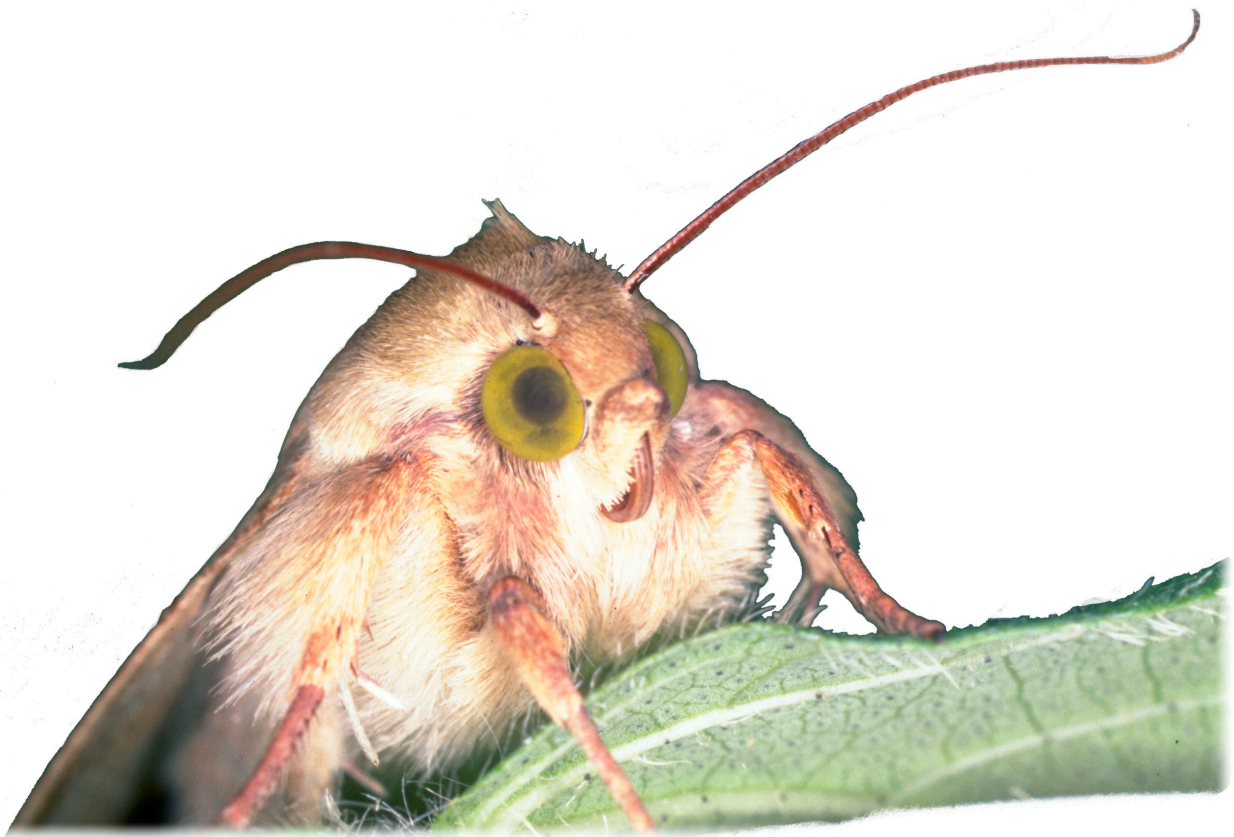


Entomological Society of Queensland

# NEWS BULLETIN



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# Entomological Society of Queensland

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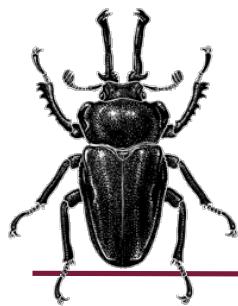
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**Front Cover:** A photograph of the Old World Bollworm, *Helicoverpa armigera*, a cosmopolitan species found naturally in Africa, southern Europe, across Asia and in Australia. *H. armigera*, together with *H. punctigera* (found only in Australia)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

ISSN 1037-2989



# 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.

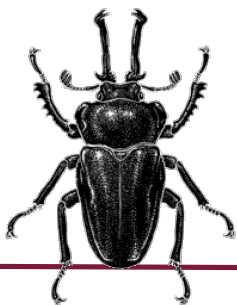
The Society publishes **THE AUSTRALIAN ENTOMOLOGIST**. This is a refereed, illustrated journal devoted to Entomology in the Australian region, including New Zealand, Papua New Guinea and the islands of the South Western Pacific. The journal is published in four parts annually.

**EMBLEM:** The Society's emblem, chosen in 1973 on the 50<sup>th</sup> 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.

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

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# Entomological Society of Queensland

## Minutes for General Meeting

**Tuesday, August 13th, 2019**

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

Meeting open: 1:03 pm

### Attendance (46):

**Members (31):** Tim Heard, Geoff Monteith, Gary Fitt, Hoan Le, Alexandra Glauerdt, David Holdom, Bernie Franzmann, Mike Muller, Natalia Medeiros de Souza, Simon Lawson, Cate Paull, Lachlan Jones, Jaye Newman, Melissa Starkie, Francesca Strutt, Don Sands, Rachel McFadyen, Helen Nahrung, Andrew Hayes, David Comben, Christine Goosem, Vesna Gagic, K. Dhileepan, Vivian Sandoval, Jane Royer, Shannon Close, Kerri Moore, Bradley Brown, David Exton, Gio Fichera, Penny Mills.

**Visitors (15):** Raghu Sathyamurthy, Quinton Dell, Kumaran Nagalingam, Yuwan Malakar, Tamara Taylor, Melika Missen, Boyang Shi, Jason Caccander, Tracey Steinrucken, Greg Sullivan, Sebahat Ozman-Sullivan, Di Taylor, Julie Sassa, Tim Vance, Matt Herington.

**Minutes:** The minutes of the last meeting were circulated in News Bulletin 47[4] June/July 2019. Moved the minutes be accepted as a true record: Cate Paull; Seconded: Simon Lawson; Carried: All.

### Nominations for membership approved by council:

#### General Members:

1. Linda Semeraro

#### Student Members:

1. Yun Li (ANU/ANIC/CSIRO)

### General Business:

~ Gary announced that the \$2000 Small Grants Scheme winner for 2019 is Colleen Foelz, who is designing a "Beetles of Brisbane" brochure.

~ Don Sands has discovered the larva of the Kauri Moth, *Agathiphaga queenslandensis*.

~ The Perkins Memorial Lecture in October is to be held at the Women's College Auditorium at the University of Queensland; parking is available but members are encouraged to use public transport where possible.

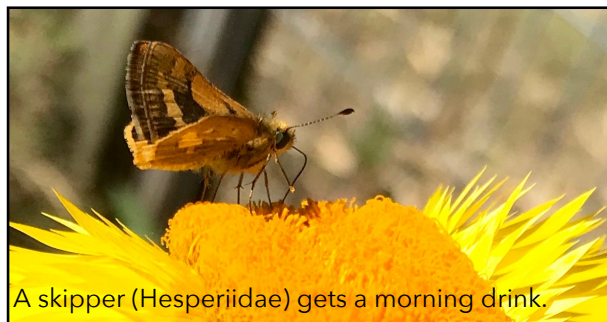
~ David Holdom is giving away some old books and journals.

~ If you are happy to assist with IDs for the Great Aussie BioQuest please contact Penny Mills ([secretary@esq.org.au](mailto:secretary@esq.org.au)) with your details and area of expertise. Any members who can help with phasmids, Blattodea, Orthoptera and Coleoptera especially welcome. There are some great prizes up for offer!

**Main Business:** Dr. Raghu Sathyamurthy (CSIRO) presenting on "Assessing risk in host-specificity testing for weed biocontrol: juxtaposing scientific and regulatory perspectives". The vote of thanks was given by Don Sands.

**Next meeting:** The next meeting will be on 10<sup>th</sup> September, and we will hear from Susan Wright (QM) about "The Queensland Museum Collection – what we hold and why".

Meeting closed: 1:58pm.



A skipper (Hesperiidae) gets a morning drink.





## ***The Queensland Museum Collection: What we hold and why***

*presented by*  
**Susan Wright**  
**Collection Manager**  
**Queensland Museum**

Susan completed a Bachelor of Science (Hons), majoring in Entomology, through the University of Queensland. While doing her degree, Susan worked part-time with the University of Queensland Insect Collection (UQIC) with Greg Daniels and Margaret Schneider. This sparked an interest in insect collections and taxonomy. She went on to complete an Honours in the systematics of Syrphidae (hoverflies). She began her 23 years with the Queensland Museum as a technical assistant for Chris Burwell and is now a Collection Manager. She cares for approximately 3.5 million insect specimens. Her work involves adding to, preserving and organising the insect collection; conducting field work; identifying insects; facilitating access to the collection by researchers, students and members of the public; assessing potential donations; providing specimens for displays and workshops; and conducting research into the collection and its donors. Ironically, the UQIC is now held at the QM in her care, completing the circle. In her talk, Susan will share a bit about the history of the QM, its collections and what working in a museum entails.



**Tuesday 10th September at 1pm**

**Ground floor Library at EcoSciences. Tea & Coffee following.**

**All welcome!**

***Please take note:*** Our October meeting will be the Perkins Memorial Lecture with guest speaker Dr. Ary Hoffman from the University of Melbourne. This meeting will be held at a **different venue: Women's College Auditorium at the University of Queensland. More details next month.**



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

*presented by*

**S. Raghu**

**CSIRO Health & Biosecurity**

**Brisbane QLD**

Host location and host use in phytophagous insects is a catenary process (Figure 1) that is shaped by the evolutionary context in which the insect-plant interaction originated, and the ecological context in which interactions play out. For an herbivorous insect to utilise a plant species as a host it must be able to locate it in the environment, and feed/complete development on it. The host plant cues and herbivorous insect response involved in enabling each step of this process is the result of adaptive physiological processes. When a plant possesses all traits/cues to enable host location and

use by a focal herbivorous insect, they can be considered as a primary host plant. Plants that possess only a subset of traits/cues which result in a lower use (e.g. insufficient to enable complete development, lower development rates and proportion than on primary hosts) by a focal herbivorous insect, can be regarded as secondary hosts. A corollary therefore is that plants that do not possess the traits/cues to enable host location and/or even lower use are unlikely to be hosts.

A diversity of host association patterns observed in nature, ranging from strictly monophagous to highly

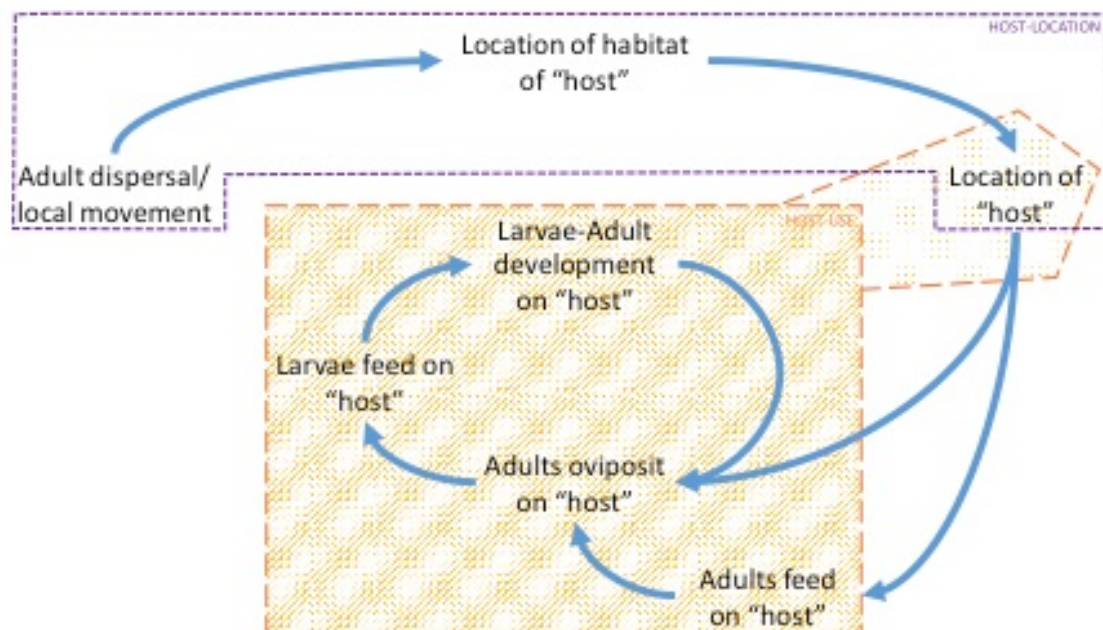


Figure 1. Host association in herbivorous insects is an emergent pattern of a catenary process (adapted from Walter, 2003).

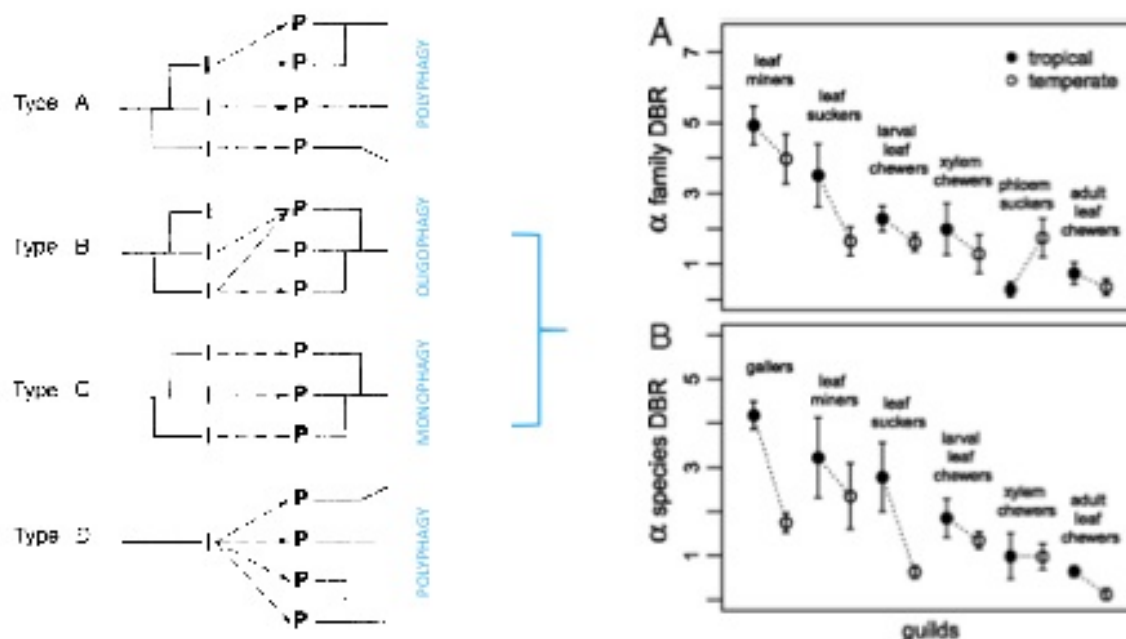


Figure 2. Diversity of host association patterns in herbivorous insects. Left panel: host associations relation to the phylogeny of a group of herbivorous insects (I) in relation to the phylogeny of their host plants (P) to infer patterns of host breadth (adapted from Jermy 1984 and Walter 2003). Right panel: Diet breadth in herbivorous insects tend to be skewed towards being specialized (i.e. monophagy and oligophagy) (Source: Forister et al. 2015)

polyphagous. Monophagy (i.e. host range restricted to one host plant) and oligophagy (i.e. host range restricted to a small number of closely related plant species) tend to be the most common associations (Figure 2) and tend to be phylogenetically conserved across a range of herbivorous taxa, including insects (Figure 3).

This conceptual underpinning is 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. To this end, a range of ecological and evolutionary studies are undertaken across the native

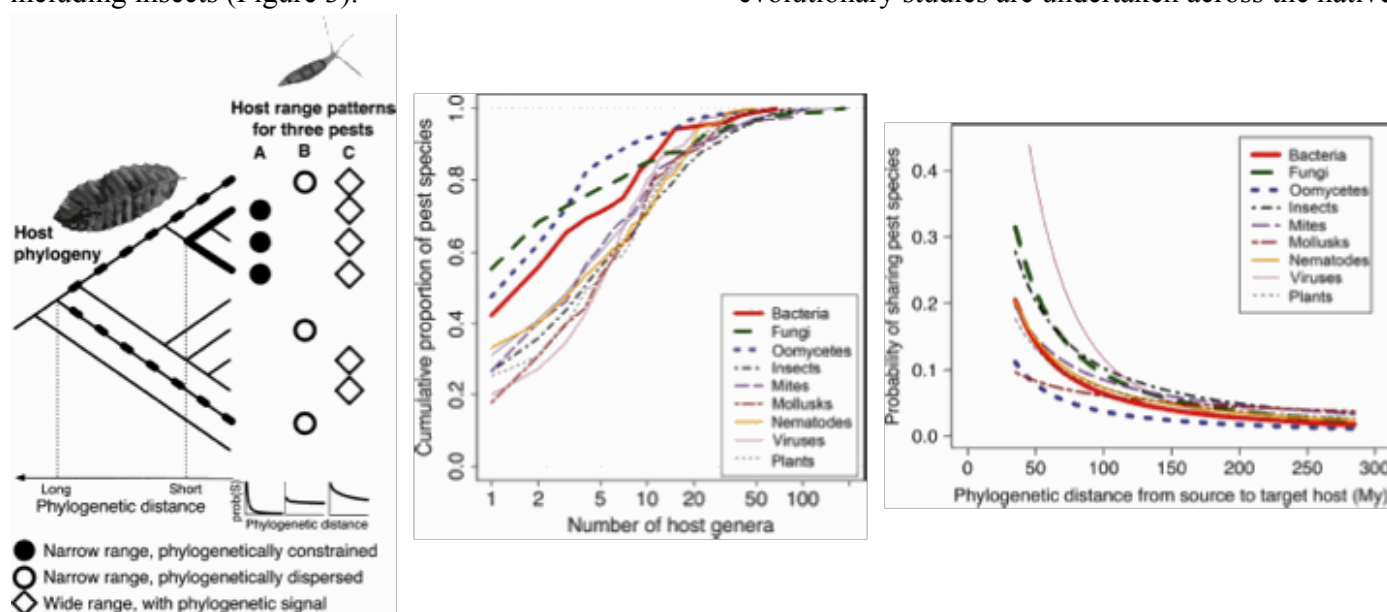


Figure 3. Host associations tend to be phylogenetically conserved across several groups of herbivorous taxa (Source: Gilbert et al. 2012).



Likelihood of off-target effects	Consequences of off-target effects					
	Negligible	Very low	Low	Moderate	High	Extreme
<b>High</b>	Negligible risk	Very low risk	Low risk	Moderate risk	High risk	Extreme risk
<b>Moderate</b>	Negligible risk	Very low risk	Low risk	Moderate risk	High risk	Extreme risk
<b>Low</b>	Negligible risk	Negligible risk	Very low risk	Low risk	Moderate risk	High risk
<b>Very low</b>	Negligible risk	Negligible risk	Negligible risk	Very low risk	Low risk	Moderate risk
<b>Extremely low</b>	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Very low risk	Low risk
<b>Negligible</b>	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Negligible risk	Very low risk

Figure 4. Risk assessment framework (relating likelihood and consequence of host use that is beyond the focal weed taxa, i.e. off-target effects) used by Australian regulators in ascertaining the level of risk posed by candidate biological control agents (Source: Department of Agriculture, developed based on FAO and WTO)

and introduced ranges of focal weed taxa and their specialist herbivores. In addition, research and inference for weed biological control needs to be undertaken in a regulatory framework guided by risk analysis.

In Australia, the use of biological control is regulated by the Commonwealth through the *Biosecurity Act 2015* and the *Environmental Protection and Biodiversity Conservation Act 1999*, which in turn are informed by international phytosanitary standards/regulations (e.g. SPS (WTO) 1995; ISPM (FAO 2007, 2011, 2013). In the Australian context, the use of herbivorous insects and pathogens as classical biological control agents is guided by a risk analysis process that ensures Australia's agriculture and environment have an Appropriate Level of Protection, as indicated in the aforementioned legislation (and associated regulations and guidelines). The regulatory interpretation of Appropriate Level of Protection is guided by where the agents sit within a risk matrix (Figure 4) based on scientific evidence gathered on host associations from ecological and physiological studies conducted in the native range, quarantine host-specificity testing, and evidence from the safety

of agents when used elsewhere in the world. The regulatory focus of this assessment is on risks, and any benefits of controlling the target weed need not be given consideration in the context of approving use of a focal biological control agent in Australia.

Those of us working as scientists in the discipline of classical biological control of weeds need to therefore ensure we stay abreast of (i) the scientific (ecological and evolutionary) concepts and evidence that underpin our work, (ii) the regulatory context for our work, (iii) the similarities and differences between scientific and regulatory perspectives in interpretation of evidence/risk from host association studies and (iv) the importance of appropriate risk communication in both scientific and regulatory domains. This will enable us to continue to strengthen the discipline and practice of weed biological control.

### Acknowledgements

Ideas presented in this article and talk have been strongly influenced by several seminal and significant weed biocontrol scientists in Australia and elsewhere, and through discussions with Australian regulators.



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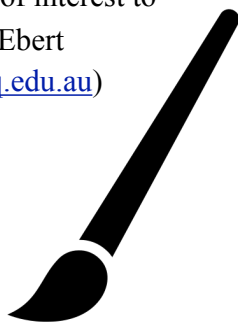
## Attention Ento-Artists!



Interested in being part of  
the  
**Perkins Insect Art  
Exhibit?**

Why not consider displaying some 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](mailto:k.ebert@uq.edu.au))



## Photo competition for a new ESQ calendar!

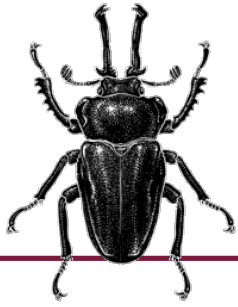
Calling all photographers of insects and their allies—ESQ is looking for the twelve best photos to show off Queensland's diverse and intriguing arthropod fauna! Twelve winners will be announced and have their images displayed at the Perkins Memorial Dinner on 8 October 2019. Images will also be compiled 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](mailto: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.*



# Entomology News

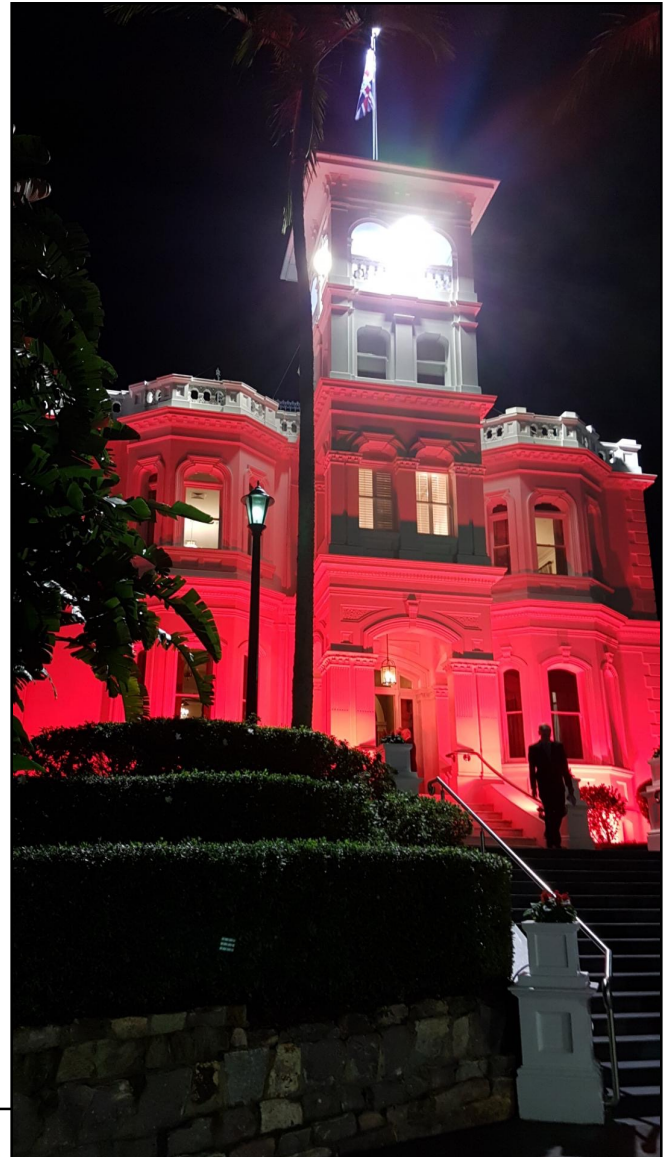
from Queensland and beyond...

## Launch of Queensland Science Network at Government House

--Mark Schutze

Mark Schutze (ESQ Vice President) and Penny Mills (ESQ Secretary) attended the launch of the Queensland Science Network (QSN) event held at Queensland Government House in the late afternoon of the 13<sup>th</sup> of June, 2019. The QSN (<https://scienceqld.org/>) is an initiative of the Royal Society of Queensland; spearheaded by the indefatigable Geoff Edwards (President); who was, incidentally, our Guest of Honour at the 2017 Perkins Dinner.

As the Royal Soc. Qld website states, “*The Queensland Science Network is an unincorporated collaboration between some 24 not-for-profit societies [including the ESQ] based in Queensland, Australia. They are all societies that collect or disseminate scientific knowledge as one of their major functions*” (<http://www.royalsocietyqld.org/initiatives/scienceqld/>), with one of the primary aims of the group being to educate and instill a broader



appreciation of the sciences amongst the general public and to those who have the power to promote scientific endeavours of all variety.

The QSN was officially launched by the Governor of Queensland, His Excellency the Honourable Paul de Jersey



AC, who delivered a wonderful speech as the Patron of the Royal Society of Queensland. The full transcript is accessible here: <https://www.govhouse.qld.gov.au/the-governor-of-queensland/speeches/2019/june/launch-of-the-queensland-science-network.aspx>.

Geoff Edwards, President of the Royal Soc. Qld followed with a likewise speech, and then presented awards to those who have been instrumental in bringing the QSN to where it is today.

There was an opportunity to mill about with drink and canapés in (each) hand after the formalities; as Mark and Penny mingled amongst the 50 or so guests in the room, including Queensland's Chief Scientist Paul Bertsch, and Jim Thompson, the CEO of the Queensland Museum, amongst others. Penny and Mark took every opportunity to spruik the ESQ and its activities.

A notable highlight of the evening was the display of the very first volume of the Proceedings of the Royal Society of Queensland (1884)—perched atop the Governor's piano—which includes some remarkable notes in the Inaugural Address (by the Hon. A.C. Gregory C.M.G., F.R.G.S., M.L.C.); including one expounding the relative virtues of steam power *vs* new-fangled electricity; another musing on the thickness of the Earth's atmosphere. To enjoy the full volume, including its several wonderful articles, look it up here in *electronic* (not steam!) form: [http://www.royalsocietyqld.org/wp-content/uploads/documents/Proceedings/PRSQ\\_1884\\_VOL\\_1-1.pdf](http://www.royalsocietyqld.org/wp-content/uploads/documents/Proceedings/PRSQ_1884_VOL_1-1.pdf)

Overall, the evening was a most enjoyable event, and our membership of the QSN represents an excellent opportunity for all of us to further engage with the broader 'Qld scientific society scene'—and all members are encouraged to engage with the QSN to promote science, education, enlightenment, and—of course—insects!

And finally, a hearty congratulations to Geoff Edwards and the Royal Soc. Qld for developing the network – an endeavour sorely needed now, perhaps more than ever in this day-and-age of general (misguided) mistrust of science and those who promulgate it.

---

## ***Gonipterus* in Queensland: documenting diversity and distribution – an update**

***--Natalia Medeiros de Souza***

Last time I reported about my ESQ Small Grants project (ESQ Bulletin, Volume 46, Issue 9) I was about to take my weevils all the way to ANIC and have a look at them along with Dr Rolf Oberprieler, a specialist in the Curculionidae. After two-and-a-half weeks of intense work, dissections, comparison of weevils and their genitalia, I can only reaffirm this is indeed an intriguing genus!

In total, I took with me 165 specimens of my own collections, most of which were dissected and pinned; some of them with tentative species determination, some of them completely undetermined. Thanks to Susan Wright and Justin Bartlett, from the Queensland Museum (QM) and Queensland Department of Agriculture and



Working desk at ANIC with many pictures of (weevil) genitalia hanging for reference.



Rolf and I looking at one of the many drawers dedicated to *Gonipterus* at ANIC.

Fisheries, respectively, loans from both institutions were waiting for me at ANIC to include in the work. At ANIC itself I was able to check more specimens from within and outside of Queensland and most of the type specimens for described species of *Gonipterus*.

The most reliable current method for distinguishing *Gonipterus* species is through comparison of the male genitalia, that is, the shape, size and characteristics of the aedeagus and its internal sclerites. In the weeks leading up to my trip, I prepared my specimens by carefully extracting parts I needed and pinning them to be ready for examination once I arrived at ANIC. I had already also grouped the specimens according to what I thought was their species, whether described or not, including some females. After all that was prepared and the specimens went through appropriate procedures to enter ANIC, I could then start the fun part of the work: identification.

Because Rolf has been dealing with these weevils for a while now, many of the relevant species I needed to look at had already been skillfully dissected. I set up camp and started by organising the non-dissected museum specimens according to their location of collection (which I documented as well) or external morphology, to later compare with the ones I had collected myself. Because these are museum specimens, I wanted to avoid as much as I could dissecting any of them, dissecting mine instead.

The findings after looking at a couple of hundreds of weevils are fantastic! The first important one is that although not well documented in formal publication or databases, *Gonipterus* weevils can be found all over eastern Queensland, extending their distribution all the way to Batavia Downs, which is almost as north as you can get in the state. This means a significant extension not only in the geographical range of the genus, but possibly in the microclimates they are adapted to and their ecological interactions with other organisms, including host plants and natural enemies.



*Gonipterus ferrugatus*, one of the beautiful weevils from Queensland.



We found that at least seven out of the 21 currently described species of *Gonipteris* occur in Queensland alone. The rest of them...well, it is not that simple. We found at least eight undescribed species; three of them had already been recorded and were in the process of description by Rolf, the rest of them, however, had not been recorded before. We also found out that some of the described species are probably going to have to be split into two or three to reflect what we have observed upon dissection and careful comparison of many specimens.

The work is not done yet! All this new, exciting information is currently being put together to be published, including the description of the new species found in Queensland. As you can imagine, most of the work now includes taking detailed measurements of specimens and taking good quality photographs to ensure we have the best possible descriptions to be used by taxonomists, forest managers, and enthusiast amateurs.

This work has filled the gap in knowledge we had about the diversity and range of distribution of *Gonipteris* in Australia. I must point out, however, that this is just the beginning. As in Queensland, other areas in Australia might have a broader diversity of species; although these areas were more extensively surveyed in the past, the use of different techniques such as observation of internal morphology, not only external, might reveal that



Many *Gonipteris* species do not have any characteristic external patterns.

there is much more out there than meets the eye.

I would like to finish by thanking the Entomological Society of Queensland for the opportunity of doing this work through the Small Grants Award. It has been a fascinating journey!

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## An Invitation

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!



Join us as we celebrate

Entomology!

Biennial Perkins Memorial  
Dinner - Tuesday evening,

8 October 2019



# Announcements

## *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](mailto:secretary@esq.org.au) before **Monday, September 2nd at 5pm.**

Questions? Contact the secretary, email above.



## *Can you identify this insect?*

One of our student members has submitted photos and asked for help with identification. Joel Johnson, from Central Queensland University, sends us a photo of what he believes to be a weevil larva covered in frass. He observed it on *Eucalyptus populnea* saplings in Central QLD. He is wondering if other ESQ members have observed this or anything similar in the field. If you can help, contact Joel ([joel.johnson@cqumail.com](mailto:joel.johnson@cqumail.com)).

## **HELP WANTED**

Dr James Nicholls from CSIRO/ANIC is looking for people able to collect hoop pine cones in search

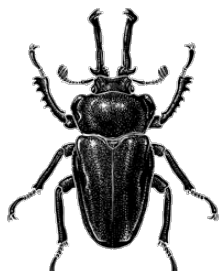
of *Austrocynips* wasps which parasitise Oecophorid moths breeding in the cone. Not much is known about the biology and life cycle of the wasp, though emerged specimens have been more commonly collected in late winter/spring. The specimens of both wasp and moth host are to be used for ongoing phylogenetic studies on the wasps and moths. If you can assist James in any way please contact him on 02 6246 4034 OR [james.nicholls@csiro.au](mailto:james.nicholls@csiro.au)



*Austrocynips mirabilis* \*

Length: 4 mm

\* specimen damaged; usually fully winged



# Diary Dates for 2019

Meetings held on the second Tuesday  
of the respective month

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

## SOCIETY SUBSCRIPTION RATES

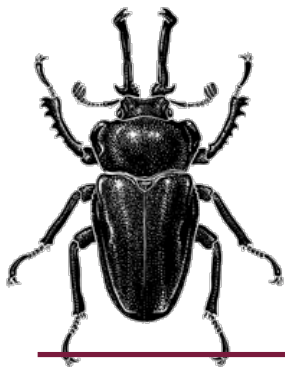
<b>GENERAL</b>	Person who has full membership privileges	<b>\$30pa</b>
<b>JOINT</b>	Residents in the same household who share a copy of the <i>News Bulletin</i> , but each otherwise have full membership privileges.	<b>\$36pa</b>
<b>STUDENT</b>	Student membership conveys full membership privileges at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

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# Entomological Society of Queensland



Notice of next meeting:

*Tuesday, 10 September 2019, 1:00 pm*



## *“The Queensland Museum Collection - What we hold and why”*

*presented by*

***Susan Wright***  
*Collection Manager*  
*Queensland Museum*

**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>*

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Deadline Friday, 13 September 2019.

Send your news/stories/notices to the editor at: [k.ebert@uq.edu.au](mailto:k.ebert@uq.edu.au)