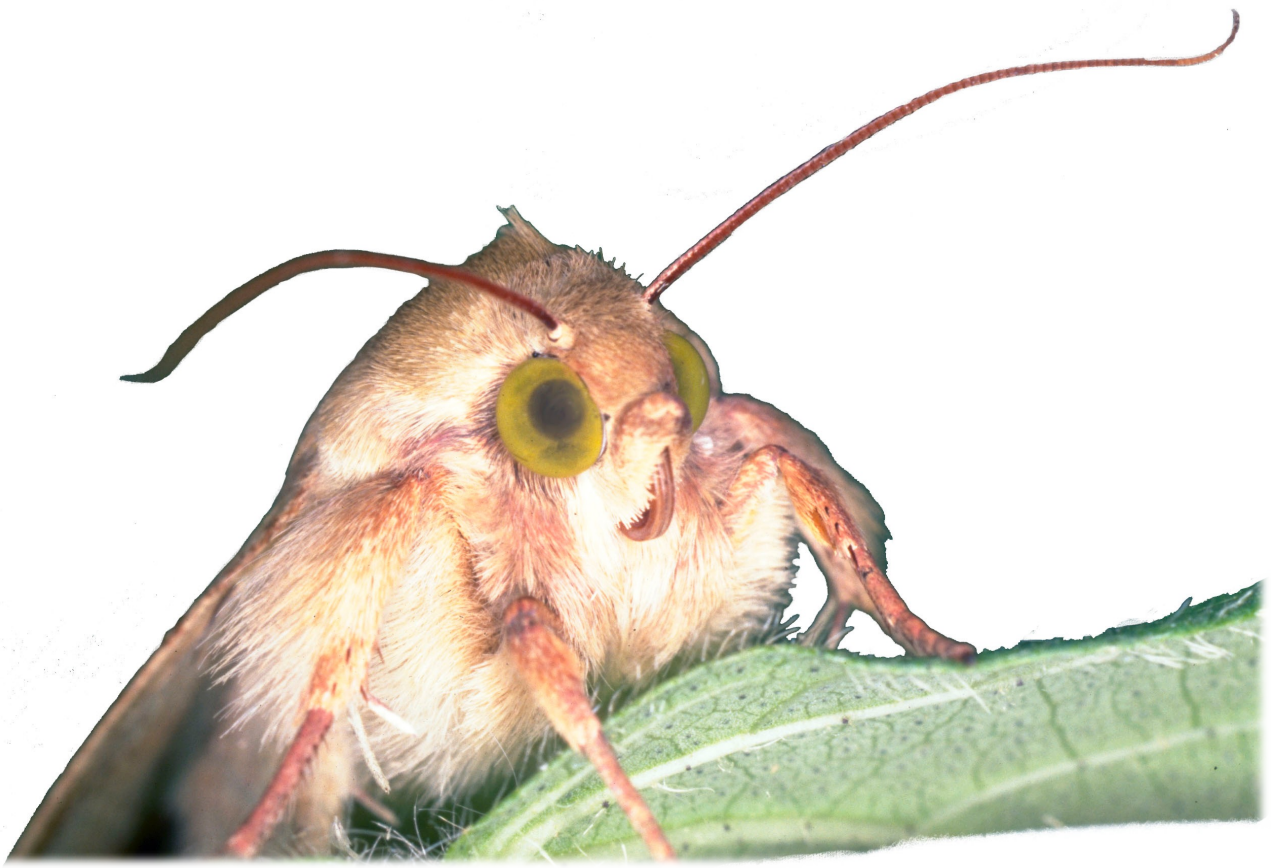
Entomological Society of Queensland

NEWS BULLETIN



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Entomological Society of Queensland

Website: www.esq.org.au
Address: PO Box 537, Indooroopilly QLD 4068

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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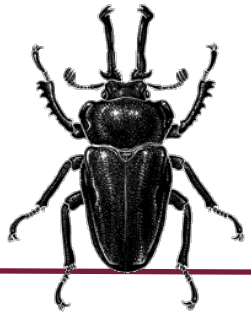
The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. The Society promotes liaison among entomologists through regular meetings and the distribution of a *News 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.



Entomological Society of Queensland
Minutes for General Meeting

Tuesday, June 11th, 2019
Held in the Seminar Room, Ecosciences Precinct, Boggo Rd, Dutton Park.
Meeting open: 1:03pm

Attendance (39):

Members (28): Brendan Ryan, Chris Lambkin, Noel Starick, Mike Muller, David Merritt, Mike Barnett, Kempsy Ledger, Lui Lawrence-Rangger, Claudia Schipp, Craig Edwards, Graham Forbes, Justin Bartlett, Bernie Franzmann, Owen Seeman, Tim Heard, Mark Schutze, David Exton, Colleen Foelz, Jane Royer, Gary Fitt, Geoff Monteith, Don Sands, Des Foley, Stephen Frances, Shannon Close, Kathy Ebert, Vanessa Cockington, Penny Mills.

Visitors (11): Amalie Spadijer, Stephen Brownlie, Joolie Gibbs, Peter Ryan, Segun Osunkoya, Dean Beasley, Lucas Becker, Adrian Holbeck, Juliane Henderson, Sonya Winnington-Martin, Kaylene Bransgrove.

Minutes: The minutes of the last meeting were circulated in News Bulletin 47[3] May 2019. Moved the minutes be accepted as a true record: Penny Mills; Seconded: Kathy Ebert; Carried: All.

Nominations for membership approved by council:

General Members:

1. Mr Robin Parsons
2. Brendan Ryan
3. Dr. Thomas Wallenius

Student Members:

1. Mr Joe Hardy (UQ)
2. Ms Alana Delaine (Uni. of Adelaide)

General Business:

Be aware that some members have reported that the bulk emails from the secretary email are being directed to junk mail folders. Please check your junk mail to see if you are missing out on these emails.

Main Business: ***Notes and Exhibits:***

Craig Edwards, ESQ 2019 Student Award winner from UQ presented on his Honours thesis research on *Melaleuca*-galling scale insects.

Shannon Close, UQ student and ESQ 2017 Small Grants Recipient, shared amazing photos from her work on batflies: "*Got milk? An update on the 'milk glands' of viviparous bat flies*."

Don Sands presented news on "*Minute primitive moths Heliozelidae: A flagship group of reciprocal conservation significance*".

Christine Lambkin, QM, presented "Just what is a Gidgee Bug??"

Joolie Gibbs, Director of the Gympie Regional Art Gallery shared some of her insect art in "*Insecta I have dined with*."

***Lucas Becker, Grilo Protein Company*:** brought eco-friendly, nutritious and clean food made from organic crickets.

Vote of thanks: Delivered by Gary Fitt.

Next meeting: The next meeting will be on 13th August, and we will hear from Dr. Raghu Sathyamurthy (CSIRO) about "Assessing risk in host-specificity testing for weed biocontrol: juxtaposing scientific and regulatory perspectives".

Meeting closed: 14:11

At our next meeting...

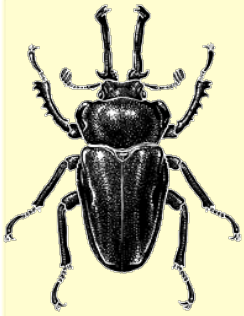
Assessing risk in host-specificity testing for weed biological control: juxtaposing scientific and regulatory perspectives

presented by
Dr Raghu Sathyamurthy
CSIRO Health and Biosecurity
Dutton Park

Host location and host use in phytophagous insects is a catenary process that is shaped by the evolutionary context in which the insect-plant interaction originated, and the ecological context in which interactions play out. Understanding these aspects are crucial to the scientific practice of classical biological control of weeds, where we try to use specialist insects (and plant pathogens) in the management of invasive plants. In addition to a range of ecological and evolutionary studies across the native and introduced ranges, research and inference in this domain needs to be undertaken in a regulatory framework guided by risk analysis. In this talk, I will focus on the scientific/conceptual frameworks within which we undertake research in weed biological control and compare the scientific and regulatory interpretations of risk in Australia. In doing so, I will identify areas of science, risk analysis and risk communication that we could improve to enable us to strengthen the discipline and practice of weed biological control.

A bit about Raghu:
Raghu is an ecological entomologist. His research interests focus on using ecological and evolutionary knowledge of plant-herbivore interactions to progress the scientific practice of weed biological control. Raghu completed his PhD in 2002 at Griffith University on tephritid-plant interactions, before going on to do a postdoc with the Weed CRC and has worked in academia and public sector science agencies in Australia and the US. He joined CSIRO in 2010 and now coordinates a large portfolio of research in Australia and internationally.

Tuesday 13 August at 1pm
Ground floor Seminar Rm at EcoSciences.
Tea & Coffee following.
All welcome!

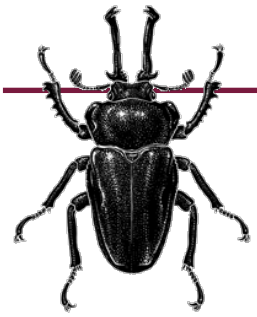


Celebrate Entomology!

Biennial Perkins Memorial Dinner

Tuesday 8 October 2019

The evening will include photo displays, insect exhibits, special guests including the Chief Scientist and the Perkins lecturer, Roll Call of past Presidents and more. Please join us for a relaxed dinner and a chance to catch up with entomologists old and new! *See details on page 82.*



A new genus of *Melaleuca*-galling eriococcid scale insects with over 60 species

Presented by
Craig Edwards
Student Award Winner 2019
University of Queensland

Australia is an ancient continent with weathered, nutrient-poor soils that support a rich scleromorphic flora adapted to living in low-nutrient environments. Gall-inducing insects are species-rich in these types of environments and the plant family Myrtaceae is associated with a rich fauna of gall-inducing scale insects, especially eriococcids (felt scales). While the gall-inducing scale insects from *Eucalyptus* have been recently revised (Gullan, 1984, Hardy & Gullan, 2010, Hardy *et al*., 2011), those associated with *Melaleuca* have not. Five species of gall-inducing scale insects were described from *Melaleuca* hosts during the 1890s (*"Sphaerococcus" froggatti* Maskell 1894, *"S." tepperi* Fuller 1897, *"S." morrisoni* Fuller 1897, *"S." socialis* Maskell 1897 and *"S." ferrugineus* Froggatt 1898) and placed into the genus *Sphaerococcus*. At that time, *Sphaerococcus* was used as a generic "dumping ground" for hard-to-place species and the adult female *Melaleuca*-gallers, having no obvious appendages (Figure 1), were certainly difficult to place. *Sphaerococcus* was revisited by Miller *et al*. (1998) but they did not assign the five *Melaleuca*-galling "*Sphaerococcus*" to any established genus, so they have remained, in limbo, as species with no known generic status.

Meanwhile, the Cook Lab at The University of Queensland has been collecting galls from *Melaleuca* from across Australia for over ten years. The lab has amassed a collection of over 600 samples and the galls are spectacularly diverse in form (Figure 2). The female is trapped within the gall which the plant produces as a response to

Figure 1. Adult female *Melaleuca*-galling scale insect. This image shows the adult female (blue circle) trapped within the tissue of the gall which has been cut away. Image courtesy of Lyn Cook.

Figure 2. Some examples of galls collected from *Melaleuca*. They are extremely diverse morphologically and occur on various organs of the plant from leaves to woody stems. They can be simple swellings of the stem or complex with various tissues that do not normally occur on the host. Images courtesy of Lyn Cook.

signals from the insect. There is an opening in the gall through which mating occurs, but the adult female never leaves the gall. Juvenile females leave the maternal gall and crawl, or are blown by wind with a few surviving to induce their own gall. Adult males are ephemeral and live only a few days once they leave their cocoon.

The aim of my project was to use DNA extracted from specimens in the Cook Lab collection to answer two questions: should the *Melaleuca*-gallers be recognised as a new genus? and how many species are there? A phylogeny published by Cook and Gullan (2004) showed the *Melaleuca*-gallers do not fall into any established genus but this was based on only two genes. To see if the *Melaleuca*-gallers still form a monophyletic group when more data are used, we developed a phylogeny from 80 genes, using transcriptomic and genomic data. The phylogeny shows the *Melaleuca*-gallers are clearly monophyletic within Eriococcidae and do not fall within any established genus. Following these results, I propose that a new genus be established to encompass the *Melaleuca*-gallers.

To address the question of how many species are in the collection, I developed five sets of hypotheses. To do this, I applied species delimitation models (GMYC and mPTP) to phylogenies estimated from *COI* and used the results as preliminary hypotheses to be tested using further data. As an alternative hypothesis, I produced a neighbour-joining tree from *COI* and applied a barcode gap of 3%. The number of species hypothesised by each method ranged from 64 to 77. To test the hypotheses, I estimated phylogenies for each of three nuclear genes (*Dynamin, Enolase* and *18S*) and compared the hypothesised *COI* species groups to groups in the nuclear gene phylogenies. Where the groupings match between the hypotheses and the nuclear phylogenies, I interpret it as evidence of reproductive isolation and do not reject the group as a species. Following this approach, I could not reject 49 of the original species hypotheses.

The results of this work have uncovered a species-rich genus of insects that have an amazing diversity in their extended phenotype and an evolutionary association with an iconic Australian plant genus.

References

Cook, L. G., Gullan, P. J., 2004. The gall-inducing habit has evolved multiple times among the eriococcid scale insects (Sternorrhyncha: Coccoidea: Eriococcidae). *Biological Journal of the Linnean Society* 83:441-452.

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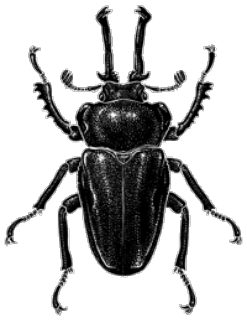


ESQ President Gary Fitt presents the Student Award to Craig Edwards at the June meeting.

From Craig:

I completed my undergraduate degree with majors in ecology and zoology at The University of Queensland after working in several jobs which included gaining a trade certificate as a baker. During my third year of studies I collected some *Melaleuca* galls as part of an insect collection. The *Melaleuca*-gallers then became the focus of my studies and I completed my Honours project supervised by Lyn Cook.

Congratulations, Craig!

Just what is a Gidgee bug??

Presented by
Christine Lambkin
Queensland Museum

Gidgee Bugs. Longreach, 2010. Image Courtesy ABC.

The first questions about Gidgee Bugs arrived at Queensland Museum in December 2010 from ABC radio concerning an outbreak that had closed the swimming pool at the Aquatic Centre in Longreach. Gidgee (also spelt Gidgea or Gidgyea) Bug stories abound. There's even a song about them by James Blundell: Gidgee Bug Pub (1987) (http://www.youtube.com/watch?v=HRdnJpG91vk). But what were they? There was a suggestion that they may be Cydnidae–burrowing bugs–that are known to aggregate in huge numbers.

While the images that were sent at the time were not clear they appeared to be Pentatomidae–and possibly a species of *Cephaloplatus*. Unfortunately, they were erroneously reported as *Cepaloplatus* by the media. There were no scientific publications that reported large numbers of this genus.

In late April 2019, a journalist from the North West Star contacted Queensland Museum concerning outbreaks of Gidgee Bugs at several properties near Julia Creek in north-west Queensland. Again the images sent through after request were insufficient to supply a positive identification–but appeared to be the same as those in 2010, a species of *Cephaloplatus*.

I was then sent a set of confronting images and a bizarre video of masses of insects by another property owner at Nelia, east of Julia Creek, via an ANU student. The concern this time was to whether these were Brown Marmorated Stink Bugs, *Halyomorpha halys*, an exotic pest pentatomid that we had recently been warned to be on the lookout for.

Again specimens were requested for positive identification and arrived, although in very poor condition. Using the keys provided in Gross (1970, 1976) and McDonald (1992), the QM identified collection, and five intact specimens from Nelia the

Toddler attempting to eat Gidgee Bugs south of Julia Creek April 2019. Image supplied.

Gidgee Bug was determined to be ***Cephaloplatus* (*Cephaloplatus*) *pallipes*** Walker 1868.

The only mention of large numbers of this species was made online by the late Graeme Cocks in his website *Insects of Townsville* where he states: "This bug occurs around Townsville but is especially prolific in Western Queensland at certain times of the year where it occurs in large numbers." No scientific publication has previously recognised this species as **The Gidgee Bug**.

The Gidgee Bug appears to form huge aggregations as adults about 8 weeks following flooding. There is an approximate 50/50 sex ratio in the adults flying towards lights, active between dusk and dawn, and moving upwards on any standing object. While they stink, they also leave an oily residue where they have been. And I am told, they burn well!

References

Gross, G.F. 1970. A revision of the Australian pentatomid bugs of the genus *Cephaloplatus* White (Hemiptera: Pentatomidae: Pentatominae). *Records of the South Australian Museum* (Adelaide) 16:1–58.

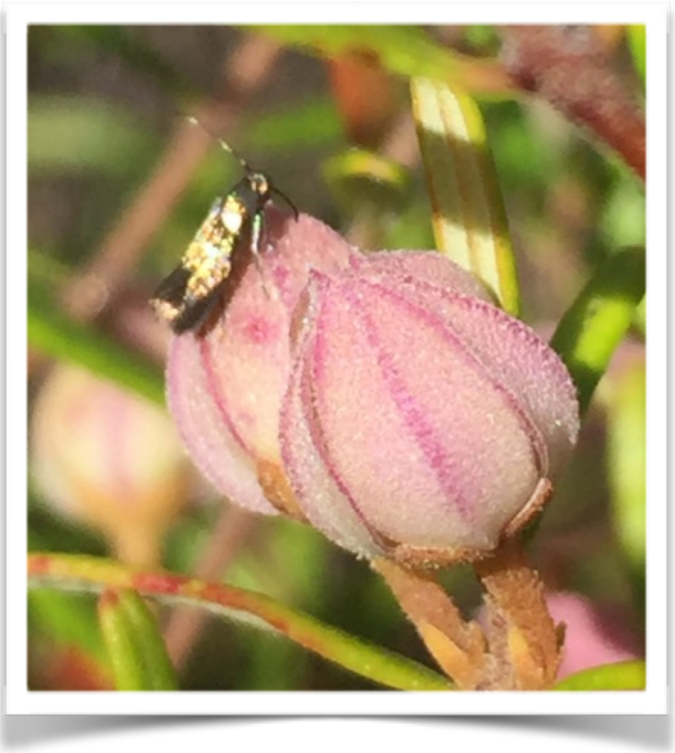
Gross, G.F. 1976. Plant-feeding and Other Bugs (Hemiptera) of South Australia. *Heteroptera-Part II - Adelaide*: A.B. James.

McDonald, F.J.D. 1992. *Cephaloplatus elegans* sp. n. (Hemiptera: Pentatomidae) from Australia. *Australian Journal of Entomology* 31(3): 223-225.

Knee deep Gidgee Bugs from Nelia. May 2019. Image supplied.

Minute primitive moths Heliozelidae: A flagship group of reciprocal conservation significance

Presented by
Don Sands



A heliozelid female moth (? *Pseliastis* sp.) on a bud of *Boronia rosmarinifolia* (Image: Elizabeth Gage).

At a past "Moth Weekend" (a workshop series, ANIC, Canberra), Prof. Doug Hilton (Melbourne University) discussed his collaborative studies (Milla et al. 2018) on the primitive shield-bearer moths Heliozelidae (Adeloidea: Heliozelidae). These colourful or often metallic moths occur worldwide (ca. 12 genera, 120 described species). In the northern hemisphere, the larvae are mostly leaf miners, whereas in Australia the larvae can be leaf miners, gall formers, and seed or stem borers. Adults may also be pollinators. Australian heliozelids (140 + spp,) are minute diurnal moths that interact unusually with a group of Rutaceae (e.g. *Boronia, Zieria, Crowea, Eriostemon, Phlebalium* and *Philotheca* spp.). Some female moths pollinate flowers and oviposit in ovaries. The larvae develop before they exit, remaining in diapause for months in leaf litter before pupating (A. Young pers. comm.).

Recently (August 2018) at a BioBlitz workshop hosted by Cooloola Coastcare Inc. at Rainbow

Don Sands netting heliozelid moths over a shrub of *Boronia rosmarinifolia* (Image: John Sinclair).

Beach, an enthusiastic participant showed me a shrub of *Boronia rosmarinifolia* in flower, where many minute heliozelids were flying and ovipositing in the flowers. Some specimens were sent to Prof. Hilton who found them to be an undescribed *Pseliastis* sp. Subsequently other species of

Heliozelidae were found on *Boronia rivularis* and *B. falcifolia* at Cooloola.

The species of heliozelids associated with threatened *Boronia* spp. are likely to be of ***reciprocal conservation significance***, if plant and moth are totally dependent on each other for survival and reproduction. With this in mind, it is hoped certain management practices (e.g. deliberately-lit fires), routinely applied to habitats of threatened *Boronia* spp., will take into account such threats to heliozelid moths that may not necessarily threaten their plant hosts.

References

Liz Milla, Erik J. van Nieukerken, Ruben Vijverberg, Camiel Doorenweerd, Stephen A. Wilcox, Mike Halsey, David A. Young, Therésa M. Jones, Axel Kallies, Douglas J. Hilton. (2018). A preliminary molecular phylogeny of shield-bearer moths (Lepidoptera:Adeloidea: Heliozelidae) highlights rich undescribed diversity. *Molecular Phylogenetics and Evolution* **120**, 120-143.

Cooloola monster, *Cooloola propator* Rentz, 1980, as sketched by Joolie Gibbs.

About Heliozelidae

Heliozelidae are tiny, day-flying, monotrysian moths. Worldwide, there are approximately 120 described species placed in 12 genera, several of which are monotypic. Heliozelidae are often overlooked by collectors, and most species were described in the 19th and early 20th century. Recent targeted collecting efforts in Australia, coupled with field observations and morphological studies, have revealed a rich undescribed Heliozelidae diversity (>250 new species and at least 14 new genera) and uncovered an unexpected variety of life-histories. Whereas almost all described Heliozelidae are leaf miners that excise a shield-like case in which they pupate, major clades of Australian Heliozelidae feed within galls on Ericaceae or in the flowers or seeds of Rutaceae. Within the clade that feeds on Rutaceae seeds are a group of moths that have formed an obligate pollination mutualism with a group of *Boronia* species endemic to Western Australia. Females of these moths have an elaborate structure on the tip of their abdomen on which pollen is collected during oviposition. In at least some species, the pollen is deposited actively on the stigma of the flower leading to pollination. Once hatched, larvae then consume some, but not all, of the developing seeds. Interestingly, the group of *Boronia* pollinated by these Heliozelidae are monophyletic and have more diverse floral structure than other *Boronia* species and indeed the majority of other Australian Rutaceae. A preliminary molecular phylogeny based on 4 genes (*COI*, *COII*, *H3* and *28S*) has now been complemented by a phylogeny based on many hundreds of genes obtained through whole transcriptome sequencing that allows us to propose hypotheses about the evolution of this family.

Insect art exhibit

Presented by
Joolie Gibbs, Director
Gympie Regional Art Gallery

Joolie Gibbs shared some of her insect art in a display entitled: "Insecta I have dined with." Joolie describes her art as environmental art, as it spans many media to highlight her concerns for the environment, from drawing, painting, sculpture, paper making, basketry and others. She effectively used shadowing to give her artwork dimension and she showed great attention to detail.

'Insects as food' exhibit

presented by
Lucas Becker
Grilo Protein Company

Lucas brought samples of Grilo Protein bars for us to try. Grilo Protein Company is a Byron Bay based company on a mission to minimise our footprint on the planet and make people healthier through eco-friendly, nutritious and clean food made from organic crickets. Crickets have up to 69% protein, all essential amino acids, all the vitamin B12 you need in just 1 Tbs, bioavailable iron, omega fatty acids, prebiotic fibre and more. Sustainable protein for environmentally-conscious people!

Entomology News

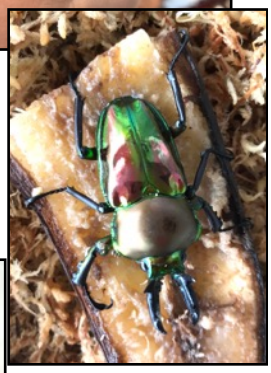
from Queensland and beyond...

RapidAIM wins the Future Food Asia 2019 Award

RapidAIM, the Australian start-up company led by Nancy Schellhorn recently received the Future Food Asia Award at the Future Food Asia Conference in Singapore in June. The company's innovative system for providing real-time information about pest location allows for early detection and targeted control. More than a hundred contenders from 13 different countries in the Asia Pacific applied for the award. The ESQ was very fortunate to hear Nancy speak about the RapidAIM story at our recent meeting in May.

Congratulations to all at RapidAIM! To read more about the event see: https://futurefoodasia.com/2019/06/ffa2019winners/

Nancy Schellhorn RapidAIM CEO (center), receives the $100,000 Future Food Asia Award. Photo credit: https://futurefoodasia.com/2019/06/ffa2019winners/



Insects visit Kids Day at the Cottage

Geoff Monteith and Kathy Ebert brought stick insects, burrowing roaches, a stag beetle and a host of other insects to share at the annual **Kids Day at the Cottage** sponsored by the Moggill Creek Catchment Group. An assortment of insects were able to be held or viewed up close with magnifiers. The annual event also has other stalls with crafts, snails, plants, native bees and other animals.

Insect Mosaic Art

Waiting for a bus in the midst of traffic and noise? This beautiful sidewalk mosaic celebrates the Gold Coast hinterland rainforests with birds and flowers and trees and insects. These panels are part of a long, sinuous mosaic at the main intersection in Tweed City, just across from the Tourist Information office, at the bus exchange. Tweed City could provide only these details about the artists: H & K Broadhurst – (Arts for All) Highgate Hill, Brisbane.

-Susan Cully

Attention Ento-Artists!

Interested in being part of the

Perkins Insect Art Exhibit?

Why not consider displaying one of your works of art at our Perkins Memorial Dinner? We will have display panels available. Please send expressions of interest to Kathy Ebert (k.ebert@uq.edu.au)

Ozentomology: Communicating with Entomologists in Australia

If you are interested in finding out more about entomology across Australia (e.g. scholarships/ jobs/ fieldtrips, etc.) you can join the Ozentomology mailing list. The Ozentomology mailing list is a communication forum for those interested in Australian entomology. This is an informal, unmoderated and non-commercial email list.
You can subscribe to the mailing list here:
http://bit.ly/OzEnto

***Nigel Andrew,* Professor of Entomology**
& Moderator of Ozentomology
University of New England

Feeling Creative? Promote Queensland entomology by entering our design contest!

You could win the opportunity to have your design printed on a re-usable bag. All you need to do is create an image or digital drawing that incorporates a Queensland arthropod and ESQ. Up to 4 colours can be used in the printing of your image, so get creative!

Entries will be judged based on their overall originality and creativity at representing an entomological icon of Queensland. Winning entry will be printed on re-usable bags available for sale.

The winner will receive a free bag with their printed design!

All entries must be submitted to the secretary: secretary@esq.org.au before Monday, September 2nd at 5pm.
Questions? Contact the secretary, email above.

Vale

Alan Dyce

6 Sept 1923 - 4 Jan 2019

Alan Dyce held a special place amongst vector entomologists around the world. His pioneering work on the study of biting midges as vectors, particularly field collection, recognition of parous females and taxonomy, continues to inspire entomologists today.

Alan was born in the NSW country town of Coolamon and grew up on a farm in the Riverina district. He attended Yanco Agricultural High School which helped formalise his interest in everything rural. After leaving school he enlisted in the navy and served as a radar operator on N class Destroyers, working out of Darwin until the end of World War II.

Immediately following his service, Alan enrolled in a Bachelor of Science in Agriculture from which he graduated with First Class Honours majoring in entomology in 1952. He was immediately employed by CSIRO as a Research Officer and within weeks was seconded to the CSIRO Wildlife Survey Section to work on the vectors of myxomatosis of rabbits. This introduction to vector-borne diseases proved to be a turning point in Alan's career and remained a focus for his entire life. It was during these nine years working alone in northern NSW that Alan first discovered *Culicoides* biting midges.

After the completion of the myxomatosis program in 1961, Alan was transferred to the Division of Entomology in Canberra but quickly had himself transferred to the Division of Animal Health, McMaster Laboratory in Sydney, to work on insect-borne diseases of livestock. Initially he carried out surveys for biting midges across eastern Australia in the 1960s. At this time, authorities were concerned about the exotic threat of bluetongue disease which had devastated merino sheep flocks in the Iberian Peninsula in the 1950s. Bluetongue was known to be transmitted by *Culicoides* biting midges but very little was known about the biology and distribution of biting midge species in Australia or the potential impact of bluetongue on Australia's merino flocks.

In the late 1960s, there was a quarantine incident on the outskirts of Brisbane when it was found that bull semen had been illegally imported from an area where bluetongue disease occurred. As part of the response, Alan Dyce came to Brisbane to assist with collecting biting midges, and it was here that he met two scientists who would become lifelong friends and colleagues: mosquito specialist Harry Standfast and veterinarian and microbiologist Toby St George from the CSIRO Long Pocket Laboratories in Brisbane. Together this team would change the face of veterinary arbovirus research in Australia. Harry and Alan worked across northern Australia pioneering methods of collecting, feeding, identifying and preparing midges and mosquitoes for the virus isolation studies headed by Toby. So simple and effective were these methods that they were quickly adopted by researchers the world over and many continue to be used today.

Following their discovery in 1977 of bluetongue virus silently circulating in cattle in northern Australia, the team, led by Alan, Harry and Toby, identified the vectors, clarified the distribution and

Figure 1. Alan Dyce preparing to make a biting insect bait collection from a buffalo, Mudginberri Station, NT, 1970.

ultimately provided an explanation for the limited distribution of this virus and the reasons the Australian sheep flock, mostly in the southern and inland regions of Australia, was not affected by this disease at that time. Their work has since been adopted by the National Arbovirus Monitoring Program (NAMP) which maps the distribution of livestock arboviruses and their vectors allowing authorities to declare infected and free zones, greatly facilitating the trade of livestock to markets sensitive to Australian viruses. This program relies on a team of entomologists who rely either on training received from Alan, or on identification aids prepared by him. Alan personally acted as the Reference Entomologist to NAMP well into his 80's.

Towards the end of his career with CSIRO, Alan turned his hand to taxonomic studies based on broad disciplines encompassing biogeography, morphology as a product of biological necessity, host preferences and, especially, immature breeding habitats. His influence is evident in vector and taxonomic studies in Africa, SE Asia and the Americas via his collaboration with eminent experts such as Willis Wirth, Michel Cornet and Rudy Meiswinkel. Alan's goal of revising the entire Australasian *Culicoides* fauna proved to be too ambitious for a single lifetime but in 2007 he completed a wing picture atlas which comprehensively treated the entire fauna, much of which was collected by Alan and his team. His generosity in sharing both his knowledge and his time was renowned and many a researcher owes a debt of gratitude to Alan for his contributions and ideas.

Alan's eminence as Australia's foremost veterinary vector entomologist was acknowledged formally on two occasions when he received an Order of Australia medal in 2004 and again in 2008 when he received the Australian Medal for Agricultural Science from the Australian Institute of Agricultural Science and Technology.

Alan's conclusion that the vectors of bluetongue virus in Australia were all of Asian origin led him to collaboration with workers in Asia, including the Japanese midge expert, Masaaki Tokunaga. At the end of a trip to Japan to visit Dr Tokunaga and his colleagues, Dr Tokunaga, who had served in the Japanese Armed Forces during World War II, shook Alan's hand and pronounced "Once we were enemies but now we are friends".

At the McMaster Laboratory, Alan had a magazine clipping on his microscope cabinet that said "There's more to seeing than looking". His career was the epitome of that saying. When not studying his beloved *Culicoides*, Alan enjoyed fly fishing in the Snowy Mountains and tending his garden at his house in Asquith, northern Sydney. Alan is survived by his son, Lindsay, and two granddaughters Peta and Megan.

(A more detailed version of this obituary is available in the Ceratopogonid Information Exchange Volume 103, May 2019 at http://campus.belmont.edu/cienews/cie.html

written by

Mike Muller and Glenn Bellis

Cockroach #96

by David Rentz

The recent concern regarding the supposed demise of insects worldwide seems to be reflected in the diversity and numbers of insects that show up at my light sheets each night. We have no real data concerning the reduction of insect numbers other than just "feelings that things are not right". Recently at public events where we display insect collections more than one person remarks about the paucity of insects compared to the past. They usually use Christmas Beetles as an example. Dan Janzen has written to me in the past few weeks noting that the same seems true for Costa Rica, a place where insect diversity is, or used to be, astounding. But apparently not now (Janzen & Hallwachs, 2019).

Over the past 15 years or so I have been recording the species of cockroaches that I encounter on my small quarter acre block in the rainforest in Kuranda. In the past couple of years cockroaches have become scarce. One seldom sees them on leaf surfaces after dark and very few turn up at the light sheet. This observation carries through to light sheets that we run in the local area. Buck Richardson and I take a short field trip each week and set up our light sheets, running them for several hours after dark. I frequently remark to him that I would not have been able to write the cockroach guidebook if we had such limited numbers several years ago when I was keen to obtain photos of local species.

So it was very surprising to find a small cockroach at my lights on a rainy night recently. I originally thought it was *Ectoneura minima* Hebard, (Ectobiinae) but on closer examination it was not that species at all. It is *Paraectoneura bivittata* Roth, a cockroach in a different subfamily, the Blattellinae. This is odd as *P. bivittata* is known from a few localities in coastal Northern Territory and Western

Fig. 1. *Paraectoneura bivittata* Roth, male. Fitzroy Crossing NT, KD Hill photo.

Australia. In the west, it seems to have nothing to do with rainforests.

The *P. bivittata* that I found is a female. That makes it difficult to determine it with certainty. But if there was another, yet undescribed species in the Kuranda environs I would have thought I would have encountered it by now. Of course, the little female could have been introduced. It could have come in any of a number of ways-with tourists, in transported goods, in traveler's vehicles. Who knows?

In 2014, I reported 88 species of cockroaches on my property in Kuranda. *P. bivittata* brings the number to 96, so perhaps, the diversity of cockroaches just seems to be on the decline. In the five years since the book was published, 8 species!

Fig. 2. *Ectoneura minima* Hebard, male.

Here are a few characters useful in distinguishing *P. bivittata* from *E. minima*.

***P. bivittata* (Fig. 1)**	***E. minima* (Fig. 2)**
Form robust	Form slender, tapering from head to tail
Antenna almost uniformly black	Antenna pale
Tip of hindwing (underwing) "rolled"; See Rentz, 2014, p. 245	Tip of hindwing normal, not rolled
Male genitalia distinctive (see Rentz, 2014, p, 239.) Subgenital plate broad with 2 similar styles. Angles of subgenital plate normal, not produced anteriorly.	Subgenital plate elongate, with 1 minute style. Corners (apodemes) of subgenital plate extending anteriorly to about the 7th abdominal segment.

References

Janzen, DH, Hallwachs, W. 2019 Perspective: Where might be many tropical insects? *Biological Conservation* 233: 102-108.

Rentz, DCF 2014 A guide to the cockroaches of Australia. CSIRO Publishing 318 pp.

Male Paperbark Sawfly (Pergidae, *Lophyrotoma* sp. Photo: Penny Mills).

Photo competition for a new ESQ calendar!

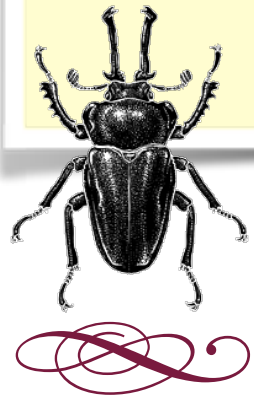
Calling all photographers of insects and their allies–ESQ is looking for the twelve best photos to show off Queensland's diverse and intriguing arthropod fauna! Twelve winners will be announced and have their images displayed at the Perkins Memorial Dinner on 8 October 2019. Images will also be compiled into a 2020 calendar, available for pre-order on the night.
The competition is open to all members of ESQ.

How to enter:

- Submit a maximum of two high-quality images by email to **shannon.close@uq.net.au** (links to cloud storage accepted if image files too large to email).
- You must also include an educational caption for each image that includes the species name, location and some interesting information about the subject. Max 100 words.
- Entries close midnight Sunday 15 September 2019.

Get snapping!

Entrants give The Society full permission to publish their images for display and advertising purposes, and for inclusion in the calendar.



Join us as we celebrate Entomology! Biennial Perkins Memorial Dinner - Tuesday evening, 8 October 2019

You are cordially invited to attend our Biennial Perkins Memorial Dinner. You will find your invitation and RSVP attached to this issue of the News Bulletin. We will have various displays including live insects, museum specimens, ESQ History posters plus photo and art displays. Special guests will include Professor Paul Bertsch, Queensland Chief Scientist and Professor Ary Hoffman from the University of Melbourne (our Perkins Lecturer). Please consider joining us for a relaxed and enjoyable evening!

The History Corner...

John Arthur WEDDELL (1902-1980)

John Weddell was born Newcastle-on-Tyne, England and came to Australia aged seven. Attended Brisbane Grammar School and completed secondary education as an evening student at Brisbane Technical College. Employed 1917-1922 as a technical attendant at the Central Technical College. Joined Department of Agriculture and Stock (DAS) in 1922 as Assistant to the Entomologists working under Henry Tryon and later, Robert Veitch. Appointed 1928 to professional Entomologist grade on basis of internal examinations under the direction of Veitch. Weddell was academically gifted and versatile in his wide ranging technical skills. As an entomologist he worked on and published results of extensive investigations on major grasshopper outbreaks but also on pests of bananas and vegetables, termites and apiculture regulation. Technical skills apparent from his pioneering construction of a vapour heat disinfestation facility as a fruit fly phytosanitary measure around 1930. Later in career, as Senior Entomologist, Weddell was transferred to become the departmental Senior Technical Officer with a property managerial role responsible for the establishment and maintenance of research facilities state wide. John was early involved in industrial advocacy and was instrumental in the establishment of the Queensland Professional Officers Association, an apolitical organisation, becoming inaugural President and later a Life Member. Was at foundation meeting of Entomological Society of Queensland in 1923 and served as President, 1937 and 1944. Served Australian Army during WW2 at the rank of Lieutenant.

Obituary: Anon. 1980. *News Bulletin of the Entomological Society of Queensland* **8:** 55.

Announcements

Attention Students: Australian Entomological Society's
Phil Carne Prize 2019

Applications are invited for the **Australian Entomological Society's Phil Carne Prize 2019**. The Phil Carne Prize is aimed at fostering high quality entomological research in student scientists. The name of the prize celebrates contributions made by Dr Phil Carne to the science of entomology and the Australian Entomological Society. The prize is a certificate and also includes cash remuneration to the value of $1500. Finalists in the competition are selected by assessment of the submitted entries and all finalists are invited to present their papers at the Society's Annual General Meeting and Scientific Conference to be held in Brisbane 1–4 December 2019. A maximum of $1000 for each finalist will be provided towards conference expenses (registration, travel, accommodation) on receipts. The finalist presentations will be assessed and a Phil Carne Prize winner selected.

For details of how to nominate for this prestigious award, who is eligible to enter and for a list of past winners, please visit the Society's website at **www.austentsoc.org.au** and select Phil Carne Prize from the AWARDS option on the menu bar. Deadline for receipt of your nominations has been set at **31 July 2019** because of the later date of the Society's conference this year.

Call for Abstracts: Australian Entomological Society

The Organising Committee is pleased to open invitations for you to attend the 2019 combined conference of the Australian Entomological Society (AES), the Society of Australian Systematic Biologists (SASB) and the Australasian Arachnological Society (AAS). This year, the conference theme is ***Understanding the Australian Biota in a Changing World***, reflecting the joint interests of the three societies as well as addressing the pressing challenges of climatic and biotic change in the Anthropocene. We hope that a significant proportion of the symposia and associated presentations will play a part in advancing our understanding of the significance and conservation of Australia's biota and in revealing the important functional aspects of both natural and modified ecosystems. Abstracts are not limited to conference theme. **Deadline for abstract: 1 September 2019. See:** https://www.aesconferences.com.au/2019-conference/call-for-abstracts-2019/ **for more details.**

Help! Regional representative needed!

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.

It's a Buzz

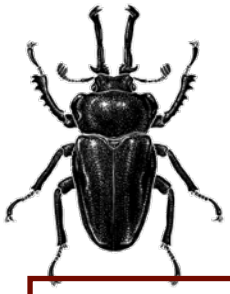
Native bee enthusiasts and professionals alike, are in a buzz of excitement with the formation their own member organisation, the **Australian Native Bee Association (ANBA)**. President Dr Tim Heard said "The association will harness and spread the enthusiasm for native bees by many groups including naturalists, beekeepers, farmers, and backyarders." The Australian Native Bee Association aims to promote the conservation and sustainable use of all native bees. "Although much interest is centred on the stingless bees of warmer areas, all native bees lie within the scope of the association." said Dr Heard.

Native stingless bees are social, occurring in the warmer parts of Australia, and can be kept in hives and used for honey production and pollination. But the huge numbers and diversity of solitary and semi-social native bees has captured the interest of people right across the nation. These can be encouraged everywhere. All bees are important for the health of natural systems and agricultural production. Dr. Heard said "We encourage the formation of local branches and already have expressions of interest from a number of regional areas in five states and territories." ANBA will achieve its objectives by providing resources, disseminating information, supporting members and communicating with stakeholders. The Association has longer term goals of obtaining endorsement for a stingless bee honey standard and accredited training in native bee keeping.

ANBA will host the second Australian Native Bee conference in Brisbane in December 2019. To be a part of this vibrant community, and stay abreast of what is going on in the native bee world, join the Australian Native Bee Association at https://australiannativebee.org.au.

For more information, please contact:
Tim Heard, pres@australiannativebee.org.au, 0434 416053
Trevor Weatherhead, sec@australiannativebee.org.au, 0427 960735

Above left: Attendees enjoy a stingless bee hive exhibition at a meeting of the Brisbane branch of the Australian Native Bee Association. *Above right:* Attendees at the field trip of the 1st Australian Native Bee conference watch a demonstration of stingless bee management on a macadamia farm.



Diary Dates for 2019

Meetings held on the second Tuesday of the respective month

MARCH 12	Mike Muller, ESQ President	AGM and Presidential Address: *"Come in Sucker – A 46-year Journey with Biting Flies"*
APRIL 9	Dr. Phyllis Weintraub (Volcani Institute, Israel)	*"Symbiotic bacteria associated with phytoplasma vector"*
MAY 14	Dr. Nancy Schellhorn (RapidAIM Pty Ltd)	*"The journey to RapidAIM."*
JUNE 11	Notes and Exhibits	Student Award winner and other presentations
AUGUST 13	Dr. Raghu Sathyamurthy (CSIRO)	*"Assessing risk in host-specificity testing for weed biocontrol: juxtaposing scientific and regulatory perspectives*"
SEPTEMBER 10	Susan Wright (Queensland Museum)	"*The Queensland Museum Collection – what we hold and why"*
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

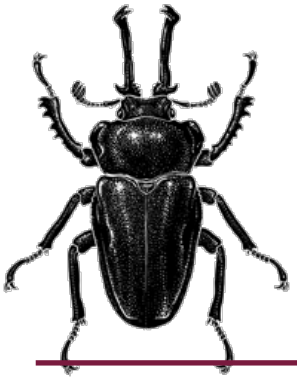
SOCIETY SUBSCRIPTION RATES

GENERAL	Person who has full membership privileges	**$30pa**
JOINT	Residents in the same household who share a copy of the *News Bulletin*, 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

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**

THE *AUSTRALIAN ENTOMOLOGIST* SUBSCRIPTION RATES



Entomological Society of

Notice of next meeting:

Tuesday, 13 August 2019, 1:00 pm

Assessing risk in host-specificity testing for weed biological control: juxtaposing scientific and regulatory perspectives

presented by

Dr Raghu Sathyamurthy
CSIRO Health and Biosecurity
Dutton Park

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 5 (August 2019)

Deadline for contributions:

Friday, 16 August 2019

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