus*



Above: A huntsman spider, *Pediana regina* (Sparassidae). Photo: Liam Bromley.



Right: Glasswing butterfly, *Acraea andromacha* (Nymphalidae)



Above: Carpenter bee, *Xylocopa* (*Koptortosoma*) sp.



Jessa holds a Green Slantfaced Grasshopper, *Acrida conica*



Brendan Trewin collecting mosquitoes from a hollow stump using his electric pooter.



Collleen and Nellie survey the Malaise trap at the edge of the dry rainforest.



Driving across the paddocks to the rainforest site.



Penny, Liam and Stacey at the light sheet.

Runmeng helps install pitfall traps.



Above: Wattle Cup Moth Caterpillar - *Calcarifera ordinata*
Right: Bush Katydid - *Ephippitytha trigintiduoguttata*.





Announcements

An opportunity to be involved!

Looking for an enthusiastic entomologist to take on the temporary role of Queensland Regional Representative for the Australian Entomological Society for approximately 12 months (August 2019 – 2020). The Regional Representative predominantly acts as local correspondent for the quarterly News Bulletin “Myrmecia.” However, with the upcoming [2019 Conference & AGM](#) in Brisbane this year, you may be part of the organisational committee for this exciting event. Must be a member of the Australian Entomological Society. Please contact Leanne Nelson at leanne.nelson@daf.qld.gov.au if you’re interested in this opportunity.

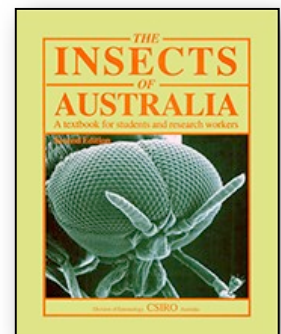
Save the date!



The 2019 Organising Committee is pleased to announce the 2019 Australian Entomological Society Conference will be held at the Brisbane Convention & Exhibition Centre at Southbank Brisbane, from Sunday 1st to Wednesday 4th December 2019. **The conference will be jointly hosted by Australian Entomological Society, the Society of Australian Systematic Biologists (SASB) and the Australasian Arachnological Society (AAS).** More information will be posted at <https://www.austentsoc.org.au>

The Insects of Australia now available for download

After a long period of discussion and negotiation with CSIRO Publishing, the Australian Entomological Society can announce that the 1991 2-volume set of *The Insects of Australia* is now available to purchase, either as a complete PDF file (both Volumes for \$90) or by chapter (for \$10 each) at: <https://www.publish.csiro.au/book/94/>



Insect ecology symposium



The Insect Ecology Research Chapter of the Ecological Society of Australia is putting together a symposium at their Annual conference in Launceston, Tasmania this year from 24-29 November entitled ***Using ecological traits of invertebrates to understand ecosystems***. This symposium will explore the evidence that we are heading in the right direction, examine the variety of traits used, their links with ecological function and their effectiveness in predicting responses to environmental change. We will also consider statistical and modelling approaches to trait analysis, the availability of trait data and the critical steps to advancing our understanding of ecosystems through invertebrate trait ecology. Invertebrates are an ideal group for which to ask questions about relationships between assemblage structure and the environment because of their diversity. A range of disciplines will be closely aligned to ecologies such as statistics, behaviour, physiology, and mathematical modelling. Speakers will be asked to present their latest findings within the framework of the symposium. Interested? Find more information here: <https://www.esa2019.org.au/symposia-at-esa19/>

From my first ESQ BugCatch, I learnt that to catch a ‘bug’ requires...

written by Colleen Foelz (bug convert)

1. BugCatchers

- Twenty-four insect enthusiasts and entomologists—all can enjoy and contribute regardless of the stage they’re at in their journey into insects--larva, pupa or adult (Fig. 1 & 2).
- inter-Phylum/Class tolerance—bird and sub-adult spider enthusiasts infiltrated the group and added to its successes (Fig. 3).



Fig. 1. Brendon Trewin and daughter, Maddy, checking out the insects.



Fig. 3. Liam Bromley identifying spiders.



Fig. 2. Kathy Ebert (UQ) explains a bit about dung beetles to Tanya Pritchard (QTFN).

2. Highly specialised equipment and enthusiastic volunteers (Figs. 4-8)

- gladwrap ‘flight intercept device’ (Fig. 5).
- garden twist ties, stinky mushrooms and roo poo gift-wrapped in Chux Superwipes (Fig. 6).
- buckets, plastic drinking cups and lots of containers – it’s very important that some have holes and that others don’t (Fig. 7).
- specially lit white bedsheet (requires installation of two human rain guards) (Fig. 8).
- WMDs – ethanol, detergent, fingers



Fig. 6. Baited pitfall trap



Fig. 4. Stacey MacLean digs pitfall traps.



Fig. 5. Will Arnold and Chrissy Williams set up the flight intercept trap.



Fig. 7. Nellie Pease clears a pitfall trap.

3. BugCatch-friendly weather

- the slightly cooler conditions were welcomed despite intermittent drizzle and breezes whenever you tried to put up or take down a tent (avoiding TC Oma's strong gusts and predicted epic rain event of the previous weekend) (Fig. 9).



Fig. 9. Intermittent brief drizzles interspersed with fine conditions made for interesting lighting across the paddocks.



Fig. 8. Mantispid lacewing (above) at the light sheet.

4. Food

- contrary to suspicions we did not partake in entomophagy and no bugs were harmed in the course of eating (Fig. 10). We ate well and long with all tastes catered for thanks to our QTFN host, Renee Rossini.



Fig.11. Above: Runmeng Chen sorts through the catch. Right: Penny and Brendan identify some of the catch.



Fig. 13. Will Arnold and Kathy Ebert check the cattle dung for dung beetles.



Fig. 10. Jessa Thurman and Andrew Maynard identifying specimens over lunch.

5. Shelter (to hide from insects when they come looking for you at night)

- the underhouse, surrounds, verandahs and facilities of the Aroona Homestead provided lots of space and options for meals, insect sorting (Fig. 11), assorted personal hygiene needs and sleeping contraptions (which could be satisfactorily spaced to avoid snoring/ zipping interference overnight – this is highly desirable) (Fig. 12).



Fig.12. Tents set up around the homestead.

6. Focus

- of search pattern ... koala gazing is out and no sampling the livestock (but rifling through fresh dung is OK – Kathy said) (Fig. 13).
- of eyes - supported by whatever the job takes ... seeing glasses, squinting, microscopes, cameras, hand lenses, binoculars.

7. Insects

- we caught all types (even some that were already dead) – ones that wanted us to think they were sticks or leaves or bark or were just total show-offs (Fig. 14), ones that predate/ parasitise/sting/bite, some that like poo, ones Penny thought were cute (that was most of them), ones that crawl/fly/hop/dig/climb/delight..... (Fig. 15-16).



Fig.14. Left: Jessa Thurman found a colourful Wattle cup moth caterpillar (Limacodidae: *Calcarifera ordinata*). Its bright colours advertise: Don't touch me, my spines sting!!



Fig.15. Above top left: Carpenter bee *Xylocopa* (*Lestis*) sp., right: a longicorn beetle (Cerambycidae) and below left: a gall made by a scale insect in the *Apiomorpha floralis* group.



Fig.16. Above: Ants tending a gall; Left: a leaf beetle (*Paropsisterna* sp.)

Meetings & conferences

2019 Genetics Society of AustralAsia Conference

June 30– July 4, 2019

University of Melbourne, Melbourne,
AUSTRALIA

<http://www.genetics.org.au/>

43rd New Phytologist Symposium: Interaction Networks and Trait Evolution

July 1–4, 2019

Zürich, SWITZERLAND

<https://www.newphytologist.org/symposia/43>

16th International Auchenorrhyncha Congress

2-8 July 2019

Cuc Phuong National Park, Vietnam

<http://iac.vnmn.ac.vn>



8th International Symposium on Molecular Insect Science

7-10 July 2019

Sitges, nr Barcelona, Spain

[https://www.elsevier.com/events/conferences/
international-symposium-on-molecular-
insect-science](https://www.elsevier.com/events/conferences/international-symposium-on-molecular-insect-science)

2019 International Congress of Odonatology

14-19 July 2019

Austin, Texas, USA

<https://worlddragonfly.org/meetings/ico2019>

Society for Molecular Biology & Evolution (SMBE) 2019

July 21–25, 2019

Manchester, ENGLAND

<http://smbe2019.org/>



Ento '19

August 20–22, 2019

London School of Hygiene &
Tropical Medicine, London, UK

[https://www.royensoc.co.uk/
event/ento-19](https://www.royensoc.co.uk/event/ento-19)



Ecology of Aphidophaga 14

September 16–20, 2019

Montreal, CANADA

<https://www.aphidophaga14.uqam.ca/>

Entomology 2019

November 17–20, 2019

St. Louis, Missouri, USA

[https://www.entsoc.org/
events/annual-meeting](https://www.entsoc.org/events/annual-meeting)



Australian Entomological Society's 50th AGM and Scientific Conference

in conjunction with

**Society of Australian Systematic
Biologists and Australasian
Arachnological Society**

1-4 Dec 2019

Brisbane, QLD

<https://www.austentsoc.org.au/AES/>



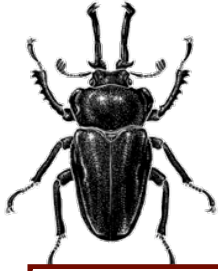
International Congress of Entomology

19-24 July 2020

Helsinki, Finland

www.ice2020helsinki.fi





Diary Dates for 2019

Meetings held on the second Tuesday
of the respective month

MARCH 12	Mike Muller, ESQ President	AGM and Presidential Address: <i>"Come in Sucker – A 46-year Journey with Biting Flies"</i>
APRIL 9	Dr. Phyllis Weintraub (Volcani Institute, Israel)	<i>"Symbiotic bacteria associated with phytoplasma vector"</i>
MAY 14	Dr. Nancy Schellhorn (RapidAIM Pty Ltd)	<i>"The journey to RapidAIM."</i>
JUNE 11	Notes and Exhibits	TBA
AUGUST 13	Dr. Raghu Sathiyamurthy (CSIRO)	<i>"Assessing risk in host-specificity testing for weed biocontrol: juxtaposing scientific and regulatory perspectives"</i>
SEPTEMBER 10	Susan Wright (Queensland Museum)	<i>"The Queensland Museum Collection – what we hold and why"</i>
OCTOBER 8	Perkins Memorial Lecture: Prof. Ary Hoffman (Uni. of Melbourne)	TBA
NOVEMBER 12	Mark Schutze (QDAF)	TBA
DECEMBER 11	Notes & Exhibits	Notes and Exhibits/Christmas Afternoon Tea

SOCIETY SUBSCRIPTION RATES

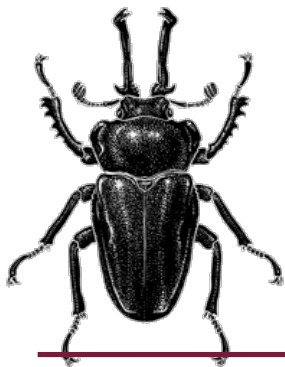
GENERAL	Person who has full membership privileges	\$30pa
JOINT	Residents in the same household who share a copy of the <i>News Bulletin</i> , but each otherwise have full membership privileges.	\$36pa
STUDENT	Student membership conveys full membership privileges at a reduced rate. Free the first year , \$18pa subsequent years. Students and others at the discretion of the Society Council.	\$18pa

ESQ membership subscriptions should be sent to the Treasurer, PO Box 537, Indooroopilly, QLD 4068
<http://www.esq.org.au/membership.html>

THE AUSTRALIAN ENTOMOLOGIST SUBSCRIPTION RATES

AUSTRALIA	Individuals/Institutions	AU\$33pa/AU\$37pa
ASIA/PACIFIC	Individuals/Institutions	AU\$60pa/AU\$65pa
ELSEWHERE	Individuals/Institutions	AU\$65pa/AU\$70pa
ELECTRONIC	Individuals/Institutions	AU\$25pa/AU\$30pa

Journal subscriptions should be sent to the Business Manager, PO Box 537, Indooroopilly QLD 4068
<http://www.esq.org.au/publications.html>



Entomological Society of Queensland



Notice of next meeting:

Tuesday, 14 May 2019, 1:00 pm



Dr Nancy Schellhorn

*Co-inventor
& co-founder of
RapidAIM*

will present:

“The journey to RapidAIM”

All welcome! Join us after the meeting for tea and coffee.

Ground floor library, Ecosciences Precinct, Boggo Road, DUTTON PARK

More venue details available at <http://www.esq.org.au/events.html>

Next News Bulletin:

Volume 47, Issue 3 (May 2019)

CONTRIBUTIONS WELCOME

Deadline Friday, May 17th, 2019.

Send your news/stories/notices to the editor at: k.ebert@uq.edu.au