Entomological Society of Queensland

NEWS BULLETIN

Price $3.50
Print Post Approved
100001946

Volume 46, Issue 7, October 2018

Entomological Society of Queensland

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

Front Cover: A photograph of the saltmarsh mosquito, *Aedes vigilax*. This species is found in coastal saltmarshes and mangroves from the south coast of New South Wales north around the continent and down to the southwest corner of Western Australia, and in the Riverland and Adelaide region of South Australia. Its drought-resistant eggs are laid in the margins of temporary pools that are flooded by peak tides or rain events. On subsequent inundation, these eggs can hatch simultaneously in millions, taking as little as 7-8 days to develop into adults. The adult mosquitoes are renowned for their capacity to disperse over many kilometres. This makes them the worst pest species in coastal Queensland, where the larvae are the target of aerial spraying programs by councils from the Gold Coast to Noosa. *Photo by Stephen Doggett, Department of Medical Entomology, NSW Health Pathology, Westmead Hospital. Used with permission.*

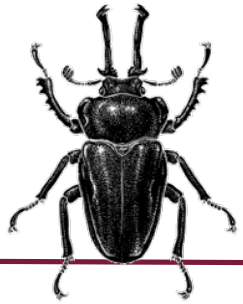
ISSN 1037-2989

Entomological Society of Queensland

Table of Contents

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, September 11th, 2018
Held in the Seminar Rooms, Ecosciences Precinct, Boggo Rd, Dutton Park.
Meeting open: 1:02 pm

Attendance (30):

Members (27): Bill Palmer, Peter Machin, Desley Tree, Mark Schutze, Mike Muller, Kathy Ebert, Vivian Sandoval, Geoff Monteith, Min Pokhrel, David Merritt, Chris Lambkin, Michael Jeffries, Geoff Thompson, Don Sands, Mike Barnett, Graham Forbes, Andrew Maynard, Jessa Thurman, Gary Cochrane, David Extoh, Penny Mills, Harriet Clark, Helen Schwencke, Lui Laurence-Ranggar, Claudia Schipp, Shannon Close, Jacinta Zalucki

Visitors (3): Liz Snow, Steve Csurnes, Irene Terry

Minutes: The minutes of the last meeting were circulated in News Bulletin 46[6] September 2018. Moved the minutes be accepted as a true record: Chris Lambkin, Seconded: Penny Mills, Carried: All.

Nominations for membership approved by council:

Student Members:

Rhys Parry (Univ. of QLD)
Min Raj Pokhrel (Univ. of New England)

General Business:

Don Sands noted that the Australian Entomological Society conference in 2019 will include a symposium on conservation, and that the conference will be held in Brisbane, most likely in November.

Michael Jeffries presented the newly published book on '*Flora of the Granite Belt*' .

Main Business:

Presentation: *"Cycad cones, volatile emissions, pollinators and diversification - cells, coevolution and conservation"* presented by Irene Terry.

Desley Tree provided the vote of thanks.

Next meeting: 13 November: *"Mosquitoes, moths and microscopes: life as a biosecurity entomologist"* presented byJohn Nielsen (DAWR, Canberra).

Meeting closed: 14:12

Sabethes cyaenus: A Neotropical genus of mosquito that breeds in containers formed by the broken stems of American bamboos (*Chusquea* spp.) and have the peculiar behaviour of biting their hosts on the tip of their nose! *Sabethes* are among the most beautiful mosquitoes in the world, having brilliant iridescent scaling and broad paddles of setae on their hind tibiae. Photo: John Nielsen.

At our next meeting...

"Mosquitoes, moths and microscopes: life as a biosecurity entomologist in Australia"

presented by John Nielsen
Australian Government
Department of Agriculture and Water Resources
Canberra ACT

Biosecurity entomologists study and manage insects that would cause harm if they were to be introduced to an area where they do not naturally occur. John Nielsen has had the privilege of working as a biosecurity entomologist with the Department of Agriculture and Water Resources for the past 13 years. In this role, he has had exposure to most aspects of biosecurity affecting plant health, as well as coordinating mosquito monitoring conducted to fulfill WHO requirements at airports and seaports. In this talk, John will describe the diversity of work biosecurity entomologists perform based on his experience with the department.

John Nielsen in one of the insectaries at the Walter Reed Institute of Army Research at Silver Spring, Maryland, in June 2018. The container he is holding contains a colony of *Anopheles stephensi*. As they had not been blood fed, the females were attracted to the John's body heat and have made a silhouette of his hand in an attempt to bite him through the wall of the container.

About John:

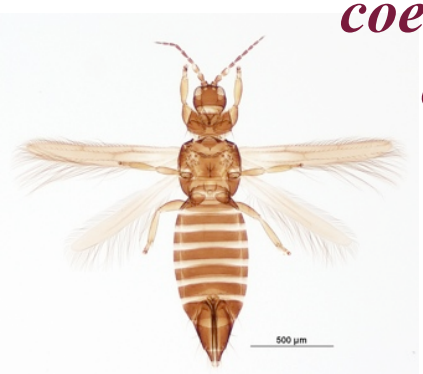
John Nielsen is an entomologist with the Australian Government Department of Agriculture and Water Resources, where he has worked since completing his undergraduate studies at the University of Queensland. A lepidopterist at heart, John enjoys working on any insect with scaled wings and a proboscis–making his current work on mosquitoes a natural choice! Starting with the department as a Sydney-based diagnostician in 2005, John cut his teeth on the diversity of insects intercepted through biosecurity inspections, giving him intimate knowledge of trade pathway risks to Australia. In 2007, John moved to Canberra for a policy-based role that saw him contribute technical input to a number of high-profile import risk assessments. His work using geospatial intelligence concepts as part of a risk analysis project for Asian gypsy moths (*Lymantria dispar*) was recognised with a ComCover Award for excellence in risk management in 2012. He has also supported Commonwealth, State and Territory government decision makers manage a number of incursions as secretariat for the Consultative Committee for Emergency Plant Pests. In 2016, John became National Vector Coordinator for the department, coordinating national monitoring activities for mosquitoes at all first points of entry to Australia. In June 2018, John spent three weeks based in Washington, DC, working with the United States Army at the Walter Reed Institute of Army Research and Walter Reed Biosystematics Unit. The experience he gained with mosquito trap technology, diagnostics and field surveillance methods is being used to ensure Australia's mosquito monitoring activities continue to manage risk well into the future.

Tuesday 13th November at 1 pm

Ground floor Seminar Room at EcoSciences. Tea & coffee following.

All welcome!

Cycad cones, volatile emissions, pollinators and diversification - cells, coevolution and conservation



presented by
Irene Terry
Research Professor
University of Utah
Salt Lake City, Utah, USA

Cycads are dioecious gymnosperms and are the oldest lineage of extant plants that are insect-pollinated. Many species have a sole pollinator and the pollinator relies only on the pollen cone for food and reproduction. Australia, being a centre of cycad diversity, offers unique opportunities to study the evolution of pollination mutualisms in these plants. We have been investigating many aspects of the pollination systems of the Australian cycad genus *Macrozamia* from different perspectives. These run the gamut of analyzing the molecular genetics of the pollinator and their plant hosts, determining the changes in the physiology of cone thermogenesis and chemical emissions across plant hosts, and testing the pollinators' responses to these cone behaviors. My work shows how all this comes together to mediate pollinator behavior and how these systems might diversify.

Cycads were thought to be wind-pollinated like most gymnosperms until the early 1980s when several studies in Florida demonstrated that beetles from different families were the specialist pollinators of cycads in the genus *Zamia*. Studies since that time have indicated that most, if not all, cycads are insect pollinated, and that with one exception, pollination systems most likely arose independently across each continent where cycads currently reside. Pollination studies in Australia have revealed a diversity of pollinators: weevils in the genus *Tranes* pollinate several species of *Macrozamia* and *Lepdiozamia peroffskyana*; *Melotranes* pollinates *Bowenia*; beetles in several families are pollinators of species in the genus *Cycas*; and thrips in the genus *Cycadothrips* are the sole pollinator of many *Macrozamia* species (Terry et al. 2012). There are three named *Cycadothrips* species based on disjunct distribution of the genus across the Australian continent: *C. chadwicki* in the eastern region on many different species, *C. albrechti* in the central region on *M. macdonnellii*, and *C. emmaliami* in the southwest on *M. reidlei*.

Pollination experiments have established that *Cycadothrips* and *Tranes* are very effective pollinators of their specific *Macrozamia* host, and that there are many cone traits that mediate their specific pollinator's behaviour. These traits include a daily cone thermogenic event (where cones ramp up their respiratory metabolism and raise their temperature above the ambient) and a concomitant emission of numerous volatile organic compounds (VOCs). In the beetle-pollinated species, thermogenesis and VOC emissions increase around sunset and into the evening whereas thrips-pollinated

species are thermogenic and release odours during the day time (Terry et al. 2004). In addition, there are many differences in the chemical components of the VOCs between the beetle-pollinated and thrips pollinated *Macrozamia* species. Cone thermogenesis and high VOC emissions tend to 'push' insects out of the pollen cones where they feed and reproduce, and then later in the day 'pull' or attract insects into a pollen cone or into an ovulate cone (Terry et al. 2014). The ovulate cone has similar traits to the pollen cone but does not offer rewards of food or brood sites. Insects exiting pollen cones carry sufficient pollen (See Figs. 1 & 2) and occur in enough insect numbers to effectively pollinate ovulate cones. *Cycadothrips* and *Tranes* respond primarily to their own host volatiles and that appears to be one factor in maintaining separate cycad gene pools in locations where beetle-pollinated and thrips-pollinated species are sympatric.

More recent studies have addressed questions about the diversification and evolution of *Macrozamia* and their pollinators. The primary focus thus far has been on the *Cycadothrips*-pollinated *Macrozamia* of the eastern region. These studies involve examining molecular genetics of *Cycadothrips* and their host plants and the cone traits (VOCs and thermogenesis patterns) of *Macrozamia* species. Results to date indicate that specimens of *Cycadothrips chadwicki*

Fig. 1 Pollen-covered *Tranes* sp. weevil. Photo by John Donaldson.

across the region are difficult to distinguish from one another morphologically, but molecular genetics indicate there are at least three species and perhaps more associated mainly with geography (Brookes et al. 2015). The primary clusters are a southern group comprising thrips on *M. communis* and *M. montana* in NSW; a group on southern Qld *Macrozamia*; and a northern Qld group. There are further subdivisions within Qld. We have demonstrated also that the VOC chemistry varies significantly across these eastern thrips-pollinated *Macrozamia* species. Preliminary experiments indicate that *Cycadothrips*

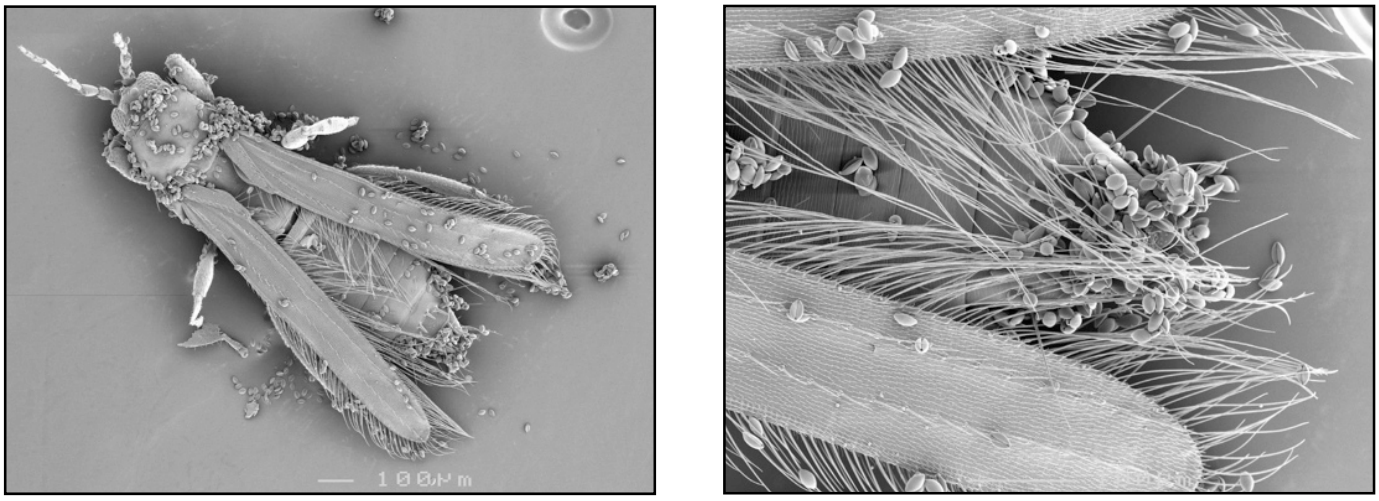


Fig. 2. Scanning electron micrographs of *Cycadothrips chadwicki* exiting a pollen cone. Left: Adult with pollen grains. Right: magnification of end of abdomen. Photos by Desley Tree.

respond to only their own host species' VOCs (or other species of the region with similar volatiles).

More than half the cycad species worldwide are under threat, and there are many management plans and attempts underway to conserve these species. Some species are extinct in the wild and are found only in botanical gardens. In Australia, some cycad species are considered threatened or endangered and pollinator numbers are very small. In some populations, we have found only a very few plants in the same habitat, and there is no evidence of a pollinator or recruitment. Because of the tight link between the pollinator and the cycad host plant as obligate mutualists, it is critical for long term preservation that conservation plans include protection of both plant and their pollinator. Our research on thrips and host plant suggest that there are more species of *Cycadothrips* than that presented by morphology, and this raises questions about increased conservation efforts that must be considered for long term viability of these iconic plants and their pollinators.

References

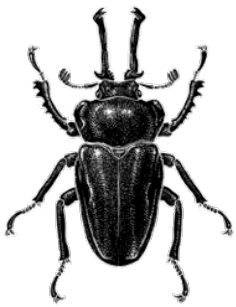
Brookes D.R., Hereward J.P., Terry L.I. & Walter G.H. (2015) Evolutionary dynamics of a cycad obligate pollination mutualism – Pattern and process in extant *Macrozamia* cycads and their specialist thrips pollinators. *Molecular Phylogenetics and Evolution*. 93: 83-93.

Terry, I., Chris J. Moore, Gimme H. Walter, Paul I. Forster, Robert B. Roemer, John Donaldson, Peter Machin. 2004. Association of cone thermogenesis and volatiles with pollinator specificity in *Macrozamia* cycads. *Plant Systematics and Evolution* 243: 233-247.

Terry, I., W. Tang, A. S. Taylor Blake, J. S. Donaldson, R. Singh, A. P. Vovides, and Angélica Cibrián-Jaramillo. 2012. An Overview of Cycad Pollination Studies. *Memoirs of NY Botanical Garden* 106: 352-394.

Terry, I., R. Roemer, D. Booth, and G. Walter. 2014. Thrips responses to thermogenic associated signals in a cycad pollination system: the interplay of temperature, light, humidity and cone volatiles. *Functional Ecology*. 28: 857-867.

A *Lepidozamia* cycad pollen cone (male). The *Tranes* beetle pollinates it and comes into the cone by the hundreds just before and as they start to open up (or elongate and the sporophylls spread apart). Weevils lay eggs and larvae develop on male cones. Thanks to Robert Richardson for sharing this photo taken by his sister in her back yard.



Announcements

Moth Bombing Gympie and Bundaberg Entomological Help Needed

The Gympie Regional Gallery and Bundaberg Regional Art Gallery have joined forces to bring ***The Moth Migration Project*** (**mothmigrationproject**.net) exhibition to Australia from 26 April–22 June 2019.

American artist Hilary Lorenz is the founder of this crowd-sourced worldwide project of hand printed, drawn and cut paper moths and draws attention to our connection to our natural world and each other. Through this project the moth has become a symbol of community.

To make this exhibition interesting we are planning a range of activities pre, and during the exhibition for both towns.

One of the pre-exhibition activities will include a moth catching and identifying event or two sometime late November, early December. Gympie suggested dates could be between 1-16 December, or the 19/20 December. Bundaberg are still deciding on approximate dates, but could be in the New Year if there are entomologists in that region.

We would love to hear from anyone in the Entomological Society who can give some time and add to this exciting moth experience to educate the public on the wonderful moth species. (Contacts at end of article)

We have chosen these times so we can identify any endemic moths to our regions and give artists or participants something to work from that has relevance to our areas. From these sessions, we are hoping to conduct several art workshops leading up to the exhibition for locals to become moth dazzled. We realise different locations, weathers and times will attract different species, and not always at night, and there are different ways of collecting moths–large white sheets and light, the tubes etc. This could be a wonderful art/science project for the community. We had no idea that moth experts were so hard to find in SE Queensland.

Although any new work cannot be included in the actual exhibition space with ***The Moth Migration Project***, we are intending moth bombing the Gympie and Bundaberg regions in any fashion and in any venue that will partner with us.

During the exhibition, which is almost 8 weeks long, Gympie is planning at least one moth or moth-related activity to happen each week. This could be talks, workshops, group visits, etc. and turning one of its smaller gallery spaces into a moth art making space for individual engagement. Talks and demonstrations are another occasion where the Entomological Society could be involved. There is also the Cooloola BioBlitz happening in May, where this year several new moth species were discovered and Dr Don Sands was involved.

Gympie Regional Gallery contact: Sandra Ross (07)54810737, Education and Public Programs Officer or Joolie Gibbs, Gallery Director (07)54810732

Bundaberg Regional Art Gallery contact: Jenny Gilbertson 41304758 or Zoe Blandford 41304753.

Entomology News

from Queensland and beyond...

Entomology Awards to two UQ students

The inaugural Jiro Kikkawa Memorial Lecture was held on Wednesday, 3 October at UQ. This event was held to honour the late Professor Jiro Kikkawa who was Head of Zoology at The University of Queensland from 1980-1988 and is known for his work in tropical ecology. Emeritus Professor Roger Kitching from Griffith University presented an overview of Professor Kikkawa's life's work.

Professor Margie Mayfield, Head of the Biological Sciences Department at UQ presented the annual School of Biological Sciences Prizes to outstanding students from 2017-2018. The school has prizes for students in the areas of ecology, botany, evolution, marine biology, vertebrate zoology, genetics and most importantly (to ESQ, at least), two awards in entomology. The first award is the R & AE Veitch Prize which was established in 1974 by the late Robert Veitch as a memorial to his wife Alice and himself (see p. 131). It is awarded to the second year student who achieved the greatest proficiency in second-year entomology. This year the award was presented to Lauren Thornton. The second award is the FA Perkins Prize in Entomology which was established in 1965 as a tribute to FA Perkins. Perkins was UQ's first lecturer in Entomology, the first Head of Department of Entomology and a founding member of the ESQ. This prize is awarded to the student with the highest mark in the second year entomology course. This year the award was presented to Gabrielle Bendell.

Following the awards, Professor Stuart Pimm, a world renowned conservation biologist from Duke University, presented a lecture on *"Saving nature in places that matter."*

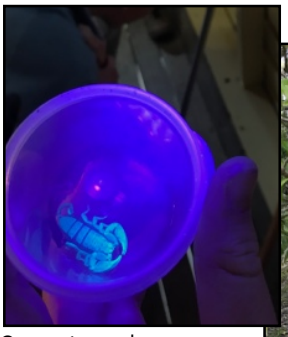
Above: Roger Kitching presents an overview of Jiro Kikkawa's life. *Right:* Lauren Thornton (left) receives the R & AE Veitch award from Margie Mayfield.

Leading the field of insects & arthropods

The Australian has published this year's *Research Magazine* in September featuring a list of leading researchers and research institutions across Australia put together by the data analytics firm, *League of Scholars*. Over 250 research specialties of academics and research institutions were analysed based on research measurements of both quality (number of citations) and quantity of publications to determine an index which would reflect both output and impact of research. In the field of *Insects & Arthropods,* our very own ESQ Secretary, Dr Mark Schutze, has come out as the leader. CSIRO has come out as the leading institution in the field. Well done, Mark!

Intrepid UQ Insect Science students

The UQ insect science students weren't deterred by the threat of rain for their field trip to Gold Creek Reservoir. In spite of the weather, we managed to find lots of interesting insects. Several ESQ members and past students came along to help out and make the event a success. Dave Merritt, Shannon Close and Kathy Ebert ran the event with assistance from Andrew Maynard, Jessa Thurman, Penny Mills, Will Matthews, Adam Bilsborough and Adelaide Power. Interesting invertebrates included a pollen- and nectar-feeding kaytydid nymph (*Anthophiloptera dryas*), a huge female mantid (*Archimantis* sp.), a scorpion, wood cockroaches and an enormous beetle grub. One student was trialling the new Moccona killing jar and finding it very effective!



Scorpion glow.

Above, Minguan beats the bushes hoping to find insects for his collection. ***Below:*** One of the new Moccona killing jars devised by David Rentz.

Jessa with a female mantid.

Zaprochilinae nymph

2018 Whitley Awards

Spiders fared well at the annual Whitley Awards Ceremony held at the Australian Museum on October 3rd. The Whitley Awards are sponsored by the Royal Zoological Society of New South Wales for books and other media that provide educational material on Australasian fauna and conservation. Congratulations to Caitlin Henderson, Alan Henderson, Cameron Hunt and Deanna Henderson at Minibeast Wildlife for their outstanding digital field guide, ***Spidentify.*** Congratulations also goes to Robert Whyte and Greg Anderson for their book, ***A field guide to spiders of Australia***.

Australian Entomological Society Conference

Alice Springs Convention Centre, 23-26 Sept 2018

Panorama view of Alice Springs and surrounding area from Olive Pink Botanical Gardens. Photo: Shannon Close.

The 49th Annual Australian Entomological Society Conference was held at the Alice Springs Convention Centre during the last week of September. Over 120 people came from all over Australia to attend the event. The theme for the conference was "insects as the centre of our world".

The first keynote address was presented by Veronica Dobson, a highly respected Eastern Arrernte woman, and Fiona Walsh who spoke on of the cultural significance of the caterpillars in the region. The features of the landscape around Alice Springs represent the caterpillars' journey across the land. The caterpillars were sacred totems to the local people as well as an important food source. Veronica shared her knowledge of bush foods, natural history of the caterpillars and the threats to their survival such as the introduced buffel grass. The yeperenye caterpillar (*Hyles livornicoides*, Lepidoptera: Sphingidae) was the most colourful of the sacred caterpillars and was chosen to be the logo for the conference.

Other keynote speakers included Theo Evans from the University of Western Australia who gave a fascinating presentation on evolutionary history of termites. Michael Kearney from the University of

The Alice Springs Convention Centre, located along the Todd River, provided a perfect venue for the conference.

Rolf Oberprieler showed us images and CT scans of weevils found fossilised in amber from the Upper Cretaceous. They represent a new family: Mesophyletidae, that appear to be specialised for feeding on early angiosperms.

Melbourne spoke on mechanistic models of insect distribution, and Sarah Corcoran from the Northern Territory Department of Primary Industry and Resources reviewed plant biosecurity in the Northern Territory.

Over three days, the conference symposia covered a wide range of topics including insect conservation, pest management, native species, diagnostics, physiology, beneficial insects and insect fauna from Burmese amber.

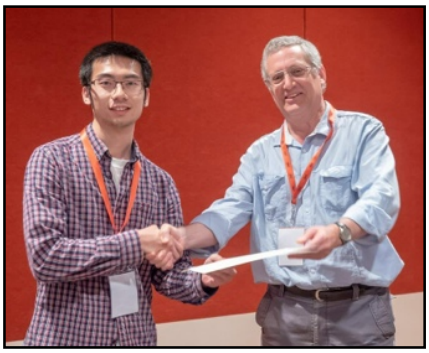
Three student finalists for the Phil Carne Prize gave presentations: Perry Beasley-Hall from the University of Sydney explained her research on parallel evolution in burrowing cockroaches; Leanda Mason from Curtin University in Western Australia taught us all about mouse spiders and short-range endemics; and Xuankun Li from ANU presented his work on Bombyliidae taxonomy. All three students gave excellent presentations, but it was Xuankun who won the $1500 prize. The Phil Carne prize is awarded each year to foster high quality entomological research in young scientists.

Other awards went to Ben Passlow who was awarded the CHAEC prize for best use of entomological collections. Ben is a PhD student at Flinders University studying the molecular

Right: Walking to Simpsons Gap for Welcome Event.

Below: David Merritt, Lyn Cook and Mark Schutze enjoy the evening at Simpsons Gap.

Everyone ready to hear the morning's keynote speaker.



Xuankun Li received the Phil Carne Prize from AES President Phil Weinstein. Photo: B. Thistleton

Ben Passlow received the CHAEC Prize from Gary Taylor Photo: B. Thistleton

Chris Sanderson received the Alan Yen Conservation Award from Gary Taylor. Photo: K. Ebert

phylogenetics of *Gasteruption* wasps.

The new conservation award in honour of Alan Yen was awarded to Chris Sanderson for his work in insect conservation. Chris works with the Threatened Species Recovery Hub at UQ/ANU and spoke about the importance of accurate data collection to conservation. *"Lack of conservation begins with lack of data."* The award was presented by Gary Taylor, the Chair of the AES Conservation Committee.

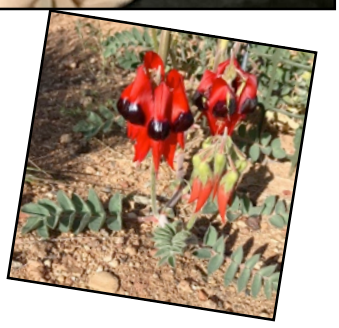
Posters on various research projects were on display for the duration of the conference. *Shannon Close (left) presented her research on batflies (Nycteribiidae) and Kathy Ebert (right) presented a poster on diet diversity in rainforest dung beetles.*

Highlights of the conference included a Welcome Event held at Simpson Gap where we were entertained by an all-girls drumming group while enjoying beautiful scenery at sunset. We even managed to spot a few elusive rock wallabies. A special student event attracted about 35 students who were able to test their ento-knowledge and win prizes. One evening there was a delicious dinner under the stars on the 17th hole of the golf course behind the convention centre. It was lovely evening of socialising that started with an introduction to the night sky. The pre-conference tour was enjoyed by about 20 attendees who spent the day exploring the beautiful East Macdonnell Ranges.

All in all, the conference was a memorable experience and a great showcase for all the exciting entomological research happening in Australia. The next AES conference will be held jointly with the Society for Australian Systematic Biologists in Brisbane later next year.

--Kathy Ebert

Above: Leanda Mason from Curtin University in Western Australia brought a display of her spider burrows.



Right: Sturt's desert peas were in bloom near the convention centre.

Above: Alice Wells, Laurence Mound, Phil and Agnes Weinstein, David Merritt and David Yeates enjoy the conference dinner on the golf course. ***Left:*** Shannon Close, Olivia Davies and James Dorey at the conference dinner.

Right: A hawk moth was spotted on the walk to the conference dinner and we had hoped it was the adult of the conference logo, but it turned out to be *Agrius convolvuli*. Photo: B. Thistleton

2018 AES conference group photo at the Alice Springs Convention Centre. Photo: B. Thistleton

Book Review

Minibeasts: True rulers of our world and the key to our survival

Review by Jessa Thurman

Alan Henderson has dedicated his life to showcasing the wonders of the insect world. After spending years working at the Melbourne Museum and creating live displays of some of Australia's most impressive invertebrates, Alan and his wife, Deanna decided to start their own business: ***Minibeast Wildlife.*** The business conducts educational programs and locally sells Australian insects as pets to promote an appreciation for these small creatures. In his new book, *Minibeasts*, Alan builds on all of his previous work by showcasing some of his best macrophotography of invertebrates, many of which were found in his own backyard!

Alan lives in the tropical paradise of far north Queensland, where you can find stunning insects like the Australian leaf insect (*Phyllium monteithi*), the lichen katydid (*Phricta spinosa*), the peppermint stick insect (*Megacrania batesii*), alongside many other magnificent invertebrates. From huntsman spiders, millipedes, and scorpions to cockroaches, beetles, and butterflies, all of the tropical Australian wonders can be found in the pages of *Minibeasts*, where they are paired with an accessible text. Take for instance, the strange form of spiny stick insects (*Extatosoma tiaratum*) after they've first hatched and consider how much they resemble the spider ant (*Leptomyrmex* sp.). Alan explains these peculiarities

Spiny leaf insect (*Extatosoma tiaratum* (Macleay, 1826) first-instar nymph (left) and a spider ant (*Leptomyrmex* sp.). Photo: Alan Henderson

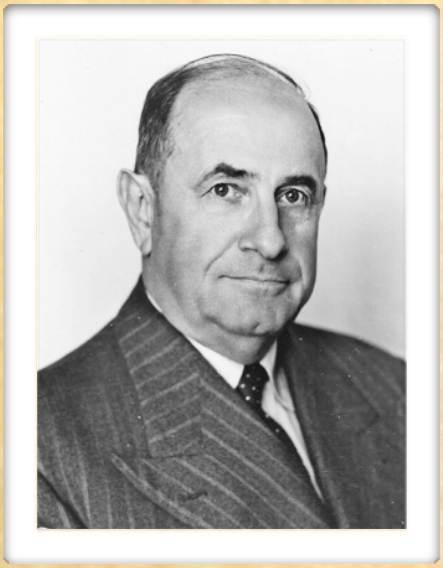
throughout the chapters of the book with mimicry in "The Pretenders" and sexual cannibalism in "The Mating Game."

This book offers a glimpse into the realm of invertebrates with stunning detail. Whether it is an introduction to this stunning world, or a long-awaited visualization of common themes we've all learned about, this book is a great addition to your entomological collection. If you'd like a copy of your own or are interested in the other Minibeast resources, including a children's book, a guide for keeping Australian invertebrates, and an interactive spider idenfication app, ***Spidentify***, visit their website (shop.minibeastwildlife.com.au/books-and-resources/)

Mating mantids: *Hierodula majuscula* . Photo: Alan Henderson

The History Corner...

Robert VEITCH (1890-1972)



Born Edinburgh, studied at Edinburgh University, graduating BAgrSc and BForSc in 1912, part of Forestry course undertaken in Germany. Served as Assistant at Imperial Institute of Entomology, British Museum, London, 1913-14, before becoming entomologist with Colonial Sugar Refining Co. 1914-25. Based in Lautoka, Fiji, during CSR service but travelled widely to sugar growing areas, including Australia, and published on Australian cane beetle borer in 1917. In 1925 appointed to replace long-serving Henry Tryon with Qld Dept. of Agric. and Stock under new title of Chief Entomologist. Encouraged research and appointed many graduate entomologists from the newly established UQ Agriculture Faculty. Set up field stations for entomology at Stanthorpe and Cairns. Established forest entomology group. Published widely, especially leaflets aimed at farmers. Produced two seminal volumes on agricultural pests, viz. the 1929 *Pest and Diseases of Queensland Fruits and Vegetables* (with J.H. Simmonds) and the 1938 *Queensland Agricultural and Pastoral Handbook Vol 3*, the latter a compilation of input from departmental staff (revised 1951). After review by UQ Professor Goddard and Minister Bulcock, Veitch became Director (Research) in new Division of Plant Industry in 1937 and rose to Assistant Under-Secretary (Technical) in 1947. Retired 1956, but recalled for a year in May 1958 as Acting Under-Secretary following sudden death of A.F. Bell. Veitch was President of Entomological Society of Qld in 1932 and was elected Honorary Life Member in 1956. Also President of the Royal Society of Queensland.

Obituary: Weddell, J.A. 1972. *News Bulletin Entomological Society of Queensland.* **90:** 21.

Plant Camp 2018

by Penny Mills

The inaugural Plant Camp was recently held from 28–30th September at the Aroona station in Mount Mort (Fig. 1). This was a joint venture organised by the Queensland Trust for Nature (QTFN) and UQ's School of Biological Sciences Ecology Centre. Aroona is a 2000-ha property that was kindly donated to the QTFN in December 2015. It was originally a cattle property and the QTFM still manage a 300-head herd of cattle on the property. The property is approximately a 1.5 h drive south-west of Brisbane. The QTFN's goal for Aroona is to show that farming and conservation can co-exist successfully and do not have out-compete each other.

The aim of Plant Camp was to sample the vegetation of several different ecosystems to build a species list for the property, and to give the third-year students studying Plant Identification and Vegetation Classification (BIOL3227) some experience of field work and curating specimens. Although Plant Camp was aimed at the undergraduate students studying plant identification, several entomologists also attended: Andrew Maynard, Jessa Thurman, Ehsan Sanai and myself.

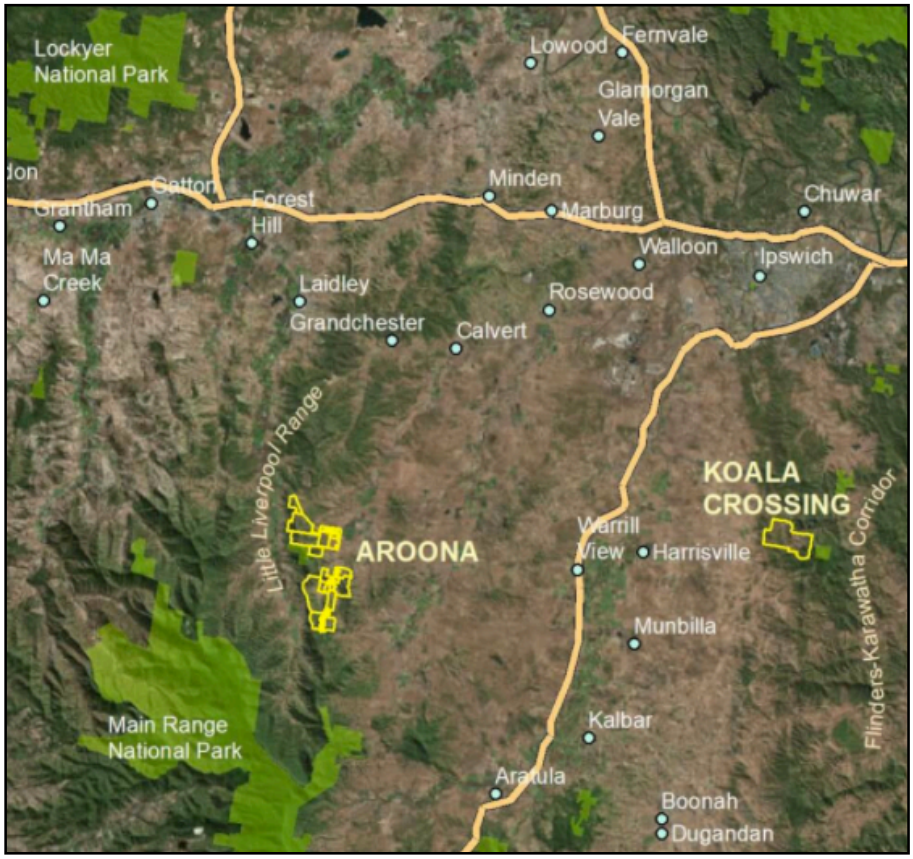


Fig. 1. Map of the Aroona property. Map from: http://qtfn.org.au/aroona/

The first two mornings were spent sampling the vegetation in two different habitats: dry rainforest and open sclerophyll forest. A student directed me to a rock face in the dry rainforest where several bristletails were scurrying about (Fig. 2). There were plenty of other arthropods in the rainforest ecosystem (Figs. 3–6), even though there had been very little rain recently.

After lunch, once the samples were sorted and pressed, there was free time to further explore the property.

Fig. 2. Two bristletails on a rockface in the dry sclerophyll ecosystem at the Aroona property.

Fig. 6. A mole cricket (Gryllotalpidae) found in a rotten log.

Fig. 3. A jumping spider (Salticidae) on a rock with its recently captured prey (an ant).

Andrew, Jessa and I climbed several hills, finding a diversity of arthropods during the camp. There were some cool creatures and strange arthropod-made structures on the tree trunks (Fig. 7), under rocks, and on the vegetation. We found species from Blattodea (bush cockroaches), Coleoptera (net-winged beetles, leaf beetles; Fig. 8), Diptera, Hemiptera (pentatomids and scale insects, including five species of gall-inducing scale insects from *Apiomorpha*; Fig. 9),

Fig. 4. A jack jumper ant (*Myrmecia nicrocincta*.) standing its ground.

Fig. 5. A bee killer assassin bug (*Pristhesancus plagipennis*) on a leaf.

Fig. 7. Jessa photographing a strange growth (arthropod-made) on the trunk of a *Brachychiton*.

Fig. 8. A paropsine leaf beetle (*Paropsis obsoleta*) on a eucalypt leaf.

Fig. 9. One of the five species of gall-inducing scale insect Apiomorpha (*Apiomorpha urnalis*) found on Aroona.

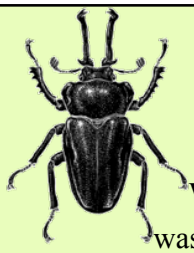
Hymenoptera, Lepidoptera (tiger moths), Mantodea, Mecoptera (Fig. 10), Neuroptera and Orthoptera (including bark crickets, field crickets, raspy crickets (Fig. 11), gumleaf grasshoppers and katydids). There was also a mayfly spotted at the homestead, which was difficult to photograph because it decided to hang out on the homestead's guttering on the second floor.

The property has a large homestead with electricity, drinking water and bathroom facilities (although due to the size of the group, we were encouraged to use the outdoor toilet facilities). There was plenty of space around the homestead to park and set up tents, and there was also room to sleep out on the large verandah. There was a large concrete area underneath the homestead where most of the plant processing was done and where the food was stored. At a small cost, catering for the plant camp was provided by Dr. Renee Rossini with vegetarian and meat options available. The homestead and property have all the necessary facilities to run a future 2–3 days BugCatch and it would be great to do a proper arthropod survey of the property, especially after a bit more rain.

I would like to thank Renee (QTFN/UQ) and Rod Fensham (UQ) for organising the Plant Camp, and the other staff members Felicity (QTFN), Tanya (QTFN) and Gab (UQ) for running a wonderfully successful Plant Camp.

Fig. 10. Andrew holding a net-caught scorpionfly (Mecoptera: *Harpobittacus* sp).

Fig. 11. A raspy cricket found hiding under bark on a tree trunk.



S-t-r-e-t-c-h your Ento knowledge

Well, last month's mystery photo was indeed a tricky one - nobody guessed it! The scanning electron micrograph shows the sex combs on the front legs of a *Drosophila serrata*. Male *Drosophila* have modified bristles on the front legs that are used in courtship. In *D. serrata*, these combs are exceptionally long. Variations in these combs are used to identify different species of *Drosophila*.

Thanks to Sam and Zach from the UQ insect science course for sharing their SEM images!

We're taking a break from the mystery photos for now - hope you have enjoyed them!

The combs on the front legs of a male *Drosophila serrata* magnified 1200x.

Meetings & conferences

Joint Entomology Conference 2018 (Ent. Soc. of America (ESA), Ent. Soc. of Canada (ESC) and Ent. Society of British Columbia (ESBC))
November 11–14, 2018
Vancouver, CANADA
https://www.entsoc.org/events/annual-meeting

9th International Congress of Dipterology
25-30 November 2018
Windhoek, Namibia
https://icd9.co.za/

Ecological Society of Australia Annual Conference
25-29 November 2018
Brisbane, QLD
http://esa2018.org.au

Trends in Biodiversity & Evolution (TiBE) 2018: Host-parasite Interactions Conference
December 5–7, 2018
Vairão, Portugal
https://cibio.up.pt/tibe/details/tibe2018

XVth International Symposium on Scale Insect Studies
17-20 June 2019
Zagreb, Cratia
http://www.scaleinsectsymposium.org/

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
Vietnam
http://www.tymbal.org/meetings.htm

Society for Molecular Biology & Evolution (SMBE) 2019
July 21–25, 2019
Manchester, ENGLAND
http://smbe2019.org/

2019 International Congress of Odonatology
14-19 July 2019
Austin, Texas, USA
https://worlddragonfly.org/meetings/ico2019

Joint Australian Entomological Society and Society for Australian Systematic Biologists
Date TBA
Brisbane, QLD

International Congress of Entomology
19-24 July 2020
Helsinki, finland
www.ice2020helsinki.fi
Call for symposia proposals soon!

Diary Dates for 2018

Meetings held on the second Tuesday of the respective month

MARCH 13	Tim Heard	AGM and Presidential Address: "*Stingless Bees, their journey from obscurity to insect ambassadors"*
APRIL 10	Andy Walker	*"Exploring the world of insect venoms"*
MAY 8	Brendan Trewin	*"The history of* Aedes aegypti *in Southeast Queensland and novel techniques for its surveillance and control."*
JUNE 13	Notes and Exhibits	Notes & Exhibits
AUGUST 14	Mike Rix	*"Life down under: evolution and conservation of Australia's trap door spiders"*
SEPTEMBER 11	Brian Montgomery	*"Zika Mozzie Seeker - exploring Citizen Science as a tool to monitor invasive and urban mosquitoes"*
OCTOBER 9	Irene Terry	*"Cycad cones, volatile emissions, pollinators and diversification - cells, coevolution & conservation"*
NOVEMBER 13	John Nielson	*"Mosquitoes, moths and microscopes: life as a biosecurity entomologist in Australia"*
DECEMBER 11	Notes & Exhibits	Notes and Exhibits/Christmas Afternoon Tea

SOCIETY SUBSCRIPTION RATES

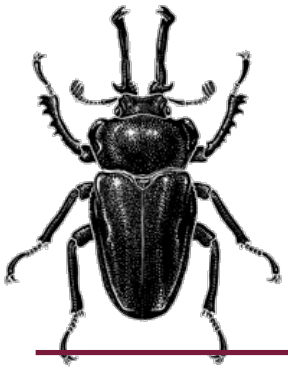
GENERAL	Person who has full membership privileges	**$30pa**
JOINT	Residents in the same household who share a copy of the *News Bulletin*, but each otherwise have full membership privileges.	**$36pa**
STUDENT	Student membership conveys full membership privileges at a reduced rate. **Free the first year**, $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

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, 13 November 2018, 1:00 pm

John Nielson

Australian Government
Department of Agriculture & Water Resources
Canberra ACT

presenting:

"Mosquitoes, moths and microscopes: life as a biosecurity entomologist in Australia"

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

Ground floor Seminar Room, Ecosciences Precinct, Boggo Road, DUTTON PARK

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

Next News Bulletin:

Volume 46, Issue 8 (November 2018)

CONTRIBUTIONS WELCOME

Deadline Wednesday, 21 November 2018.

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