Entomological Society of Queensland

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Entomological Society of Queensland

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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.*

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Entomological Society of Queensland

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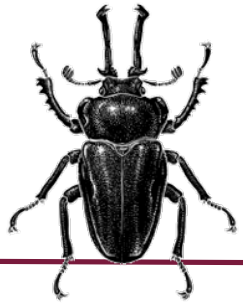
The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. The Society promotes liaison among entomologists through regular meetings and the distribution of a *News 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 12th, 2018

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

Meeting open: 1:06 pm

Attendance (43):

Members (33): Mike Muller, Mark Schutze, Greg Daglish, Des Foley, Rachel McFadyen, Don Sands, Kathy Ebert, Francesca Strutt, Andrew Hayes, Melissa Starkie, Jane Royer, Justin Cappadonna, Bernie Franzmann, Geoff Monteith, Kerri Moore, Shannon Close, Graham Forbes, Michael Barnett, Natalia Medeiros de Souza, Brogan Amos, Andrew Maynard, Penny Mills, Nadine Baldwin, Colleen Foelz, Chris Lambkin, Richard Zietek, Brendan Trewin, Rebekah Wright, Lui Lawrence-Ranggar, Claudia Schipp, Liam Bromley, Matt Krosch, Vivian Sandoval

Visitors (10): Dean Beasley, Quinton Dell, Colin Harris, Linda Clarke, Thelma Peek, Nicole Forrest, Vivian Rivon-Florez, Kumaran Nagalingam, Tracey Steinrucken, Brendan Missenden

Minutes: The minutes of the last meeting were circulated in News Bulletin 46[3] May 2018. Moved the minutes be accepted as a true record: Christine Lambkin; Seconded: Penny Mills; Carried: All.

Nominations for membership approved by council:

General Members:

1. Gordana Rasic
2. Geoff Williams AM

Student Members:

None.

General Business:

Mike Muller (President) announced the Small Grant Scheme Winner: Natalia Medeiros de Souza, for her project on Australian *Gonipterus* weevil taxonomy.

Main Business:

'Notes and Exhibits' including:

Melissa Starkie, who is one of the joint winners of this year's ESQ Student Award, presented on her honours research topic of "*Is ITS barcoding an effective tool for use in tephritid fruit fly diagnostics?*"

Christine Lambkin provided an update on the ESQ Insect Collecting Permits

Vivian Sandoval-Gomez told us all about fungus beetles (Family Ciidae).

Mark Schutze provided a vote of thanks to all speakers.

Next meeting: 14th of August: *"Life down under: evolution and conservation of Australia's trap door spiders"* presented by Mike Rix.

Meeting closed: 14:30.

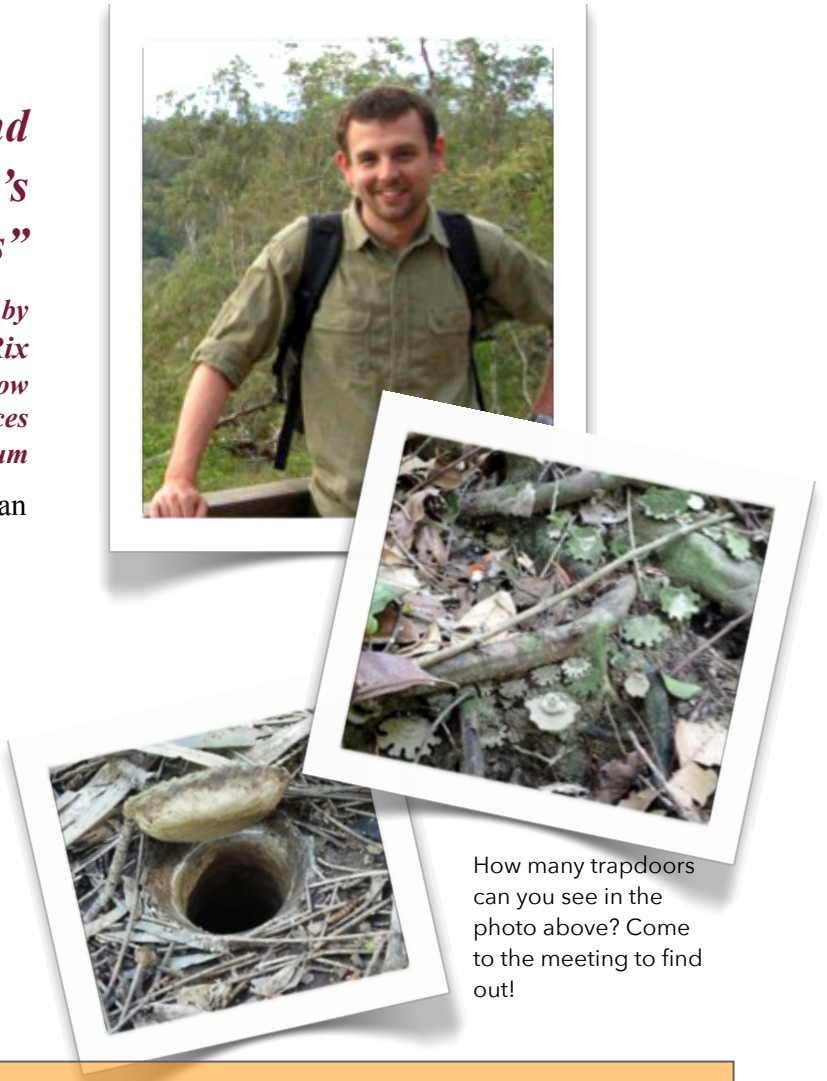
A green shield bug (*Glaucias amyoti* (Dallas, 1852)) enjoys a bit of winter sunshine (Photo: K. Ebert).

At our next meeting...

"Life Down Under: evolution and conservation of Australia's trapdoor spiders"

presented by
Dr Mike Rix
ABRS Research Fellow
Acting Head of the Biodiversity & Geosciences Program, Queensland Museum

Trapdoor spiders (infraorder Mygalomorphae) are an iconic component of the Australasian ground-dwelling spider fauna, increasingly renowned for their longevity, cryptic fossorial life history, biogeography and conservation significance. The Australian fauna is remarkably diverse and highly endemic, and recent research across a number of trapdoor spider families has provided important insights into their phylogeny, biogeography and taxonomy. In this talk I will summarise recent advances in our understanding of mygalomorph spider evolution and conservation, and highlight exciting avenues for future research.



How many trapdoors can you see in the photo above? Come to the meeting to find out!

About Mike:
Dr Mike Rix is an ABRS Research Fellow and currently Acting Head of the Biodiversity and Geosciences Program at the Queensland Museum. After completing his undergraduate and Honours degrees at the University of Queensland, Mike was awarded his Ph.D. from the University of Western Australia in 2010, for his work on the Gondwanan micro orb-weaving spiders of the family Micropholcommatidae. He has since completed an ABRS-funded post-doc at the Western Australian Museum on Australia's assassin spiders (family Archaeidae), and in 2012 was awarded an Australian Postdoctoral Industry Fellowship at the University of Adelaide, funded under the ARC Linkage scheme. This research focused on the evolution, biogeography and conservation biology of Australian idiopid spiny trapdoor spiders, using next-generation sequencing methods for phylogenetic inference. Since late 2015 Mike has been employed as an ABRS Research Fellow in the arachnology section at the Queensland Museum, where he maintains an active research programme in trapdoor spider systematics. He has a particular research interest in southern-temperate and Australasian spiders, and in the systematics, biogeography and conservation of terrestrial invertebrates, and has described over 200 species in eight families.

Tuesday 14 August at 1 pm

Seminar Room at EcoSciences. Tea & coffee following.
All welcome!

Is ITS barcoding an effective tool for use in tephritid fruit fly diagnostics?

Presented by
Melissa Starkie
Joint Student Award Winner 2018
currently a PhD student at
Queensland University of Technology

President Mike Muller presented Melissa with her Student Award at the June ESQ meeting.

The Tephritidae family consists of some of the most species-rich and agriculturally destructive fruit fly species (Norrbom, 2004; Plant Health Australia, 2011). Fruit flies have the potential to cause substantial economic losses in the form of produce damage, imposed trade embargoes and costly management strategies (Sutherst, Collyer, & Yonow, 2000). Management of species is often impeded by a lack of adequate morphological and molecular identification techniques, as many of the characters used are homoplasious (Kipling, Mischler, & Wheeler, 2005).

This study was based on previous work which found that only DNA sequence at the *ITS1* (internal transcribed spacer region 1) locus was able to discriminate between two key pest species in the *Bactrocera dorsalis* (Hendel) species complex (see figures below) (Boykin et al., 2014). The aim was to broaden the sample size of previous work and assess the potential of *ITS1* as a molecular diagnostic tool, and an alternative to the popular mitochondrial barcode; *COI* (*cytochrome c oxidase subunit I*).

A total of 71 *Bactrocera* Macquart and *Zeugodacus* Hendel species were sequenced in this study. We tested both general *ITS1* sequence variation and specific insertions-deletions (indels) for delimiting species boundaries, with comparisons made between *COI* and *ITS1* phylogenies. Key findings of the study included: higher nodal support present within *COI* phylogenies when compared with *ITS1* and greater resolution of deeper nodes also present within *COI*. Removal of two key indels from the *ITS*1 alignment did not greatly impact upon the inferred phylogenies, genus-level relationships were well supported; however, there was less resolution of tip relationships. Moreover, indels themselves did not provide a method of distinguishing species via a character versus gap-character count because numerous biological species exhibited identical character to gap-character ratios. Overall, mean genetic distance and pairwise distances revealed low intraspecific variation within *ITS1* compared to *COI* and higher interspecific differentiation of *COI* relative to *ITS1*.

It was concluded that after sampling a larger proportion of *Bactrocera* and *Zeugodacus* that *ITS1*

Fig. 1: Two morphologically similar pest species that were previously indistinguishable molecularly. Left: *Bactrocera carambolae* Drew and Hancock, right: *Bactrocera dorsalis* (Hendel) (Plant Health Australia, 2018).

is not as effective as *COI* at distinguishing among species, and is therefore not a suitable diagnostic marker for extensive use on tephritids. *ITS1* remains useful for diagnosing key pest species within the *Bactrocera dorsalis* species complex and establishing genus-level relationships, but the search for a more effective tephritid barcode continues.

References

Boykin, L. M., Schutze, M. K., Krosch, M. K., Chomic, A., Chapman, T. A., Englezou, A., Cameron, S. L. (2014). Multi-gene phylogenetic analysis of south-east Asian pest members of the *Bactrocera dorsalis* species complex (Diptera: Tephritidae) does not support current taxonomy. *Journal of Applied Entomology, 138*(4), 235-253.

Kipling, W. W., Mischler, B. D., & Wheeler, Q. D. (2005). The perils of DNA barcoding and the need for integrative taxonomy. *Systematic Biology, 54*(5), 844-851.

Norrbom, A. L. (2004). Updates to the biosystematic database of world Diptera for Tephritidae through 1999. *Diptera data dissemination disk, 2* [CD].

Plant Health Australia. (2011). *The Australian Handbook for the identification of Fruit Flies. Version 1.0*. Canberra, ACT: Plant Health Australia.

Plant Health Australia. (2018). Fruit fly identification Australia. Retieved from http://fruitflyidentification.org.au/

Sutherst, R. W., Collyer, B. S., & Yonow, T. (2000). The vulnerability of Australian horticulture to the Queensland fruit fly, *Bactrocera (Dacus) tryoni*, under climate change. *Australian Journal of Agricultural Research, 51*(4), 467-480.

President Mike Muller presented Perry Bennion with his Student Award in July while Perry was visiting Brisbane. Perry currently resides in London and helps out at the London Museum of Natural History and with London Zoo educational programs.

Podomyrma *ants and their* Psydrax *hosts, and assessment of their nest associates in eastern Australia*

Written by
Perry Bennion
Joint Student Award Winner 2018
completed Honours at
The University of Queensland

Ant-plant associations are widely studied around the world to understand the evolution and ecology of mutualistic relationships. In these relationships, plants provide protected nesting sites, food and foraging grounds to varying degrees, whilst ants can provide the plant with protection from a range of threats including leaf eaters, sap-suckers and epiphytes. The increasing use of chemical methods has made it increasingly apparent that many of these plants can also gain nutrition from detritus and excrement left by the hosted ants. While these relationships are found around the world, published records in Australia are currently limited to three epiphytic plant genera restricted to tropical Queensland and *Podomyrma* ants occupying swollen internodes of *Psydrax odorata* (previously *Canthium* spp.) in four locations in southeastern QLD (Gullan and Stewart, 1996). This final interaction is the focus of my research.

The *Psydrax-Podomyrma* interaction is a particularly interesting one in which *Ps. odorata* produces swollen internodes which the ants hollow out to produce a nest. Within these nests ants tend trophobiotic mealy bugs and *Torarchus endocanthium* (Hemiptera: Coccidae: Myzolecaniinae) the latter of which has only been recorded from *Podomyrma* nests in *Psydrax*. While initially reported over 30 years ago, the *Podomyrma* ants associated with *T. endocanthium* are not currently described due to difficulties arising from large morphological variation within these ants and have been assigned the working name *Podomyrma* sp.1.

Perry conducting fieldwork in Tamworth, NSW, with *Psydrax odorata f. australiana*

As current knowledge of this interaction is extremely limited, the main aim of this research was to provide a foundation for understanding the participants involved and their distribution. This was broken into four questions; 1. How many species of *Podomyrma* nest in *Ps. odorata*? 2. Is *Po.* sp. 1 a single species? 3. Is *Po.* sp. 1 host specific? and 4. What other organisms are found within the *Psydrax-Podomyrma* interaction?

To investigate these questions, *Psydrax* from the east coast of Australia were identified, and samples taken from plants, ants and associates when nests were present in swollen internodes. Genetic material was extracted and sequenced from both plants and

ant inhabitants to determine how many species are involved in this interaction. Species hypotheses were tested against a biological species concept using reciprocal monophyly of four genes (two mtDNA, one rDNA and one nDNA) under different evolutionary pressures to determine whether interbreeding was taking place.

Interpretation of the analyses was that three species of *Podomyrma*, as well as ants from two other genera (*Crematogaster* and *Camponotus)* were found inhabiting swollen internodes of plants identified as *Ps. odorata*. No evidence was found to suggest that *Po.* sp. 1 is comprised of more than a single species. The *T. endocanthium*-associated *Po.* sp. 1 was also found to be the most widespread and frequent inhabitant, while a currently undescribed species of *Alecanopsis* (Coccidae: Myzolecaniinae) was found only in nests of *Crematogaster* spp.

Within swollen internodes occupied by *Po.* sp. 1, nematodes, mites, fungi, and fly larvae (Chloropidae) were sometimes recorded, predominantly within debris piles. Further work is required to identify these organisms to lower taxonomic rank.

The known geographical range of the interaction has been extended north to Cairns, QLD and south to Tamworth, NSW, but *Po.* sp. 1 was not found to be as widespread as its host, *Ps. odorata*, which has a distribution extending south to the Hunter Valley (NSW) and into central NSW.

While this investigation provides a basis, further work is required to fully understand the extent of the interaction, identify the taxa involved, and investigate the ecology and roles played by all organisms within this interaction.

References

Gullan, P. J., and A. C. Stewart. 1996. A new Genus and Species of Ant-Associated coccid (Hemiptera: Coccidae: Myzolecaniinae) from *Canthium* Lam. (Rubiaceae). Memoirs of the Queensland Museum **39**:307–314.

Who are, where are and why study minute tree-fungus beetles? (Coleoptera: Ciidae)

Presented by Vivian Sandoval
Senior Research Technician
University of Queensland

The minute tree-fungus beetles (Coleoptera: Ciidae) are the most abundant and diverse group of mycetobiont coleopterans, feeding on basidiomes of polypore macrofungi (known as bracket fungi or shelf fungi). They present an obligatory association with the fruiting bodies, where larvae and adults depend on this resource as habitat, food, shelter, and a place for oviposition. After some weeks or months, depending on the size of the fungi, the internal hard tissue of the fruiting body is consumed by the beetles, leaving only the external parts of the pileus and stipe plus a lot of frass (Fig. 1). They are important recyclers of nutrients stored in the fruiting bodies. Without the action of the ciids, the fungi could last several years or even decades without suffering any degradation, being an inaccessible reservoir of important nutrients.

Ciids are very small, varying in size from 0.5 mm to 7.0 mm. The largest species, *Xylographus hypocritus*, is endemic to Madagascar and the smallest is an undescribed species of *Cis*, also from Madagascar (Fig. 2). Most of them range from dark brown to blackish, shiny or opaque, hairy or glabrous, with or without spots. Their body is convex, varying from round to elongated in shape. They can have horns, protuberances or lamellae on the head or pronotum which are more common in males.

Ciidae contains two subfamilies, three tribes, 52 genera and 725 described species. The diagnostic

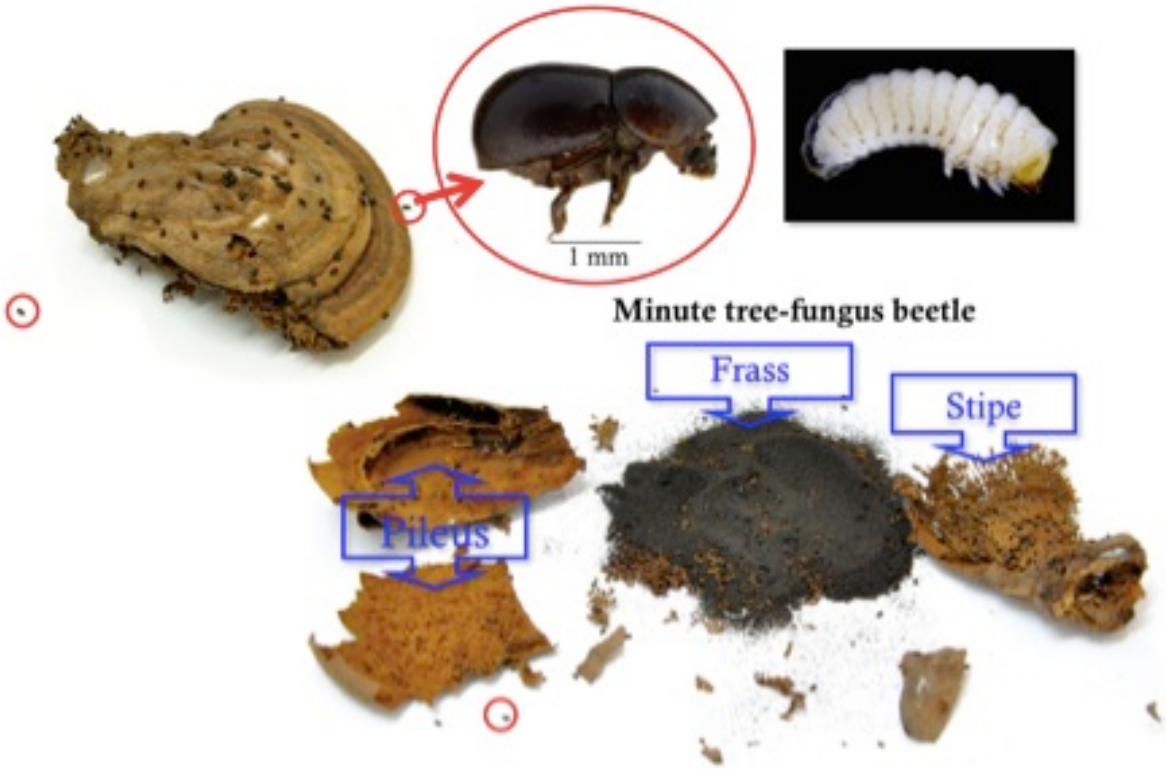


Figure 1: The bracket fungus *Ganoderma* sp. being consumed by adults and larvae of minute tree-fungus beetles of the genus *Xylographus*. Photos: C. Lopes-Andrade, 2013.

characters are: (i) antennae with 8-10 antennomeres; (ii) antennal club formed by three antennomeres; (iii) four sensillae in each antennomere; (iv) maxillary palps with four segments; (v) labial palps with three segments; (vi) tarsal formula 4-4-4; (vii) apex of protibiae with teeth, spines or angles; (viii) five exposed abdominal ventrites; (ix) presence of a sex patch in the first ventrite, usually found in males, but with exceptions. The host fungi are members of the orders Hymenochaetales, Polyporales, and Auriculariales, known as bracket fungi, shelf fungi, polypores, crust fungi, jelly ears, horse hoof fungi, among others (Fig. 3). They can be generalists or specialists. Graf-Peters and collaborators classified them as: (i) **monophagous**, feeding on one species of fungus; (ii) **oligophagous**, feeding on several species of the same genus of fungi and (iii) **polyphagous**, feeding on several species of different genera and families of fungi. Some species have been collected in leaf litter, possibly feeding on hyphae on the leaves.

Some ciids have economic importance as they are considered pests of medicinal or edible fungi, pests of scientific collections of fungi, or can be considered invasive species. *Cis chinensis* Lawrence is considered a pest of the Asian medicinal fungus *Ganoderma lucidum*, known as "Ling-Zhi" or "Reishi". Different cases of invasive species have been reported within the family Ciidae. *Cis billamellatus* Wood is an Australian species that was introduced accidentally to southern England in the late 19th century inside herbarium samples. Now they are found in England, Scotland, Ireland and France and have been recently reported in Chile.

The Australian Ciidae have been studied for many years by Dr John F. Lawrence, who recently published his preliminary revision, reporting 22 genera and 75 species in Australia, including nine new genera and 56 new species. Presently he is finishing another manuscript describing more than 50 new species for Australia.

I have been working on systematics and taxonomy of Ciidae since 2009, focusing on the Neotropical and Afrotropical fauna, thanks to the help of my supervisor Dr Cristiano Lopes-Andrade in Brazil. Recently, I began studying and describing some groups of Australian Ciidae. I was the coauthor of a paper published this year in the Insect, Systematics

& Evolution journal with John Lawrence, Cristiano Lopes-Andrade (my supervisor), and PhD student Igor Souza-Gonçalves on the revision of the genus *Paratrichapus* Scott for Australia. I am also working on another paper on the revision of the genus *Xylographu*s Mellie in Australia.

Many people ask me why I am studying this group of tiny beetles and my response is because they are so small and nobody else wants to study them. They are amazing insects that can be used as biological models for different studies. The only thing that we need to do is collect the fruiting bodies of the fungi and sort them under the microscope. That is the reason for the lack of specimens in most museums. As most entomologists do not usually collect fungi, most of the entomological collections have few specimens of ciids. They are sometimes collected in Malaise traps, Winkler traps or by using pyrethrum, but as they are so small, most people do not have the patience to mount them and they are usually mixed with other small insects in alcohol.

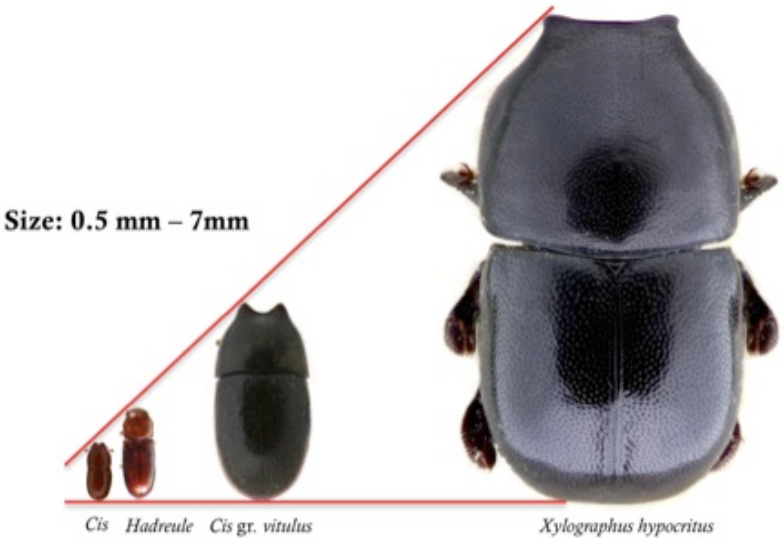


Figure 2: Comparision of the size of some species of minute tree-fungus beetles (Coleoptera: Ciidae). Photos: C. Lopes-Andrade, 2013.

They are considered ideal biological models because of: (i) high diversity and abundance; (ii) easy and cheap to collect, just go to the field with a knife and a net to avoid escapees and put them in a paper bag or plastic container (Fig. 4); (iii) the host can be "easily" quantified and identified (with the help of a mycologist, of course it will be easy); (iv) easily bred in laboratory conditions, and (v) collections take up little space.

Figure 4: Above, Vivian is observing a bracket fungus before collecting. On the left, an example of a collected fungus in a container for breeding. Photos: T. Chan, 2018 & C. Lopez-Andrade, 2013

Figure 3: Examples of bracket fungi hosts of minute tree-fungus beetles. Photos: M. Reck, 2010

Additional ESQ Requirements for QLD Collecting Permit – Why?

presented by
Chris Lambkin[1] & Simon Thompson[2]
[1]QM Entomology Curator & ESQ Permit Officer
[2]DATSIP Cape York Peninsula Tenure Resolution Program

Biological Research in Queensland's most biologically significant areas, especially those under National & State Protection (National Park (NP), State Forest (SF), NP Cape York Peninsula Aboriginal Land (CYPAL), Conservation Park, Forest Reserve), is increasingly affected by permit issues. In areas that have valid Native Title (NT) determinations, particularly on land with Post-Wik (Dec. 1996) declarations or change of use, permit applications are being blocked as Queensland Parks & Wildlife Service (QPWS) does not have the authority to grant Permits to Take, Use, Keep or Interfere (PTUKI Scientific) until there is an authorised Validation Indigenous Land Use Agreement (ILUA) or Indigenous Management Agreement (IMA). Provision of a permit would be an illegal Future Act. You do not have permission to access these areas. Even if you had consent from Native Title Holders, you are not allowed access as you still need a permit, which QPWS cannot grant.

International (UN Conference of the Parties (COP) 13, Convention on Biological Diversity (CBD) 2017), National (Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) Guidelines for Ethical Research in Australian Indigenous Studies (GERAIS) 2012), and State NP (CYPAL) requirements when working with Native Title holders and landowners will affect our ability to take specimens from areas owned, managed or co-managed by Indigenous people without greater investment in relationships and Traditional Owner support.

Chris Lambkin (QM Entomology & Entomological Society of Queensland (ESQ) Permit Officer) in collaboration with Simon Thompson (DATSIP) has been in discussion with several Aboriginal groups: Balkanu CYDC, DES, DATSIP, WTMA & QPWS especially, in Cairns 15-17 May 2018 (co-funded by QM & ESQ) concerning biological research, permits, and collection of specimens on country.

A set of protocols and procedures aligned with these requirements are being developed that both QM and ESQ biological (and potentially all) researchers should follow when working on country. By being pro-active while NP (CYPAL) IMAs and PTUKIs are being reviewed, QM & ESQ may lead the way in establishing additional protocols for researchers who come under their permits. The aim would be to significantly increase cultural understanding focusing on potential benefits for Traditional Owners, integrating their cultural aspirations, two-way communication and knowledge transfer including training in appropriate level of cultural knowledge and best scientific practice. This enhanced interaction will lead to greater satisfaction for both researchers and Traditional Owners not just for Queensland but possibly for Australia.

Background:

- About 85% of protected areas in QLD have Native Title claims or determinations. The number of valid Native Title determinations of protected areas is increasing. There is an increase in the number of other areas with valid Native Title determinations – Nature Refuges, IPA. (see DATSIP: The Cape York Peninsula Tenure Resolution Program).

- There are increased and inconsistent requirements for accessing Pre-Wik (Dec. 1996) gazetted National Parks and the associated PTUKI protocols. A NP or SF may contain both Pre- and Post-Wik areas. When issuing PTUKI, QPWS is providing maps of Post-Wik areas that are not to be accessed.

- The process can also be slow with more levels of communication required or there may be specific conditions that must be met for each area.

- The ESQ PTUKI to collect unprotected invertebrates in QLD arrived 8 June 2018 and is valid until 8 June 2021.

Of 283 protected areas in the ESQ application:

- 217 access allowed – online notification + maybe extra phone contact
- + 6 with IMA/ILUA – CYPAL + Stradbroke – extra conditions
    - Black Mountain (Kalkajaka) NP, Daintree NP and Ngalba Bulal (Cedar Bay) NP, Naree Budjong Djara (Blue Lake, Stradbroke Is.) NP, Cape Melville NP, Juunju Daarrba Nhirrpan NP, Kutini-Payamu (Iron Range) NP
- + 42 Parks **with PARTS access not allowed** – maps of **no access areas (RAA) with valid NT** provided
    - Bellthorpe NP, Blackbraes NP, Blackbraes RR, Boodjamulla NP, Conondale NP, Crohamhurst CP, D'Aguilar National Park, Dinden NP, Dularcha NP, Flat Top range RR, Girramay NP, Girringun NP, Glass House Mountains National Park, Goodedulla NP, Grey Peaks NP, Herberton Range NP, Hull River NP, Kondalilla NP, Maleny NP, Mapleton NP, Moresby Range NP, Mount Aberdeen NP, Mount Etna Caves NP, Neurum Creek CP, Paluma Range NP, Tully Gorge NP, Undara Volcanic NP, Wondul Range NP, Wooroonooran NP
    - Baldy Mountain FR, Beerburrum West SF, Booroondoo SF, D'Aguilar SF, Dinden West FR, Herberton Range SF, Kumbarilla SF, Paluma SF, Western Creek SF, Whetstone SF, Yelarbon SF.
- + 3 no access at times (school holidays, bird activity, etc)
- 3 CYPAL have no access because no response as yet (includes KULLA)
- **12 no access allowed because of NT determinations of Post-Wik gazetted lands**
    - Byfield NP, Crater Lakes NP (Lake Barrine Section), Currawinya National Park, Danbulla NP, Djiru NP, Fraser Island RA, Kinrara NP, Koombooloomba CP, Koombooloomba NP, Tully Falls NP
    - Byfield SF, Booroondoo SF.

Ethical Biodiversity Research Guidelines are being developed for QM & ESQ researchers working with Aboriginal groups. To be endorsed on this new permit you will be required to be a financial member of ESQ, an Australian Resident, and complete a new application form available on the ESQ website that includes signing an agreement to abide by the conditions and procedures relating to the permit especially the **9 ESQ protocols for access to protected areas (see below)**.

ESQ Requirements when commencing work:

1. Research field work notification form for all protected areas

Prior to commencing work, the ESQ member endorsed on the Entomological Society of Queensland Collecting Permit must COMPLETE a separate on-line Research field work notification form for each park or reserve to be entered at http://www.npsr.qld.gov.au/licences-permits/commercial/research-field-work-form.php at least 7 days (more is better, at least 3 months for CYPAL/IMA/ILUA) prior to entering the park giving actual times and proposed locations on the reserve. You are to fill out the forms with 'Christine Lambkin' under the 'Authority Holder' and YOUR name, phone number, and email address in 'Contact Details'. You are also to request a notification email to be sent to you, which you then send to Christine Lambkin.

2. Field work approval for Certain Areas.

Additional prior contact with Rangers may be required. Check the full list of parks on the ESQ Permit website for those details.

3. Additional ESQ Field work notification for parks with Restricted Access Areas (RAA).

42 parks currently have **RAA parts** gazetted Post-Wik that are **AREAS NOT TO BE ACCESSED** because of Native Title Determination. We do not have a permit that allows us access to those RAA. Even if you have consent from Native Title Holders, you cannot access those RAA parts of the park as you still need a valid permit.

For access to any protected area that has RAA parts (listed below, and on the ESQ Permit website as RAA), you will need to also send an email notice to Chris Lambkin at christine.lambkin@qm.qld.gov.au stating when and which parks you propose to access at least 7 days (more is better) prior to entering the park.

Restricted Access Areas are **parts** of these ***National Parks***:
Bellthorpe NP, Blackbraes NP, Blackbraes RR, Boodjamulla NP, Conondale NP, Crohamhurst CP, D'Aguilar National Park, Dinden NP, Dularcha NP, Flat Top range RR, Girramay NP, Girringun NP, Glass House Mountains National Park, Goodedulla NP, Grey Peaks NP, Herberton Range NP, Hull River NP, Kondalilla NP, Maleny NP, Mapleton NP, Moresby Range NP, Mount Aberdeen NP, Mount Etna Caves NP, Neurum Creek CP, Paluma Range NP, Tully Gorge NP, Undara Volcanic NP, Wondul Range NP, Wooroonooran NP

And **parts** of these **State Forests and Forest Reserves**:
Baldy Mountain FR, Beerburrum West SF, Booroondoo SF, D'Aguilar SF, Dinden West FR, Herberton Range SF, Kumbarilla SF, Paluma SF, Western Creek SF, Whetstone SF, Yelarbon SF.

Maps for each RAA reserve will be available on the ESQ website showing areas NOT TO BE ACCESSED (outlined in Blue for southern parks, in brown for others). More detailed maps are available on the National

Native Title Tribunal website through the online "Native Title Vision" (NTV) application http://www.nntt.gov.au/assistance/Geospatial/Pages/NTV.aspx through the search function (top right) to identify areas for which a Native Title Determination has been made. Applying the following map layers (blue layers bottom left) in NTV will assist visualising the overlap of National Park with areas for which Native Title exists:

- o Queensland State Layer > Non Freehold > Reserve/Park
- o Determined Outcomes

4. ESQ Field work notice for CYPAL/IMA/ILUA areas.

Check the full list of parks on the ESQ Permit website.

A. For access to any CYPAL/IMA/ILUA Park area you will need to also **send an email notice to Chris Lambkin** at christine.lambkin@qm.qld.gov.au stating when and which parks you propose to access at least 3 months prior to entering the park.

B. Special conditions apply to CYPAL/IMA/ILUA areas.

1. Provide at least 3 months' notice of field trips to the Corporation.

a. Notice includes **verbal** discussion with the chairperson of the specific Land Trust/Aboriginal Corporation

1. see ESQ website and PTUKI for contact details
2. if contact cannot be made, inform Chris Lambkin
3. if access is denied, inform Chris Lambkin
   - i. Explain you are a member of ESQ and have a valid PTUKI to access and collect invertebrates on country.
   - ii. As part of the conditions of the permit you must give notice before access.
   - iii. You are completing self-funded field work, volunteering your time and efforts to collect, identify, and provide data about invertebrates.
   - iv. Cover following issues (2-12, especially those underlined and bold) and negotiate agreements
   - v. Be prepared for questions about exactly where you need to go on country as this may determine which clans need to be informed
   - vi. Explain that field work generally does not produce immediate results. Collections take time and expertise to sort & identify. Only 25% Australian invertebrate species described. Much of the work is very long term – 10-20 years.

b. All agreements must be with the chairperson of the specific Land Trust/Aboriginal Corporation who provides contact details for those on country.

- i. Just having the OK by 'someone' from country is not enough – the chairperson knows whether all necessary clans have been informed
- ii. Prior agreements with what happens in the case of Sorry Business
- iii. Communication methods (e.g. Satellite phone) established with those on country so that last minute problems (e.g. car) can be explained

c. Record names and contact details, check spelling.

d. Record agreements (verbal and written)

e. Confirm using email if possible, cc to Chris Lambkin.

f. Report to Chris Lambkin outlining names, contact details, agreements.

2. **Make at least one (often two) seat available for a Traditional Owner to accompany the permittee on each field trip.**
    a. Sometimes difficult with amount of gear, multiple people in vehicle already, some vehicles no extra seats available, multiple days, camping remote.
    b. Suggest that interested Aboriginal groups, Aboriginal Rangers, Junior Rangers accompany you in their vehicles – allows flexibility, covers OHS, allows multiple persons to be trained. Problem -often no resources.
    c. Explain timing of field work needs to be determined by the methods being used and the creatures being captured
    d. If Traditional Owner or Aboriginal Ranger does not arrive within ½ hour of prior arranged time, then prior agreement that work goes ahead anyway
3. **Suggest that you are prepared to provide in-kind payment by training Aboriginal Rangers and interested Aboriginal groups that accompany you about World's best scientific practice**
    a. provide training through demonstration and explanation of methods (what you do, why you do it, demonstrate best scientific practice, data collection and data management i.e. knowledge transfer)
4. **Suggest that you will give a short presentation about your work to a local group nominated by the Corporation.**
5. Not enter any area in the NP (CYPAL) at any time that it is closed by the Corporation or the State for cultural reasons.
6. Not enter a Corporation Exclusive Use Area without express permission in writing from the Corporation.
7. Not enter any sensitive area specified by the Corporation.
8. Follow minimal impact camping and weed wash-down procedures.
9. Not copy or retain any keys required for access to the research area (keys must be returned to the ranger station immediately after the field trip)
10. **Provide the Corporation *and Chris Lambkin* with a 100 word plain language summary report within 12 weeks of access** which should include:
    a. outlining invertebrate groups collected, numbers of specimens and species, any significant findings – range extensions, potential new species, unusual taxa
    b. acknowledging by name the Corporation, Traditional Owners, Rangers, individuals, and clans that accompanied and helped
    c. direct to each of the Aboriginal groups concerned
        i. with a request to check acknowledgements and spelling
11. **Acknowledge the Corporation and Traditional Owners in any publication arising from the research, and provide the Corporation and Chris Lambkin with a copy of each publication.**
12. Not carry out, or allow others to carry out, additional research or development for commercial purposes on any genetic resources or biochemical compounds comprising or contained in the natural resources unless a benefit-sharing agreement has been entered into with the Corporation.

5. Nine ESQ protocols for access to protected areas.

Any interaction with Aboriginal groups on any protected area should follow the nine ESQ protocols listed below. To be endorsed on the ESQ PTUKI **you will be required to sign an agreement with these 9 protocols** on your application.

1. **Be respectful and negotiate** through discussion
   - i. **Acknowledge** the Traditional owners of the lands where we live and work, and recognise their continuing connection to land, water and community
   - ii. **Pay respect** to Elders — past, present and emerging
   - iii. Acknowledge the important role Aboriginal and Torres Strait Islander people continue to play within the community
2. **Explain you are a member of ESQ and hold a valid PTUKI** to access and collect invertebrates
   - i. You are completing self-funded field work, volunteering your time and efforts to collect, identify, and provide data about invertebrates.
   - ii. You have been given maps of RAA (Restricted Access Areas) for many parks that you are not allowed to access. Ask are you within a RAA? If so, leave.
   - iii. Ask are you in a sensitive area or area closed for cultural reasons? If so, leave.
3. **Suggest that interested Aboriginal groups accompany you** in their vehicles
4. **Suggest that you are prepared to train interested Aboriginal groups** that accompany you about World's best scientific practice
   - i. provide training through demonstration and explanation of methods (what you do, why you do it, demonstrate best scientific practice, data collection and data management i.e. knowledge transfer)
5. **Record** names and contact details, check spelling.
6. Record agreements (verbal and written)
7. Record exactly where you are (GPS, park name).
8. **Provide interested Aboriginal groups *and Chris Lambkin* with a 100 word plain language summary report within 12 weeks of access, which should include:**
   - i. outlining invertebrate groups collected, numbers of specimens and species, any significant findings – range extensions, potential new species, unusual taxa
   - ii. acknowledging by name the Corporation, Traditional Owners, Rangers, individuals, and clans that accompanied and helped
   - iii. direct to each of the Aboriginal groups concerned
     - a. with a request to check acknowledgements and spelling
9. **Report to Chris Lambkin** outlining names, clans, time, exact place (GPS) and any issues as soon as possible.

A message from the Treasurer

Membership subscriptions were due 1st January 2018. ESQ has 381 Paying Members (including 14 Student Members free for first year): 273 (72%) had paid by 31st May 2018. Many thanks to those of you who have paid already. If you have not paid, a Membership Renewal Form is available at http://www.esq.org.au/ . If you aren't sure if you've paid, please contact me via **secretary@esq.org.au**.

Brenton Peters, Honorary Treasurer

Entomology News

from Queensland and beyond...

The ESQ Small Grants Scheme

ESQ Council initiated the Small Grants Scheme in 2017 to further encourage entomological research and study, especially in our wonderfully diverse state of Queensland! We see this as an excellent way to reinvest Society resources into our membership community, providing support to undertake a project that advances our understanding of the amazing insect world that surrounds us. Projects can be anything related to entomology, including targeted collecting trips, visits to museums or other institutions, ecological, physiological or behavioural studies, or even work that's more applied and in the agricultural or medical fields.

Gonipterus scutellatus. Photo: Wikimedia Commons

In 2018, eight applications were received and assessed by Council's selection committee. The outcome was announced at the Notes and Exhibits meeting on 12 June and this year's winner is Natalia Medeiros de Souza. Natalia is currently enrolled in a PhD at the University of the Sunshine Coast where she is studying *Gonipterus* beetles, a genus of weevils native to Australia where over 20 recognised species can be found associated with eucalypts. Some of these species are recognised pests in commercial plantations, both in Australia and overseas. Despite their importance, the diversity, abundance and distribution of species is largely unknown, and a recent study has identified a number of them to comprise a cryptic species complex.

Natalia will use the grant to support travel to the ANIC in Canberra where she will access reference material and work with Dr. Rolf Oberprieler, a specialist in their taxonomy. Her studies include examination of eucalypt-*Gonipterus* – egg parasitoid associations in Queensland, where in-depth field surveys have not previously been conducted. Accurate identification of the weevils includes morphological observations under the microscope, dissection of male genitalia (the only reliable identification method for weevils within the "*scutellatus*" complex), and comparisons with catalogued specimens and literature descriptions. This will lead to molecular phylogenetics studies and investigation of cuticular hydrocarbon profiles as a potential diagnostic tool. One of the expected outcomes of this project is a detailed list of species of *Gonipterus* that occur in south-east Queensland that can be associated with egg parasitoids and their host ranges.

Congratulations Natalia!

ESQ President Mike Muller presents the Small Grants award to Natalia Medeiros de Souza at the June meeting.

Paul Brock receives two famous medals

Paul Brock, on right, receives the Stamford Raffles Medal in London on June 12 from Sir John Beddington, President of the Zoological Society of London.

Paul Brock lives in the New Forest in England but is almost an honorary Australian because of his numerous field trips to Australia to collect and study our phasmids. His well known CSIRO book, *The Complete Field Guide to Stick and Leaf Insects of Australia,* and numerous more formal papers on Australian phasmids have made our fauna accessible to the many enthusiasts who keep and study them. Congratulations to Paul on recently being awarded the prestigious Stamford Raffles Medal from the Zoological Society of London for his lifelong contribution by "amateur zoologists or professional zoologists for work outside the scope of their professional activities". Paul is also off to the European Congress of Entomology in Naples in July to receive the John Obadiah Westwood Medal which is awarded every two years for "the best comprehensive taxonomic work on a group of insects". He receives it jointly with three other authors for the paper: Revision of the Oriental subfamily Heteropteryginae Kirby, 1986, with a re-arrangement of the family Heteropterygidae and the descriptions of five new species of *Haaniella* Kirby, 1904. (Phasmatodea) *Zootaxa 4159: 1-219*. This medal is awarded by the Royal Entomological Society of London and has been won in recent years by Australians Marianne Horak (2010) and Adam Slipinski (2016, with Hermes Escalona).

Australian Honours to Geoff Williams

Geoff Williams OAM AM in the field at Barrington Tops.

Congratulations to one of our most recent new members, Dr Geoff Williams of Lansdowne, near Taree in NSW, on being awarded an AM (Member in the general Division) in the Queens Birthday list of Australia Honours in June. It builds on an earlier OAM Honours Medal received about 2002. Geoff is cited for significant service to conservation and the environment as an ecologist, biologist, author and wildlife refuge custodian. He has published widely on jewel beetles, dung beetles and pollination and holds a PhD (UNSW) for work on pollination in lowland vegetation remnants. He has published several books, including *The Flowering of Australian Rainforests* and *Hidden rainforests: Subtropical rainforests and their Invertebrate Biodiversity.* He made a major contribution to supporting the successful nomination of the Gondwana Rainforests of Australia World Heritage Area by putting together an enormous annotated compilation of insect and other invertebrate records from the region. He is best known for his work towards the protection and management of small rainforest remnant patches in northern NSW and lives on his own private Lorien Wildlife Refuge he has developed and restored inland from Taree. He is a long-standing Honorary Research Associate in entomology at the Australian Museum and also serves as Advisory Scientist on the NSW Scientific Committee of the Department of Environment and Heritage.

The First Australian Native Bee Conference

by Shannon Close

The first of July saw the inaugural Australian Native Bee Conference held on the Gold Coast. The event was organised by Tim Heard and saw 200 of the nation's top native bee experts, enthusiasts and agriculturalists gather for a jam-packed event. The opening event was a special ceremony presented by Moondarewa, Inc. (Fig. 1). Presentations covered a vast array of topics including pollination services, bee pests and diseases, new hive design, ecology, and dietary requirements of bees. Stingless and solitary bees were represented to an equal extent.

Ten students took part in a hotly-contested 3 Minute Thesis competition with ESQ member, James Dorey from Flinders University (Fig. 2) and Samantha Redshaw formerly of University of Queensland sharing the victory.

During breaks, delegates were treated to a variety of trade exhibits. The Entomological Society of Queensland was represented with a stall run by Julianne Farrell and Geoff Monteith (Fig. 3). A pinned display of Australia's diverse native bees successfully attracted new society members.

The conference was backed up the following day by a field trip, exploring the use of stingless bees in the local agricultural industry (Fig. 4.).

Fig. 1. The conference was officially opened with a Welcome to Country smoking ceremony, and the Native Bee Creation dance presented by Moondarewa Inc. (Photo: James Dorey).

Fig. 2. Above: James Dorey is studying speciation in *Homalictus* as part of his PhD at Flinders University. He shared the honour of winning the day's 3 Minute Thesis competition with Samantha Redshaw who recently completed her Master of Agricultural Science at University of Queensland.

Fig. 3. Left: Geoff Monteith and Julianne Farrell represented ESQ with a display that premiered the latest addition to the ESQ poster series 'Entomological Society of Queensland History' and 'Agricultural Entomology' compiled by Geoff Monteith and Kathy Ebert.

Fig. 4. On day two, delegates braved the weather to learn about the use of stingless bee pollination in local agricultural systems. Tim Heard (left) discussing a hive shelter that can accommodate multiple bee colonies for efficient pollination services; Tobias Smith (right) demonstrated how a *Tetragonula carbonaria* hive is split. (Photos: James Dorey)

Killing Jars and Killing Agents

by David Rentz

Fig. 1. Glass "Moccona" jars (above) have lids (right) which are useful for holding killing agent.

Every so often it is helpful to review killing agents and see what alternatives could be used. Recently I discovered an alternative use for a common household jar that can serve as an excellent killing jar.

Killing Agents

Most entomologists probably concede that potassium cyanide is the ideal killing agent. It can be kept dry and does not affect the wings of moths. However, if vespids and some other insects are left in the jar too long they discolour, a condition called "overcyanideitis". With the restrictions now associated with air travel, it is too risky to board an aircraft with cyanide.

Recently I have been using Ammonium Carbonate $(NH_4)_2\ CO_3$ to kill insects. This chemical is the "smelling salts" of the boxing trade. It is freely available and not as dangerous to humans as other killing agents. Whether you can take it aboard an aircraft, I do not know but I think there is a better chance with this than with potassium cyanide! I have been using it for the past several years and find it extremely effective. The catch can be kept dry if tissues are replaced from time to time. Green insects,

such as katydids and mantids, retain their green colour if removed within a few hours of killing. I have left the insects in the jars overnight and the green colour generally does not change. And very importantly *stick insects do not lose their legs* if killed in Ammonium Carbonate. And as long as the tissues are dry, moths can be successfully killed this way. Beetles, wasps and other insects are not adversely affected with Ammonium Carbonate. In addition, insects killed in Ammonium Carbonate seem to be less attractive to pests such as book lice, ants, dermestids etc.

Killing bottles

Everyone has those heavy-glass coffee bottles around the house (Fig. 1). They are useful for storing things like rice, cereals, herbs etc. They seem too good to toss into the recycling bin. These jars have tight fitting, plastic inserts in the lids. These inserts can be removed easily and small holes or slits made with a soldering iron. A killing agent can then be placed inside within a bit of tissue to prevent from escaping into the jar through the holes (Fig. 2). This results in the entire jar becoming available for the catch. The bottom quarter of the jar is not taken up with killing agent, cardboard etc. The heavy nature of the bottle helps prevent breakage. These bottles come is several sizes and all are useful. (As an ex-American, I can deal with instant coffee!)

I also find fruit drink bottles useful as killing jars. Killing agent is placed in the bottom and the flexible polyethylene that we use in insect drawers can be cut to hold the agent in place. The thick glass used in these bottles prevents breakage. Plastic drink bottles with fluted bottoms can also be used as the little "wells" to house the killing agent (Fig. 3).

Fig. 2. Lids with killing agent.

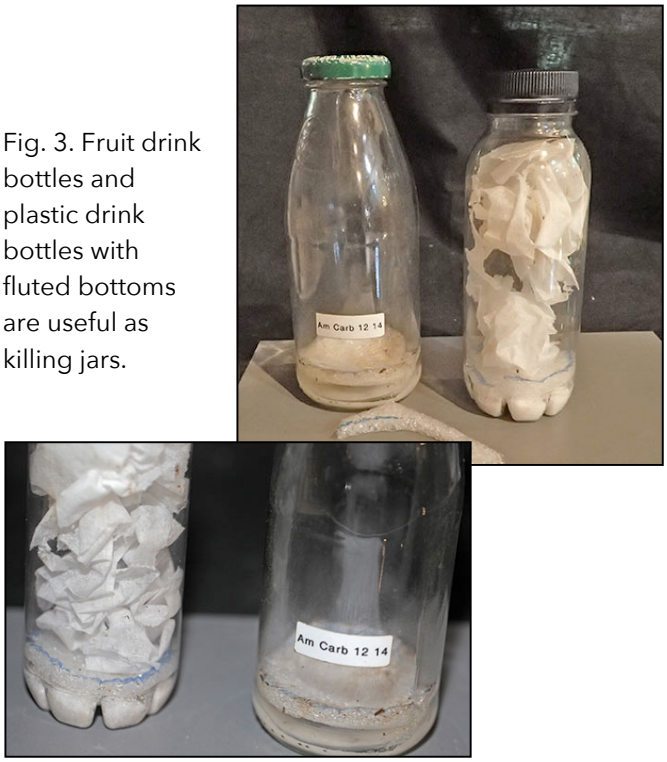


Fig. 3. Fruit drink bottles and plastic drink bottles with fluted bottoms are useful as killing jars.

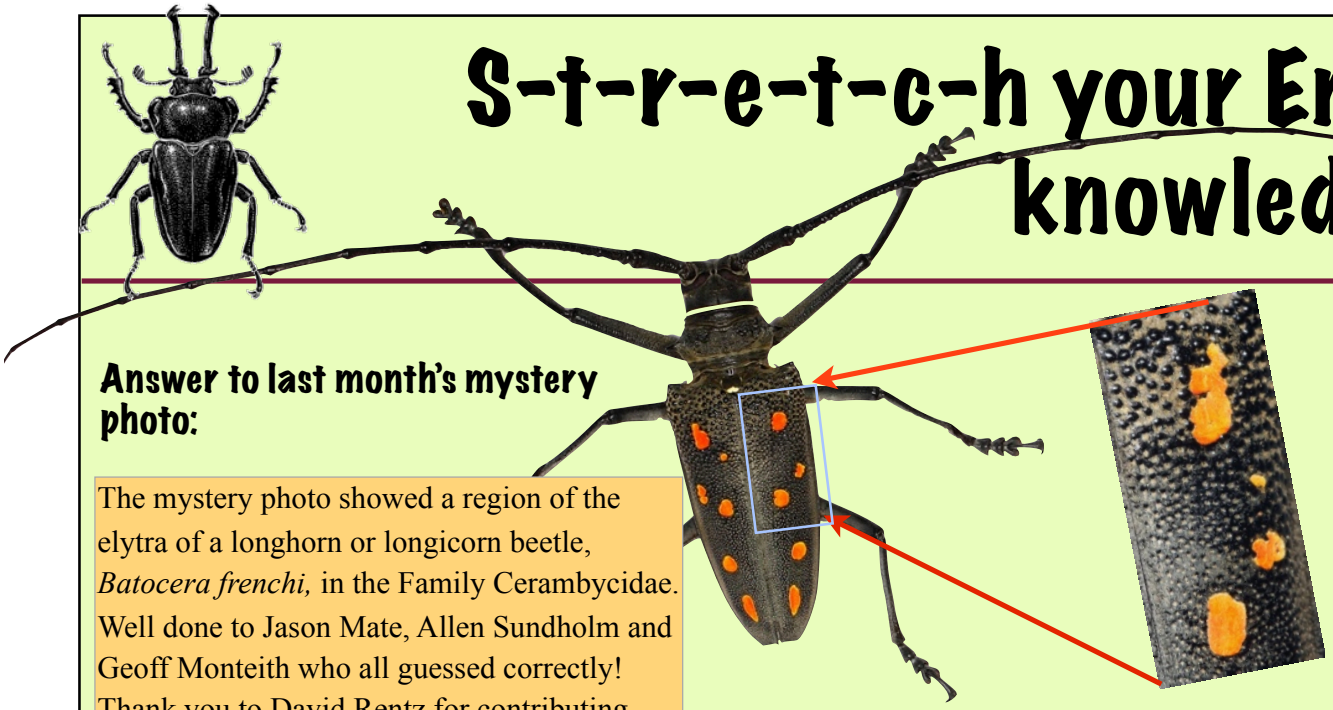
Have you read...

At CSIRO, insect fossils from Burmese amber provide a "snapshot of history" and a new acoustic liquid handler will help make DNA libraries from small insect samples faster and cheaper than ever: https://blog.csiro.au/how-csiro-researchers-are-tracking-the-evolution-of-australian-insects/

Debugging Innisfail project successful so far! They've seen an 80% drop in *Aedes egypti* population in 3 months: https://blog.csiro.au/what-a-buzz-why-we-released-millions-of-mozzies-in-northern-queensland/

Taxonomists at the National Research Collections Australia have named 73 new ants, 38 new beetles and 21 new flies this past year: https://blog.csiro.au/species-richness-our-eofy-stock-take-reveals-over-200-newly-discovered-species/

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



Answer to last month's mystery photo:

The mystery photo showed a region of the elytra of a longhorn or longicorn beetle, *Batocera frenchi,* in the Family Cerambycidae. Well done to Jason Mate, Allen Sundholm and Geoff Monteith who all guessed correctly! Thank you to David Rentz for contributing the photos and sharing a bit about them from his blogpost:

Longicorns are often spectacular beetles and are favourites with collectors. In Australia they range in size from about 5 mm to some real giants of 80 mm or more in length. The larval stages bore in wood or stems of trees and shrubs. Rainforests, with a diversity of trees, palms and shrubs have a rich assortment of species. The spectacular *Batocera frenchi* can be common at times. If a preferred log is discovered in just the right degree of decomposition, often dozens of beetles can be found mating and ovipositing in the preferred host. Their well-developed mandibles help them to chew into bark or wood. To the dismay of the collectors, the orange spots fade to dull creamish yellow after the death of the beetle. The eyes of many longicorn beetles are divided or interrupted by the insertions of the characteristically long antennae. Those species which visit flowers are important pollinators, while other species can be forestry pests.

kidney-shaped eyes of Cerambycidae

Word of the month:

hypogeal: adj. (Greek, hypo = under +geo=earth): descriptive of organisms with subterranean existence or habitat; characteristic of some wasps (Mutillidae) and beetles (Scarabaeidae) which live in soil.

Definition from:
Gordh G & Headrick D. 2011. ***A dictionary of entomology***. CSIRO Publishing.

This month's mystery photo:

Any guesses?

If you think you know what it is, send me an email!

--the Editor

k.ebert@uq.edu.au

Have you got a photo to share for the mystery photo challenge?

G.H. Hardy

Minutes.

On the evening of the 16th March 1923, a meeting of entomologists and others interested was held at the Residence of Mr G.H. Hardy, Glenn Road, Toowong, for the purpose of discussing whether an entomological society could be formed in Brisbane, and if so what steps should be taken to obtain this objective.

The gathering contained sixteen persons as follows - Messrs. A. Burns, H. Hacker; Mr. and Mrs. J.C. Hamlin, Dr. Hamlyn-Harris, Messrs, G.H. Hardy, L. Hitchcock, F.G. Holdaway, J. Mann, R. Illidge, A. Perkins, H.L. Pottenger, Professor Priestly, Mr. J.H. Simmonds, Dr. Jefferis Turner, and Mrs Preston Day who acted as hostess...

...During the course of a short speech Mr. Hardy said that he had asked his guests to meet him so that some statistics could be brought forward in relation to Australian entomologists and the need of an organisation. He drew attention to the benefits that could be secured by having in Australia a periodical devoted entirely to entomology whereby exchanges can be make with other entomological societies that at present are not sending their works to Australia, also to obtain duplicates of periodicals of which, so far, only one copy is being received. Mr. Hardy then went on to show the strength of entomologists within the Commonwealth and drew up the table given below to indicate this, and he also showed how Queensland was favorably placed in this respect, so that if any big movement was going to be made with regards to forming a Society of all Australian entomologists, he considered that such should be started now in Queensland.

Chief amongst those taking part in the Discussion that followed were Mr. Hamlin, Mr. Perkins, Dr. Turner and the Chairman. It was generally admitted that although a larger society could be formed, it seemed more advisable to form a local society with, as one of its chief objectives, the formation, in the near future, of an Entomological Society of Australia. A motion to this effect, proposed by Mr. Perkins and seconded by Mr. Hamlin, was put by the Chairman and carried unanimously. Dr. Turner proposed and Mr. Perkins seconded that Dr. Goddard be elected temporary chairman and that Mr. Hardy be temporary secretary; the motion was carried. The meeting resolved itself into a conversazione.*

Statistical Table of Commonwealth Entomologists

	Queensl.	N.S.Wales	Vict.	Tasm.	S.Aust.	W.Aust.
Prickly Pear Board	9	-	-	-	-	-
Agricultural Department	10	3	2	1	2(?)	2
Museum	1	2	1	-	2	-
University	2	1	-	-	-	-
Health Department	1	-	-	-	-	-
Those writing important papers	2	6	-	-	2	-
Those engaged in other classes of work	2	4	-	-	2	-
STATE TOTAL	27	16	5	1	8	2

* conversazione: a scholarly social gathering held for discussion of literature and the arts.

- a portion of the minutes from the first meeting to discuss the formation of an Entomological Society in Australia. ***Source: State Library of Queensland ESQ archive***

Announcements

Australian Entomological Society 49th AGM and Scientific Conference – 2018: Call for Abstracts

You are invited to attend the 49th Australian Entomological Society AGM and Scientific Conference. The conference will be held at the Alice Springs Convention Centre in Alice Springs, Northern Territory, from Sunday 23rd to Wednesday 26th September, 2018. This year the conference theme is *insects as the centre of our world*. With this theme we are encouraging you to focus on the importance of insects to our natural ecosystems, agribusiness, health and land management whilst also appreciating the cultural, ecological and entomological character of central Australia. Our symposia will reflect this aim by including topics with a local focus (including desert ecology, entomophagy) in addition to presentations on recent entomological advances. The *yeperenye* caterpillar (*Hyles livornicoides*, Lepidoptera: Sphingidae) is a major creative ancestor of Alice Springs and it is this caterpillar that we have chosen for our conference logo.

Please note that symposium and abstracts are not restricted to just the conference theme.
Abstracts are required for all presentations, including posters.
Deadline for submission of abstract: 30 July 2018
(Notification of acceptance of abstracts will be 14 August 2018)

For registration and more information see: https://www.aesconferences.com.au

PhD projects available

Two PhD projects that are being advertised through the **University of Sydney**. They have more of an engineering focus than a straight ecology/entomology focus.

Projects:

1. A sensor driven approach to assessing health in honey bee colonies
HTTP://SYDNEY.EDU.AU/RESEARCH/OPPORTUNITIES/OPPORTUNITIES/2352

2. New technologies for detecting, counting and identifying pollinators in the field
HTTP://SYDNEY.EDU.AU/RESEARCH/OPPORTUNITIES/OPPORTUNITIES/2353

Three PhD projects are available at **The University of Canterbury**, New Zealand, 2 of which focus on eucalypt forestry and insect pests and may therefore be of particular interest to Australian students.

Projects:

1. Plant-insect interactions: Selecting pest-tolerant eucalypt breeds for New Zealand Forestry
https://www.findaphd.com/search/projectDetails.aspx?PJID=98952
2. Host preferences & biocontrol of variegated tortoise beetle in New Zealand eucalypt forestry
https://www.findaphd.com/search/projectDetails.aspx?PJID=98953
3. Conservation management of threatened New Zealand insects
https://www.findaphd.com/search/projectDetails.aspx?PJID=98954

Meetings & conferences

International Union for the Study of Social Insects
5-10 August 2018
Guarujá SP, Brazil
http://www.iussi2018.com

EVOLUTION 2018
Joint Congress between the American Society of Naturalists (ASN), The Society of Systematic Biologists (SSB), the Society for the Study of Evolution (SSE) and the European Society for Evolutionary Biology (ESEB)
August 19–22, 2018
Montpellier, FRANCE
http://evolutionmontpellier2018.org/

10th International Workshop on the Molecular Biology and genetics of the Lepidoptera
19-25 August 2018
Orthodox Academy of Crete
Kolympari, Crete, Greece
https://web.uri.edu/lepidoptera/

XXVII Brazilian Congress of Entomology and XV Latin American Congress of Entomology
September 2–6, 2018
Gramados, BRAZIL
https://www.cbe2018.com.br/pt/

XV International Congress of Acarology
2-8 September 2018
Antalya, Turkey
http://www.acarology.org/ica/ica2018/index.html

3rd International Whitefly Symposium
16-20 September 2018
Fremantle, WA
http://iws2018.org/

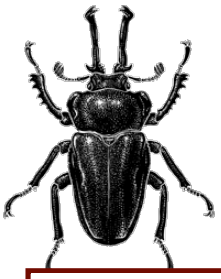
Australian Entomological Society (AES) 49th AGM and Scientific Conference
September 23–26, 2018
Alice Springs, Northern Territory, Australia
https://www.austentsoc.org.au/Web/Events/49th_AGM_and_Scientific_Conference.aspx

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/

International Congress of Entomology
19-24 July 2020
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	John Neilson	*Quarantine entomology - topic to be announced*
NOVEMBER 13	Irene Terry	*"Wacky world of cycads: Thermogenesis, volatiles and pollinator interactions"*
DECEMBER 11	Notes & Exhibits	Notes and Exhibits/Christmas Afternoon Tea

SOCIETY SUBSCRIPTION RATES

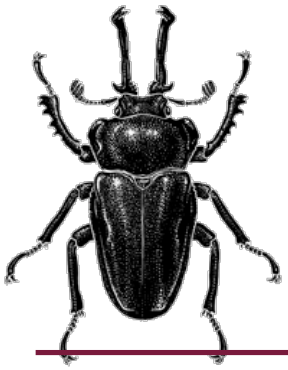
GENERAL	Person who has full membership privileges	**$30pa**
JOINT	Residents in the same household who share a copy of the *News Bulletin*, but each otherwise have full membership privileges.	**$36pa**
STUDENT	Student membership conveys full membership privileges at a reduced rate. **Free the first year**, $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$40pa/AU$45pa**
ELSEWHERE	Individuals/Institutions	**AU$45pa/AU$50pa**
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, August 14th, 2018, 1:00 pm

Dr. Mike Rix

ABRS Research Fellow
Acting Head of Biodiversity & Geosciences
Queensland Museum

presenting:

"Life Down Under: evolution and conservation of Australia's trapdoor spiders"

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:

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CONTRIBUTIONS WELCOME

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