Entomological Society of Queensland

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Entomological Society of Queensland

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

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Entomological Society of Queensland

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The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. The Society promotes liaison among entomologists through regular meetings and the distribution of a *News Bulletin* to members. Meetings are announced in the *News Bulletin*, and are normally held on the second Tuesday of each month (March to June, August to December). Visitors and members are welcome. Membership information can be obtained from the Honorary Secretary, or other office bearers of the Society. Membership is open to anyone interested in Entomology.
Contributions to the *News Bulletin* such as items of news, trip reports, announcements, etc, are welcome and should be sent to the News Bulletin Editor.
The Society publishes **THE AUSTRALIAN ENTOMOLOGIST**. This is a refereed, illustrated journal devoted to Entomology in the Australian region, including New Zealand, Papua New Guinea and the islands of the South Western Pacific. The journal is published in four parts annually.

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

Entomological Society of Queensland
Minutes for General Meeting

Tuesday, December 10th, 2019
Held in the Ground Seminar Room, Ecosciences Precinct, Boggo Rd, Dutton Park.
Meeting open: 3:04pm

Attendance (42):

Members (34): Mark Schutze, Lachlan Jones, Geoff Monteith, Greg Daglish, Natalia Medeiros de Souza, Andrew Hayes, Jessa Thurman, Des Foley, Geoff Thompson, Susan Wright, Noel Starick, Chris Lambkin, Mike Muller, Alisha Steward, Dawn Franzmann, Bernie Franzmann, Rachel McFadyen, Owen Seeman, Helen Nahrung, Shannon Close, Kathy Ebert, William Arnold, Simon Lawson, Ngoc Hoan Le, Craig Edwards, Lyn Cook, Colleen Foelz, Nadine Baldwin, Cate Paull, Bill Palmer, David Exton, Justin Bartlett, Vivian Sandoval, Penny Mills.

Visitors (8): Dale Armstrong, Bruno Bocha Tamelini, Bryan Lessard, Hazel Parry, Nathan Batley, Adriana Yatie Mikami, Carmel Harris, Adrian Holbeck.

Minutes: The minutes of the last meeting were circulated in News Bulletin 47[8] November 2019. Moved the minutes be accepted as a true record: Cate Paull, Seconded: Christine Lambkin, Carried: All.

Nominations for membership approved by council:

General members:
James Walker
Student Members:
Zack McIntyre (UQ)

General Business:
Geoff Monteith, Business Manager of ESQ's journal, Australian Entomologist, announced a major Council decision that from the start of 2020, pdf copies of the journal will be supplied to all members of ESQ as part of their normal membership. Full details are given on pp. 199-200.

Main Business: Notes & Exhibits presentations
"Egg laying decision in a generalist moth - threshold, feedback or choice"- Lachlan Jones, PhD Candidate, University of Queensland & 2017 Small Grant Recipient

"Insects of our New Guinea neighbours"- Jessa Thurman, PhD candidate, University of Queensland

"*Pontomyia revisited: marine flies"* - Christine Lambkin, Queensland Museum.

"Unraveling Gonipterus diversity in Queensland" - Natalia Medeiros de Souza, PhD candidate & 2018 Small Grant Recipient, University of Sunshine Coast

"A moth caterpillar that eats scale insects and lives in green tree ant nests" - Geoff Monteith, Queensland Museum

Vote of thanks: Penny Mills

Next meeting: 10 March:

The next meeting is our AGM on 10th March, and will be the Presidential Address given by Dr Gary Fitt.

Meeting closed: 4:05pm.

Paropsis sp. on young eucalyptus leaves at Aroona Conservation property in the Little Liverpool Range, Dec. 2019. Photo K. Ebert

At our next meeting...

Annual General Meeting followed by the Presidential Address:

"From Helicoverpa to Ebola – reflections on the ecological underpinning of pest management, resistance management and biosecurity"

presented by
Dr. Gary Fitt
Science Director
CSIRO Health & Biosecurity (Retired)

Dr Gary Fitt is an insect ecologist who worked extensively in pest management and sustainability for agricultural systems, in particular cotton. His research focussed on the ecology and management of *Helicoverpa* species; *H. armigera* and *H. punctigera*, and their contrasting strategies to deal with Australia's variable environments and exploit plant production systems. His research in insect movement, migration and host plant resistance lead into Gary's involvement with the deployment of Australia's first genetically modified crop in Bt cotton and the resistance management systems which have now sustained the technology for almost 25 years. In the last 10 years Dr Fitt has increasingly focussed on the research needs for biosecurity science for Australia and led efforts to protect Australia from invasive species and address emerging risks in vectored and infectious diseases.

Nominations for 2020 Office Bearers

The following nominations were received by the Secretary before closing date of January 28th:

President: Mark Schutze. *Nominated by Jane Royer, Seconded by Justin Bartlett*
Vice President: Helen Nahrung. *Nominated by Mark Schutze, Seconded by Justin Bartlett*
Secretary: Penelope Mills. *Nominated by Kathy Ebert, Seconded by Jessa Thurman*
Treasurer: VACANT.
Councillor: Shannon Close. *Nominated by Vivian Sandoval, Seconded by Mark Schutze*
Councillor: Vivian Sandoval. *Nominated by Mark Schutze, Seconded by Shannon Close*
Councillor: Mike Muller. *Nominated by Kathy Ebert, Seconded by Penny Mills*
News Bulletin Editor: Kathy Ebert. *Nominated by Penny Mills, Seconded by Jessa Thurman*
Australian Entomologist - Business Manager: Susan Wright, *Nominated by Geoff Monteith, Seconded by Christine Lambkin*

Tuesday 10 March at 1pm

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

President's Annual Report 2019

--Gary Fitt

I start my report by acknowledging the wonderful work done by the ESQ Council on behalf of the society. ESQ is in a great position in terms of membership, finances and activities in large part because of the commitment of council and the support we get from members. I greatly enjoyed working with Council over the past year. We had some new team members for 2019 with Jessa Thurman moving into the challenging role of Treasurer and effectively guiding our finances through the year. Penny Mills as Secretary continued the efficiency of previous occupants of the role and kept our meetings, correspondence and minutes in great order. I particularly want to acknowledge Kathy Ebert for her stellar efforts with the News Bulletin. It truly is an excellent publication and similar accolades for Geoff Monteith as Business Manager and Assistant Editor for our journal, *Australian Entomologist*, which continues in a strong position. Geoff has engineered a significant transition for the journal with an almost complete change in Editorial Board and a new Business Manager coming on board (more detail in Geoff's Business Manager's report). Significantly though Council has made the decision that Australian Entomologist will now be sent to all ESQ members in pdf form commencing from the first 2020 issue in March. We hope you will all take advantage of this new development. And I must say I have appreciated having the wisdom and experience of Geoff on Council throughout the year. Special mention is also needed for the efforts of Mark Schutze, Geoff Monteith and then Jessa in managing the transition of ESQ financial accounts from Brenton Peters, following his untimely death in January 2019. They were able to successfully assemble the accounts for auditing and provide a clearer platform for Jessa to manage. Huge thanks also to Mike Muller (Past President), Mark Schutze (Vice President), Vivian Sandoval, Cate Paull and Shannon Close who contributed through judging panels and in many deliberations of the Council. Mark also had the unenviable job of managing room bookings for our general meetings and trying to ensure the technology worked in support of our presenters. It didn't always….

The past year was another strong one for ESQ in terms of membership growth. We are now very close to 400 members who span every state of Australia and 9 other countries. Also a great year for the quality of speaker presentations at General Meetings. I was pleased to assemble a suite of speakers who covered diverse topics in entomology, the application of ecology and genetics to important challenges in pest management, risk and invasive species and the importance of entomological collections. Unfortunately other commitments meant that I missed two meetings (September and December).

We started the year in March with the Past President's address with Mike Muller providing a forensic coverage of his 46 years delving into the challenges of the biting flies, *Culicoides*, which

attack people and livestock. Mike revealed some ingenious and amusing collection techniques in his interesting address. Other topics included symbiotic bacteria and Phytoplasma transmission from Phyllis Weintraub, a visitor from Israel; Nancy Schellhorn outlined the science and technology journey to implementation of innovative automated pest monitoring under the banner of RapidAim Pty Ltd, a successful story of commercialisation. Raghu Sathyamurthy gave an excellent quantitative explanation of how risk is assessed in host specificity testing for weed biocontrol, particularly highlighting the 'conflicts' between science and regulation. We also had two valuable presentations of the importance of entomological collections with Susan Wright outlining the importance and rationale of the Queensland Museum Insect Collection and then Mark Schutze giving a similar overview of the QDAF Insect Collection. Mark was able to reveal some interesting historical anecdotes about the early days of the collection under Henry Tryon, the first Queensland Government entomologist appointed in 1894. Queensland entomology has gone from strength to strength ever since.

Of course, a real highlight of this year was in October with the Perkins Memorial Lecture delivered by Professor Ary Hoffmann (University of Melbourne) on "Studying the endosymbionts living inside insect cells: from curiosity driven research to disease control (and beyond)". Ary explored the intriguing story of *Wolbachia*, the widespread class of endosymbionts with a multitude of impacts on their host insects. Ary and his collaborators have been instrumental in identifying how to utilise *Wolbachia* to manage populations of key pests, a topic he illustrated brilliantly in mosquitoes. I feel very privileged to have been President in the Perkins year because the day also featured the Perkins dinner attended by about 80 members and friends from various parts of Australia. The dinner assembled 18 past and current Presidents of ESQ and was also the occasion to award Life Membership of the society to Dr David Rentz in recognition of his stellar contributions to Australian entomology through his work on Orthoptera during his career with CSIRO and continuing since retirement. Jessa Thurman's nomination for David and David's interesting overview of his life with insects are all available in the October Bulletin, along with Ary Hoffmann's presentation article. All this made the October Bulletin a bumper issue.

The Society again had three nominees for the Student Award for 2019. The judging panel had a difficult task in making a selection amongst the theses using the criteria we apply. Scoring was high and the research from all three candidates was engaging and well presented. They should be proud of the work they submitted. However, after much discussion we selected Craig Edwards from UQ as the winner. Craig's Honours thesis titled "Iterative hypothesis testing uncovers 49 species, which represent a new genus of *Melaleuca*-galling scale insects", was built around clear hypotheses, innovative methodology and presentation of clear results. His research provides an example of how DNA analysis can be integrated with more traditional techniques together with host plant relationships to inform taxonomy. While there are strengths and weaknesses of the iterative method Craig's robust analysis resulted in a new genus and contributed to further resolving an earlier taxonomic error. Craig gave an interesting presentation on his work at the June Notes and Exhibits meeting and provided a report for the June/ July Bulletin.

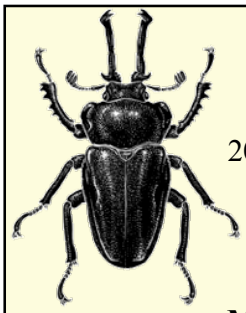
We also had four applications for our Small Grants program. Again a high standard but the winner was Colleen Foelz from Queensland Museum to produce and print a brochure on the Beetles of Brisbane. This has been completed and was popular at a number of entomological events since.

Both our Notes and Exhibits meetings this year (June and December) were packed with short presentations which covered an enormous range of topics. In June, apart from Craig Edwards, we had Shannon

Close share some amazing photos in an update on the 'milk glands' of viviparous bat flies, Chris Lambkin explained the mass eruption of Gidgee bugs in north-western Queensland, Don Sands described the unique association of the primitive heliozelid moths with threatened Boronias, Joolie Gibbs from the Gympie Regional Art Gallery displayed some of her wonderful insect art and Lucas Becker brought food products produced from crickets. A sign for the future perhaps! Later in the year, the December Notes and Exhibits meeting featured another 5 presenters with Lachlan Jones outlining egg laying decisions in a generalist moth, Jessa Thurman relating some of her adventures discovering insects in New Guinea, Chris Lambkin again, this time discussing the anomalies of marine flies, Natalia Madeiros de Souza advising how to unravel *Gonipterus* diversity in Queensland and finally a great talk from Geoff Monteith on the intriguing life history of a moth caterpillar that eats scale insects and lives in the nests of green tree ants. All in all a fascinating collection of short talks over the two meetings which I highlight as it shows the diversity of entomological science being done and the wonderful willingness of members to present their work.

It has been a privilege to serve as President of the Entomological Society of Queensland. I have learned a great deal about the passion of real entomologists and the great outcomes that derive from their work. I look forward to continuing on Council as Past President and wish the new leadership well for the year ahead.

--Gary Fitt



Treasurer's Annual Report for 2019

2019 was a big year for us with many transitions. Sadly our previous treasurer, Brenton Peters, passed away at the beginning of the year and I came into this role without the privilege of getting to meet him.

Membership. The society continued to grow in 2019 with a net increase of 3.1% from 385 members in 2018 to 397 members including 280 general members 76 students, 32 joint members (16 memberships), and 9 Honorary Life members. Our membership stretches across every state of Australia and 9 other countries. Subscription income for 2019 was strong at $9,908. At the end of the year 328 members (82.6%) had paid their annual subscription and were financial, with only 69 remaining unfinancial at end of 2019. We have 78 members (19.6%) who have paid in advance for 2020 (3 joint, 70 ordinary, and 2 students) and 4 members paid for 2021 (4 ordinary). Of our 397 members, the majority (264) receive electronic bulletins, while 133 receive the bulletin by post.

Primary expenses for the society were the printing and postage of our *News Bulletin*. Printing costs were much higher this year as we carried over some unpaid bills for postage and printing of the bulletin from 2018. We also celebrated our biennial Perkins Lecture, and following Perkins Dinner, where ticket sales covered most costs of the rental space, food, and decorations and $1,000 was allotted to the dinner by council, but with a net loss of ($501.07). We also awarded our Small Grants scheme ($2,000) to Colleen Foelz for the fantastic *Beetles of Brisbane* brochure which is currently selling copies, and our Student Award ($500) went to Craig Edwards for his project on scale insects. We also invested in the production of calendars this year using photos from our members and our costs are slowly being covered with a current net loss of $52.50. Overall, our net trading loss ($1,062.03) was a little higher than last year ($982.85) due to carried over expenses ($882.43 for 2018 *News Bulletin*s) from the previous year and our biennial Perkins Lecture and Dinner alongside new project investments. The need to rent a lecture venue for the Perkins

added expense this year. Our last Perkins year in 2017 saw a net loss ($2,864.20) and finances for ESQ are stable heading into the new year.

Finally, I would like to thank everyone who have promptly sent along their membership dues! Membership dues for 2020 are now due and if you have any information to update, including change of address, preference in News Bulletin format, please feel free to contact me.

Jessa Thurman, Honorary Treasurer
thurmanjh@gmail.com

FINANCIAL STATEMENT FOR THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND
1st JANUARY TO 31st DECEMBER 2019

ASSETS	$	LIABILITIES	$
CBA Cheque Account (00901185)	$12,543.90	Subs in advance (2020+)	$2,388.00
CBA Term Deposit (50113582)	$7,891.42		
TOTAL	**$20,435.32**	TOTAL	**$2,388.00**

EXCESS ASSETS OVER LIABILITIES: **$18,047.22**

INCOME	$	EXPENDITURE	$
Subscriptions	9,908.00	*News Bulletin* Printing	4,691.53
Interest (CBA 50113582)	174.03	*News Bulletin* Postage	1,760.01
ESQ Calendars	899.00	Student prize	500.00
Perkins Dinner Tickets	5,095.00	Small Grants Scheme	2,000.00
Perkins Dinner Donations	40.00	Website Fee	108.98
Bug Catch	10.00	Petty Cash	157.16
Questagame donations	336.64	ESQ Calendars	951.50
		Perkins Memorial Dinner	5,655.00
		Perkins Lecture	941.07
		December Catering	108.00
		PO Box split rental + key	77.00
		Insurance	430.00
		Monthly Merchant fees	144.45
		Auditors Honorarium	230.00
TOTAL	**$16,462.67**	TOTAL	**$17,754.70**

Net Trading profit/loss: $1062.03

I certify this is a true and accurate financial statement of the ENTOMOLOGICAL SOCIETY OF QUEENSLAND for the period 1st January 2019 to 31st December 2019.

Rebecca Keys
Independent Accountant

Secretary's Annual Report 2019

Attendance at Council Meetings: The 2019 Council met 11 times from the March AGM to February 2020, including a special council meeting held in July. Attendance by council members (Mar-Feb) is provided in Table 1.

Table 1. Attendance record for ESQ Council Members in 2019 (March 2019 – February 2020). This includes the Special Council Meeting held on July 22, 2019. Tim Heard (not listed in the table below) was out-going Past President and attended only the March Council Meeting prior to the AGM. Julianne Farrell was an out-going councillor but was unable to attend the March Council Meeting.

Position	Name	Attendance
President	Gary Fitt	8
Vice President	Mark Schutze	10
Past President	Mike Muller	10
Secretary (& Assistant News Bulletin Editor)	Penny Mills	11
Treasurer	Jessa Thurman	8
Australian Entomologist Business Manager	Geoff Monteith	10
New Bulletin Editor	Kathy Ebert	11
Councillor	Cate Paull	8
Councillor	Vivian Sandoval	7
Councillor	Shannon Close	9

Membership: Council received and approved 36 new membership applications between January and December 2019 (19 general; 15 students; 1 joint). This was higher than the number of new members approved in 2018 (n = 25). Of new student members: UQ (8), University of Adelaide (2), ANU (2), JCU (1), USQ (1) and UCQ (1). Thirty-two memberships were terminated (four requested terminations and five deceased) with notification letters posted by the Secretary in September 2019.

Student award: Three student award submissions were received, and judged by Gary Fitt (Chair), Mark Schutze and Cate Paull. The winner was Craig Edwards (UQ; Supervisor: Lyn Cook) for his thesis on**:** *Iterative hypothesis testing uncovers 49 species, which represents a new genus of Melaleuca-galling scale insects*. Craig presented his thesis at the June 2019 Notes and Exhibits and the accompanying article in the News Bulletin Vol. 47 (4).

Small Grants Scheme: Four applications for the 2019 SGS were received by the Secretary. The judging panel (Gary Fitt [Chair], Mike Muller, and Vivian Sandoval) were unable to meet in person to discuss the awarding of the SGS and only two of the judging panel agreed with the chosen recipient, so a Special Council Meeting on July 22nd was called and chaired by Mark Schutze. From this meeting, it was agreed to award the grant to Colleen Foelz for her Brisbane of Beetles Brochure proposal.

Perkins Dinner: The Secretary received 69 RSVPs to attend the 2019 Perkins Dinner.

General Meetings were held at the Ecosciences Precinct in Dutton Park, except for the Perkins Memorial Lecture in October, which was moved to the Women's College Auditorium at the University of Queensland. Speakers, titles, and attendance records are listed in Table 2. Average 2019 attendance (45.4 ± 9.2) was slightly lower than in 2018 (46 ± 12.4).

Ary Hoffman's Perkins Memorial Lecture at the October Perkins Meeting drew the biggest crowd (33 members and 30 visitors, total = 63).

Acknowledgements: Thanks to Mark for his help during the year with my secretarial duties and the rest of Council for helping the ESQ run smoothly during 2019. Special mention to Geoff Monteith for his continual involvement with the ESQ Council for 24-odd years, and who will be stepping aside after the March Council Meeting.

Penny J. Mills
ESQ Secretary

Table 2. Details of 2019 ESQ General Meetings (Mar-Dec), including month, type of presentation (if different from general presentation), speakers, titles, and attendance records for ESQ members and visitors.

Month		Speaker	Title	Members attended	Visitors attended	total
Mar	Presidential Address	Mike Muller	Come in Sucker – A 46-year Journey with Biting Flies	34	10	44
Apr		Phyllis Weintraub	Symbiotic bacteria associated with phytoplasma vector	29	18	47
May		Nancy Schellhorn	The journey to RapidAIM	40	12	52
June	Notes and Exhibits	Craig Edwards (student award)	Iterative hypothesis testing uncovers 49 species, which represent a new genus of Melaleuca-galling scale insects	28	11	39
		Christine Lambkin	Just what is a Gidgee bug?			
		Shannon Close	Got milk? An update on the 'milk glands' of viviparous bat flies			
		Don Sands	Minute primitive moths Heliozelidae: A flagship group of reciprocal conservation significance			
		Joolie Gibbs	Insecta I have dined with			
		Lucas Becker	Insects as Food exhibit			
Aug		Raghu Sathyamurthy	Assessing risk in host-specificity testing for weed biocontrol: juxtaposing scientific and regulatory perspectives	31	15	46
Sept		Susan Wright	The Queensland Museum Collection – what we hold and why	28	1	29
Oct		Ary Hoffman Perkins Lecture	Studying the endosymbionts living inside insect cells: from curiosity driven research to disease control (and beyond)	33	30	63
Nov		Mark Schutze	From past to present: origins and purpose of the Qld Dept. of Ag. and Fisheries insect collection	37	10	47
Dec	Notes and Exhibits	Natalia Medeiros de Souza	Unraveling *Gonipterus* diversity in Queensland	34	8	42
		Lachlan Jones	Egg laying decision in a generalist moth - threshold, feedback or choice			
		Christine Lambkin	*Pontomyia* revisited: marine flies			
		Geoff Monteith	A moth caterpillar that eats scale insects and lives in green tree ant nests			
		Jessa Thurman	Insects of our New Guinea neighbours			
			Average attendance	33	13	45

Announcements

ESQ Small Grants Award

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 is more applied and in the agricultural or medical fields. It's all up to you and your imagination!

A pro forma is available on the ESQ website (www.esq.org.au/pdf/SmallGrantScheme2020ProForma.pdf with applications due to the ESQ Secretary by no later than the 30 April 2020. The maximum budget for the project is $2000, with the successful applicant announced by the end of June 2020. Funds will be available from July 2020 and the project is to be undertaken between July 2020 and June 2021. While this grant scheme is open to all ESQ members, both far and wide, we encourage submission of project proposals with a Queensland entomology focus. We also encourage you to consider projects that may be suitable for submission to the *Australian Entomologist* journal, or even a note for the ESQ News Bulletin or presentation at one of ESQ's General Meetings!

All the best and good luck!

Revision of ESQ By-Laws specifying duties of members of The *Australian Entomologist* Publication Committee

At a meeting of the provisional members of the new Publication Committee at the Queensland Museum on November 29 we considered revised By-Laws governing duties of the various members of the Committee, as follows. There are changes to the duties of the Business Manager, to remove various editorial roles which had been allocated to that position. There are also changes to the role of Assistant Editors to require them to negotiate directly with authors regarding referee reports and required revisions. The revised wording was approved by vote of ESQ council on 4 Feb 2020. You can read the updated By Law No. 2 on the ESQ website: www.esq.org.au/pdf/ESQ_ByLaws_2020.pdf

Submissions now open for *2020 ESQ Student Award*

The Student Award was established by the Society to encourage entomological research. It is open to any student who completed an Honours Degree, Postgraduate Diploma or 4-year Undergraduate Degree at a Queensland tertiary institution in the previous calendar year. Entrants need not be Society members. See our website for details: www.esq.org.au/awards

Volunteers needed for World Science Festival

Interested in helping out for an hour at the ESQ stall at the World Science Festival? Saturday March 28th. If you would like to help or want more information contact Penny. Email: secretary@esq.org.au

ESQ Collecting Permit Report for 2019

The Queensland Parks and Wildlife Service (QPWS), Department of Environment and Science (DES) Scientific Purpose Permit ESQ PTUKI for National Parks and CYPAL WITK18701717 and State Forests WITF18701717 to collect unprotected invertebrates in QLD is valid until 8 June 2021. An Amended PTUKI WITK18701717-1 for National Parks arrived 27 February 2019 from QPWS **including KULLA (McIlwraith Range) NP** (CYPAL) with an additional requirement specific for KULLA requiring a map to be provided to the Land Trust showing intended research areas and access routes prior to access, during the notification process. That requirement has been added to the upgraded ESQ Protected areas, Conditions & Contacts. A further amendment was sought, and an Amended PTUKI WITK18701717-3 for National Parks arrived 18 September 2019 from QPWS **including Rungulla and Coalstoun Lakes NP**.

Of the 271 protected areas on the permit:

- ¬ 216 require prior online notification and many require additional phone contact as outlined on the ESQ Permit website
- ¬ 7 NP with IMA/ILUA/CYPAL now also require written evidence of permissions for each specific case prior to access and have many extra conditions as outlined on the ESQ Permit website
- ¬ 42 areas **have PARTS to which access is not allowed**. When issuing the PTUKI QPWS provided maps of Post-Wik (Dec. 1996) **no access areas (RAA) with valid NT** that are not to be accessed, now available on the ESQ Permit website. A NP or SF may contain both Pre-Wik and Post-Wik areas.

Ethical Biodiversity Research Guidelines have been developed for ESQ researchers working with Aboriginal groups. A set of protocols and procedures has been developed and upgraded several times that ESQ biological researchers should follow when working on country and been posted on the ESQ permit website. By being pro-active, ESQ may lead the way in establishing additional protocols for researchers who come under their permits. The ongoing aim is 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. The **ESQ Protected areas, Conditions & Contacts** and **ESQ Collecting permit Protocols and Procedures** have been corrected, upgraded and both are available on the ESQ Permit website or directly from the Permit Officer.

Chris Lambkin spent three intense and productive days in Cairns in mid-March 2019 at the invitation of the Traditional Owners of **KULLA** (McIlwraith Range) NP(CYPAL) Land Trust Committee (8 members) and **Cape Melville, Flinders and Howick Islands** Aboriginal Corporation (9 Directors) helping the groups to develop their own research prospectus as part of their quarterly Queensland Parks and Wildlife (QPWS) Joint Management meetings organised by Georgianna Fien (Manager (Joint Management), QPWS). Dr Darren Crayn (Queensland Tropical Herbarium, JCU) and Eda Edicott (Regional Ecosystem Mapping for Cape York, DES) were also invited. Dr Fiona Leverington attended to draft the prospectus. QPWS funded this work. Chris also took the opportunity to meet with John DeCampo (QPWS) and Simon Thompson (DATSIP) while in Cairns to discuss Permits and access to protected areas under Aboriginal co-management or with post-Wik Native Title Determinations.

As required under the ESQ permit, an annual report was submitted to QPWS in June 2019. At that time, 56 ESQ members were endorsed on the ESQ collecting permits for National Parks and CYPAL WITK18701717 &

WITK18701717-1 and State Forests WITF18701717 for 269 protected areas. 29 of those endorsed had proposed to enter areas with RAA or CYPAL conditions in the 3 year life of the permit, with 17 having already completed field work notifications for those areas.

In June 2019, 31 ESQ members reported on identifications of **9123 specimens** collected under the ESQ permits including **452 butterflies & 730 moths, 142 dragonflies & damselflies,3963 flies** including 3511 fruit flies, 231 muscids, 35 mosquitoes, and 146 robber flies**; 1062 Arachnids** including 630 spiders & 419 mites**, 88 millipedes, 90 cockroaches, 1823 beetles** including 1441 minute tree-fungus beetles (Ciidae) and 255 Carabids, **303 Hemiptera, 275 Hymenoptera** including 62 bees and 148 ants, **78 Orthoptera, 41 stick insects**, and last but not least **40 thrips.** 25 members submitted NULL reports. Included in the report are 1127 specimens of Arachnida and Insecta (2954 specimens - including 254 UQIC specimens) identified and registered at QM since the last ESQ report. Many of those specimens were registered because of **description of new species** following the return of loaned QM specimens eg Ciidae described in Lawrence, J.F. 2016. The Australian Ciidae (Coleoptera: Tenebrionoidea): A Preliminary Revision. *Zootaxa* 4198(1): 1-208 (http://dx.doi.org/10.11646/zootaxa.4198.1)

The ESQ Permit was also used to collect specimens of dung beetles that contributed to the study and publication by 3 endorsed members - Ebert, KM, Monteith, GB, Menéndez, R, and Merritt, D. J. (2019) Bait preferences of Australian dung beetles (Coleoptera: Scarabaeidae) in tropical and subtropical Queensland forests. *Austral Entomology*, https://doi.org/10.1111/aen.12396.

A number of ESQ members attempting to enter CYPAL areas have had difficulties - communicating with the relevant Aboriginal Corporation (ongoing, especially Kutini-Payamu (Iron Range) NP); one was not allowed access because there was no one available to accompany them because of Christmas Holidays; one was prevented by weather.

As required under the ESQ Protocols and Procedures Ethical Biodiversity Research Guidelines members accessing and collecting in CYPAL areas must submit a **plain language report to** both the relevant **Aboriginal Corporation** and the ESQ Permit Officer within 3 months of access. One group of moth experts (Team Leader Doug Hilton) have submitted their reports following access to Daintree NP, Annan River NP, and Kutini-Payamu (Iron Range) NP in spring 2018. The group reported on the moths collected and identified and also supplied to the ESQ Permit Officer 416 images of set moths identified to species including the ones below. These will also be available online at http://www.lepiforum.de/.

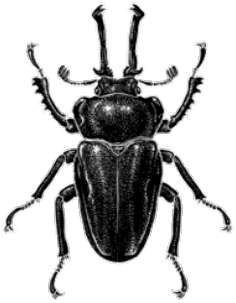
Left: *Zeheba spectabilis* (GEOMETRIDAE); Right: *Pachythrix hampsoni* (NOCTUIDAE). Images: Egbert Friedrich (CC BY-NC).

Male (small) and female Beautiful Malanda Stick-insect, *Malandania pulchra*. Image: Braxton Jones.

Also of note are the 3 female and 2 male Beautiful Malanda Stick-insect, *Malandania pulchra*, specimens found by Braxton Jones from near Daintree NP. This species (image below), the only species in the genus, is considered quite rare and only a handful of female specimens exist across the Australian museums.

As of January 2020, 75 ESQ members are endorsed on the ESQ collecting permits for National Parks and CYPAL WITK18701717, WITK18701717-1, & WITK18701717-3 and State Forests WITF18701717 for 271 protected areas. 38 of those endorsed have proposed to enter areas with RAA or CYPAL conditions in the 3 year life of the permit.

Christine Lambkin



ESQ Permit Officer
Queensland Museum
South Brisbane, Qld 4104
Email christine.lambkin@qm.qld.gov.au
31 January 2020

Beetles of Brisbane is a newly published photo-guide to the city's common species.The 16-panel glossy bochure includes around 100 beetle images and covers 29 families. *Beetles of Brisbane* serves as a handy reference for anyone interested in trying to zero in on the family or even the species of beetle they have found or photographed. It includes an introduction to the Coleoptera, brief family descriptions (including tarsal formulae and estimated species number Australia wide) as well as the individual images with species name, length and some additional points of interest. Its production was supported in part by the 2019 ESQ Small Grant which was won by Colleen Foelz (edenINK editing). Geoff Monteith provided the essential beetle expertise to ensure the quality of the final content. The brochure is currently available for purchase at $8 (plus postage) through the website http://www.esq.org.au/pdf/OrderForm_Beetles-of-Brisbane.pdf and at monthly meetings. Contact Colleen for more information: colleen@edenink.com.au .

The Australian Entomologist
Annual Journal Report for 2019

Four parts of Volume 46 of *Australian Entomologist* were published during the year, totalling 252 text pages. This is about half the total pages published during the previous year which included the very large Barry Moore Memorial Issue of 180 pages. There were 73 pages of colour compared with 98 pages in 2018. All 2019 issues were mailed out within normal circulation deadlines. Issues included 30 original papers contributed by 31 individual authors of which Michael Braby was most prolific with four papers. There were three book reviews and three pages of bibliography listings. The cover image for 2019 was a black and white painting of a female of the endangered Richmond Birdwing butterfly by insect artist and ESQ member, Dr Albert Orr.

Our financial statement indicates a net loss of $1656 for 2019. This is entirely due to carry over to the 2019 year of the large $3292 bill for printing of the large Barry Moore Memorial Issue at the end of 2018. Without that expenditure the normal trading account for the 2019 year would have shown a profit of $1636 which indicates that our financial structure is appropriate for normal years. Subscription income rose from $6203 in 2018 to $7839 in 2019 and this stems largely from the substantial increase in overseas hardcopy subscription rates brought in to cover rising overseas postage rates. Royalty income from sale of our electronic content by Informit fell slightly from $361 to $340.

The *Australian Entomologist* is owned by the Entomological Society of Queensland but has only been available to ESQ members as an independent subscription. During the year a major policy change regarding journal distribution was endorsed by ESQ Council. From the start of 2020 pdf versions of all issues will be supplied automatically to all ESQ members. This will increase readership of the journal from about 200 to about 550. Hardcopy subscriptions will still be maintained as stand-alone subscriptions. Finances will be monitored during 2020 and from 2021 a proportion of ESQ membership income, to be determined, will be transferred annually to the *Australian Entomologist* working account. Revised By-Laws to accommodate the new arrangements were tabled at the December council meeting and further changes to the Constitution will be required during 2020.

Subscriber numbers remained stable at around 220 during the year. In December the electronic subscribers who are already ESQ members were removed from the stand-alone subscriber list because they will now receive the journal as part of their ESQ membership. At end of 2019 subscriptions stood at 189, with geographic distribution being as follows: ACT 18, NSW 24, NT 1, QLD 73, SA 10, TAS 6, VIC 13, WA 7, Overseas 37.

An almost complete change of the Editorial Committee took place at the December Council Meeting when Greg Daniels was appointed as the new Editor while Christine Lambkin, Trevor Lambkin and David Lane became new Assistant Editors. We give special thanks to David Hancock who served as Editor for 24 years. Thanks also to Federica Turco (12 Years), Lindsay Popple (3 years) and Shannon Close (3 years) for their service as Assistant Editors. At the AGM in March Geoff Monteith will step down as Business Manager after 12 years, but will remain as an Assistant Editor. Susan Wright will take over as Business Manager at the AGM.

Geoff Monteith
Business Manager
Australian Entomologist

ANNUAL REPORT 2018
FINANCIAL STATEMENT FOR *THE AUSTRALIAN ENTOMOLOGIST* – JANUARY 1 TO DECEMBER 31, 2018

ASSETS		$	LIABILITIES	$
CBA chq A/c 00908915				
Closing balance		$1,497.55	Subs in advance (2020)	1543.00
			Graphic design for Vol.46(4)	100.00
Bank Australia term accts				
Closing balance:	307023174	11155.12		
	307023175	9007.37		
	138340573	5477.12		
Stationery (printed envelopes)		75.00		
Unsold past issues *Aust. Entomol.* 2039@ $0.75 ea		1529.25		
	TOTAL	**$28,741.41**	TOTAL	**$1,643.00**

EXCESS ASSETS OVER LIABILITIES: **$27098.41**

INCOME	$	EXPENDITURE	$
Subscriptions	7839.00	Printing costs, Vol 45 (4), 46(1-4)	8796.70
Page charges	870.00	Postage	2235.33
Interest (Aust. Bank 307023174)	266.76	Monthly merchant card fee	195.45
Interest (Aust. Bank 307023175)	249.59	Graphic layout costs	300.00
Interest (Aust. Bank 138340573)	130.98	Audit costs	230.00
Back issue sales	129.00	Stationery	101.97
Royalties from Informit	339.98		
Postage received	77.45		
Merchant fee refund	$167.55		
TOTAL	**$10,312.94**	TOTAL	**$11,859.45**

NET TRADING PROFIT/**LOSS**: -**$1656.14**

2019 SUBSCRIPTIONS at Dec 31:

AUSTRALIAN SUBSCRIPTIONS	152
OVERSEAS SUBSCRIPTIONS	37
TOTAL SUBSCRIBERS	**189**

I certify this is a true and accurate financial statement of the *Australian Entomologist* for the period 1 January 2019 to 31 December 2019.

Rebecca Keys
Independent and Honorary Accountant
25 January 2020

Insects of our New Guinea Neighbours

presented by Jessa Thurman
PhD candidate
University of Queensland

I was sad to miss our biennual Perkins dinner in October of 2019, but I had a remarkable opportunity and excuse. For one month, I got to work onboard a small expedition vessel, sailing through the islands off the coast of northern New Guinea. I was hired as a wildlife guide for Heritage Expeditions, an ecotourism company, and my daily work consisted of guiding a small group of passengers through each rainforest, coral cay, or cloud forest we encountered. I took as many photographs as I could in each spot and compiled them at the end of each day for recaps, alongside keeping an expedition log of our travels.

Jessa with a male Spiny Devil (*Eurycantha* sp.) of New Ireland (PNG).

Males of the Red Bird-of-paradise display for females high in the canopy at special lek sites.

Most tourists come on these voyages to see the culture of each place and a few are very keen for the birds. For West Papua, our main attraction were the Birds of Paradise, of which we saw six species! Wilson's Bird of Paradise with its strange bald blue head was admired alongside the dancing Red Birds of Paradise and their display for inquiring females. But in between these wonders were more extraordinary, although smaller creatures: the insects and other arthropods. Despite being so close to

Australia and sharing many plant and animals with us, New Guinea is largely unexplored for its wildlife, particularly the insects. A small expedition for katydids surveyed 90 species, 64 of which were new to science, suggesting that "the katydid fauna of Papua New Guinea may be one of the richest, and least explored, in the world" (Naskrecki and Rentz 2009). This expedition allowed us access to very remote communities however, and I documented as much as I could along the way. So my task for this month-long journey was to convince travelers how amazing the insects were of this region and to do so with limited information on each.

The Tithonus birdwing butterfly (*Ornithoptera tithonus*) seen in the Arfak Mountains of West Papua, Indonesia.

One group of insects for this region which are well-known are the birdwing butterflies. These butterflies rival the birds-of-paradise in their strange beauty, sexual dimorphism, and male dances for females. I previously shared an example of this display with the Bougainville Blues (*Ornithoptera priamus urvillianus*) in the November issue of the *News Bulletin* (47:8, pp. 160-161). Other stunning males of this group which we encountered include the Tithonus birdwing (*O. tithonus*). The green color on this butterfly's wings are reflections from its scales, which at the right angle can also appear golden yellow. While the males are flashy with color, the more simply colored females rule for size. Females of the Queen Alexandra's birdwing (*O. alexandrae*) are the largest butterflies in the world.

Much of New Guinea and its surrounding islands are rarely accessed due to previous conflicts. And none are more notorious than the conflict over the Panguna mine in Bougainville. Thousands of locals died in this brutal civil war between the island of Bougainville and Papua New Guinea, all over the operation and potential profits of what was then the largest copper mine in the world. Currently the region is in a time of peace with a

Stunning blue dragonflies (*Rhyothemis* sp.) rival the beauty of the true Bougainville Blues.

recent vote for independence beginning discussions of how Bougainville may become its own country. Surrounding the mine site however, is a stunning array of diversity with striking blue dragonflies (*Rhyothemis* sp.) and other aquatic invertebrates suggesting the potential regeneration of habitat quality around the old mine site.

However, what I found most surprising along our travels were the people. Everywhere we went, I met someone new. These were most typically other

A brave schoolgirl holds a *Eurycantha* sp. while the boys look on.

young women, either curious to see what a ghost like me was looking for in their forests, or wondering what I had found to make me start shouting. My most exciting finds were stick insects, my favourite group of insects. I was first drawn to the region to find the sister-species of the peppermint stick insects (*Megacrania batesii*) which we have here in Australia. The most striking of these were the black peppermints (*Megacrania nigrosulfurea*) of New Britain, alongside other members of *M. batesii* in New Ireland, Papua New Guinea. Locals were confused by my excitement at this creature, but willing to help me find others. While walking along a forest path I spotted a small black insect, which upon closer inspection was identified as a newly hatched Leaf insect (*Phyllium* sp.). Moments after this, we spotted something enormous in a palm lily (*Cordyline* sp.): the Spiny Devil (*Eurycantha* sp.)! I had only dreamed of finding a leaf insect or *Eurycantha* in my travels, but all at once these dreams came true. I was quick to try and share this amazing insect with some of the locals, but the boys were quite terrified by what I had to offer. The girls on the other hand were brave and with some caution, held the stick insects. Previously worried by the spines along the body of the creature, they came to enjoy the animal as I told them it was a harmless vegetarian.

I can only hope these remarkable experiences have the same positive impression on the

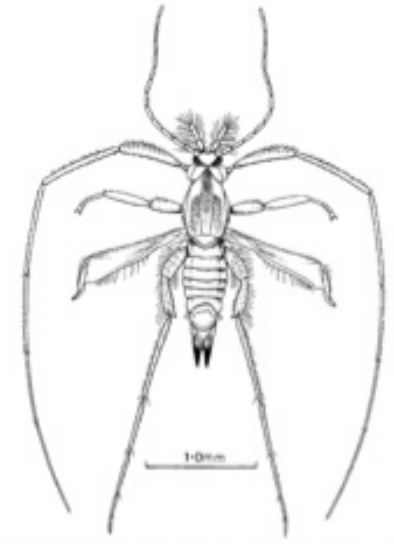
Eurycantha sp.

Peppermint stick insects (*Megacrania* spp.) of Papua New Guinea.

locals as it has had on me. I'm proud of the passengers whose attention has now been turned to appreciate, and to have met brave local girls who trusted me enough to hold a frighteningly large insect.

Pontomyia revisited: marine flies

presented by Christine Lambkin
Queensland Museum



Pontomyia male. Image F. Nanninga CSIRO. (Norris 1991).

A photograph of organisms collected by Shawn Depper in a night-time plankton sample from near Orpheus Island were sent to the Discovery Centre at Queensland Museum (QM) in September 2019 for identification. They triggered a memory of beautiful images and an amazing video taken at sunset in Pottsville NSW by Carolin Jericho from way back in May 2010.

The organisms concerned are marine flies, ♂ Chironomidae (non-biting midges), belonging to the genus *Pontomyia.* At sundown for a few nights around the new or full moon, the pupae swim to the surface where the adults emerge. Adults only live for a short period; ♂ 1-3 hours, ♀ even less. The females are always worm-like. The males skate on the surface with wings modified into paddles, the fore legs are elongated and act as 'outriggers'. The male reaches a floating female and has a brief mating 'flight'. The eggs are laid immediately, in a coil, which sinks to the bottom of the water. The larvae hatch and feed at the bottom (Norris, 1991; Huang & Cheng, 2011; Huang, Cranston, & Cheng, 2014).

Image taken by C. Jericho 2010. Video shown at ESQ Dec. 2019 Notes & Exhibit meeting; available from CL on request.

There were four species of Australian *Pontomyia* reported in the revision of the genus (Huang & Cheng, 2011) and currently on the Australian Faunal Directory and Atlas of Living Australia (*type locality):

Pontomyia cottoni Womersley 1937 (*South Australia, Australian coast);
Pontomyia natans Edwards 1926 (*Samoa, wide dist. Pacific & Indian Oceans -sublittoral tide pools);
Pontomyia oceana Tokunaga 1964 (*Japan, Pacific - coastal tide pools);
Pontomyia pacifica Tokunaga 1932 (♂ *Palau & ♀ Heron Island, Pacific).

In 2010, specimens in absolute ethanol were requested by the Cranston group for ongoing studies. Carolin sent many specimens in vodka to me, some were transferred to ethanol and sent to ANIC and then to Singapore for sequencing.

What I had missed in the intervening years, was a paper by Huang, Cranston, & Cheng (2014) that synonymised *Pontomyia cottoni* with *Pontomyia natans* and also acknowledged Carolin Jericho. Additionally *Pontomyia natans* was recognised as a cosmopolitan species, found in the Pacific, Atlantic, and Indian Oceans.

I would like to acknowledge the work of Carolin Jericho, Shawn Depper (Trinity Bay SHS, QM Honorary Assistant 2014), and QM Discovery Centre staff in revealing to me the most amazing fly story (and the best fly video I have ever seen - available on request).

References:

Huang, D., and Cheng, L. (2011). The flightless marine midge *Pontomyia* (Diptera: Chironomidae): ecology, distribution, and molecular phylogeny. *Zoological Journal of the Linnean Society*, 162, 443–456.

Danwei Huang, Peter S. Cranston, Lanna Cheng (2014). A complete species phylogeny of the marine midge *Pontomyia* (Diptera : Chironomidae) reveals a cosmopolitan species and a new synonym. *Invertebrate Systematics*, 28(3), 277-286.

Norris, K.R. (1991). Chapter 3. General Biology. Insects of Australia CSIRO, 1991. Page76

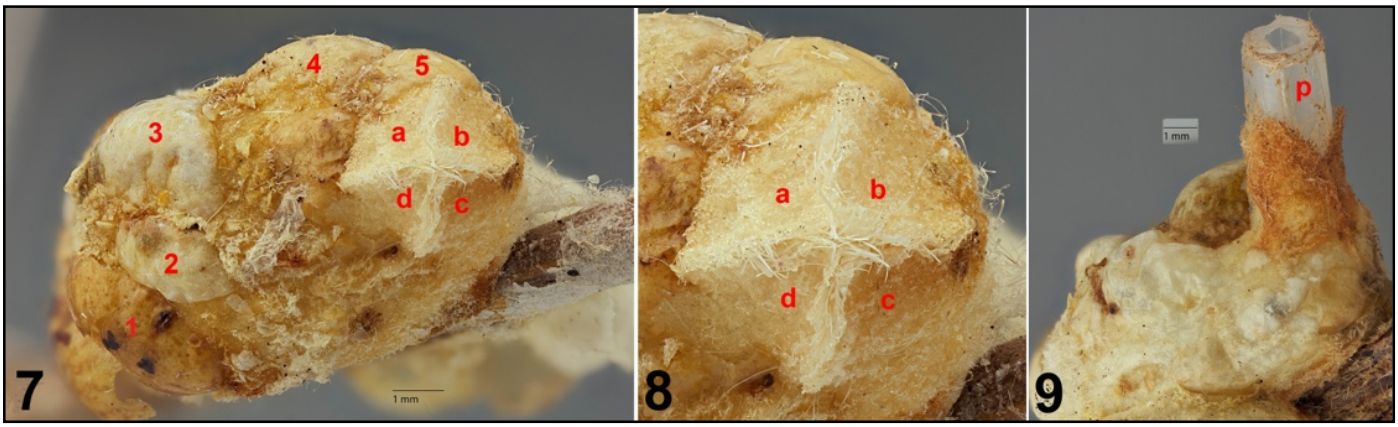
A moth that eats coccids inside weaver ant nests

presented by Geoff Monteith
Queensland Museum

This reports on a frustratingly brief observation made on a visit to Katherine in the Northern Territory on September 13, 2019. Just before driving back to Darwin I noticed a straggly tree of *Acacia auriculiformis* (the northern equivalent of our local black wattle, *Acacia melanoxylon*) festooned with many small woven leaf nests of green tree (weaver) ants (*Oecophylla smaragdina*). Only adult ants were in the 'nests', which seemed to be simply enclosing colonies of coccids being attended for their honeydew by the foraging ants. On a twig beside one nest was a lumpy cocoon-like object which I did not recognise. I quickly broke off several twigs and ant nests, shook most of the swarming ants off, stuffed everything into a plastic bag, drove 3 hours to Darwin, and flew back to Brisbane the next morning with the plastic bag buried in my suitcase.

A couple of days later I sorted through the contents of the plastic bag. The curious object on the twig proved to be a stiff-walled lepidopteran cocoon with a live pupa inside. The lumpy dorsal surface of the cocoon was formed of many parts of the spherical cases of the same coccids which the ants were guarding inside their nests. The coccid parts were firmly woven into the structure of the cocoon (Fig 7). Thanks to UQ coccid experts Lyn Cook and Penny Mills, I learned that the coccids (Fig. 1) were a species of the genus *Cryptes,* perhaps *Cryptes baccatus* (Maskell), which is common on wattles around Brisbane and is sometimes referred to as the 'wattle tick'. The species was not known from NT but populations show much genetic diversity and there may be several species of similar appearance (Lin et al. 2018).

Figs 1-6: (1) The coccid *Cryptes* nr. *baccatus* on twig of *Acacia auriculiformis*. (2) Moth cocoon incorporating *Cryptes* fragments on inside leaf surface of a weaver ant nest. (3) Moth cocoons on twigs of *Acacia* from inside and outside weaver ant nests. Emergence spouts arrowed. (4) Moth larva from inside weaver ant nest. (5) Side view of same larva in prepupal state. (6) Ventral view of prepupal larva. Note terminal anal claspers.



Figs 7-9: (7) Moth cocoon with emergence spout viewed end on. Numbers 1-5 show individual coccid shells incorporated in the cocoon. Letters a-d show the four triangular flaps which close the spout entrance. (8) Detail of spout entrance. Long wing fringe scales shed by the emerging moth are visible between the flaps. (9) Cocoon with tip of plastic pipette (p) pushed through to show how the stiff silken flaps spread apart when emerging moth exits. (Photos 7-9 by Geoff Thompson, Queensland Museum).

The pupal cocoon was very tough walled, being reinforced by the coccid shells, but had what appeared to be a softer emergence 'spout' at one end. Tearing open the small ant nests, I found several more similar cocoons (Figs 2-3) inside the ant galleries as well as one pale yellow caterpillar (Fig 4). The caterpillar went into pre-pupal quiescence without spinning (Figs 5-6), pupated on 28 Sept and emerged on 17 Oct. Three of the field collected cocoons hatched to the same species of moth on 24 Sept, 27 Sept and 9 Oct. The moths emerged through the 'spout' on the cocoon. The spout was closed by four stiff symmetrical triangular flaps of silken material which were pushed open by the moth and closed again after its exit (Figs 7-8). One always wonders at the ingenuity of caterpillars which spin these intricate cocoon structures to ensue the safe escape of themselves into their next life!

The moth (Figs 10-12) was a small grey Noctuidae, belonging to the genus *Mataeomera* (formerly *Catoblemma).* These are not readily identifiable and my species appears from images posted on Atlas of Living Australia to be very close to *Mataeomera ligata* (Lucas). Caterpillars of this genus are known to be predators on scale insects and some in Australia have been mentioned as possible biocontrol agents against coccids (Goolsby *et al* 2002; Rakimov et al. 2015). As with other moths with a predatory diet, the body of pinned specimens quickly became greasy (Fig. 12).

Larvae of *Mataeomera* species incorporate remains of their coccid prey into a woven shelter carried on their back for camouflage and protection. This larval shelter is incorporated by the larva into its eventual pupal cocoon and this explains the origin of the *Cryptes* shells embedded in the cocoons I found. The single naked larva (Figs 4-6) I found in the roughly handled *Oecophylla* nest after transit back to Brisbane had obviously had its shelter dislodged on the verge of pupation. Larvae hold the shelter on their back with the hooks of the anal claspers and this explains the strongly terminal position of the claspers in these larvae (Figs 5-6). This seems to be the first observation of *Mataeomera* larvae feeding on coccids within the nest of the highly aggressive weaver ants which had enclosed the coccids within the leaf nests for their own secretion harvesting purposes. It would have been good to have opened more *Oecophylla* nests for more detailed observations...but that is the frustrating nature of opening a jumbled bag of hastily collected items in Brisbane, 2600 km away from where they were collected a couple of days earlier near Katherine, NT!

Figs 10-12: Specimen of *Mataeomera* cf *ligata* which emerged on Sept 27 2019. (10) Beside cocoon from which it emerged. (11) In resting pose. (12) Pinned, wingspan 22 mm. Note greasy abdomen.

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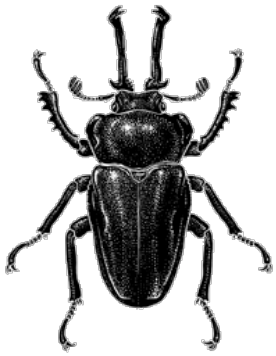


Gonipterus diversity in Queensland

photos from Natalia Medeiros de Souza
PhD Candidate, Univ. of Sunshine Coast

Gonipterus ferrugatus and *G. cinammomeus*, two described species found in Queensland.

Two undescribed species of *Gonipterus* collected in South East Queensland. *Below:* Only one or very few specimens of these two seemingly undescribed species were found.

Damsels in distress

--Roger Farrow

Lakefield National Park, Cape York

Lakefield National Park on Cape York is traversed by a network of river systems that empty into Princess Charlotte Bay. These flood during the wet season (December to March) and the waters recede during the dry between May and October. This event progressively exposes deposits of sand and silt along the river courses on which suites of annual plants germinate in the moist conditions. The rock bar of Hann Crossing on the Kennedy River is one such site where a range of different ephemerals can be seen each year among the paper barks that line the river. One of the more interesting plants that dominates this association is a long-leaved insectivorous sundew, probably *Drosera findlaysoniana*.

Drosera findlaysoniana Hann Crossing. The black specks are trapped insects.

Its sticky tentacles are modified hairs and trap a wide range of low-flying and perching insects including flies, beetles, such as ladybirds, pygmy grasshoppers (Tetrigidae), that are very common along on the water's edge, and, above all, damselflies (sub-Order Zygoptera).

Despite many millions of years of co-existence the damselflies readily alight on the deadly leaves of this sundew and are eventually consumed by the digestive juices secreted by the tentacles. Also present on the sand was another sundew, a tiny, prostrate, round-leaved species, *Drosera burmanni*, that is probably more adept at trapping crawling insects and small flying insects attracted to its glistening tentacles. Unlike the long-leaved type of sundew, its tentacles curve inwards moving the trapped insect in the middle of the leaf where it is digested (see top right leaf).

I would have thought that insectivorous plants growing in these nutrient rich alluvial deposits would hardly benefit from the nutrients provided by the insect prey. This suggestion is supported by the results from several glasshouse studies on sundews where nutrient levels available via the roots and via insect prey were manipulated and indicate that the benefits from insect nutrients are minimal in both nutrient rich and nutrient poor soils.

Ladybird beetle and a digested fly below

Trapped damselflies

Drosera burmannii

REFERENCE

Steward C.N. & Nilsen E.T. 1993. Responses of *Drosera capensis* and *D. binata* var. *multifida* (Droseraceae) to manipulations of insect availability and soil nutrient levels. *New Zealand Journal of Botany* **31**: 385-390.

Entomology News

from Queensland and beyond...

International ESQ member awarded prestigious NSF grant

-- Nicole Gunter

Nicole using the planetarium to teach biodiversity at the Cleveland Museum of Natural History.

As a curator at the Cleveland Museum of Natural History (Ohio, USA), I've been lucky enough to be able to pursue the research I am most passionate about — the evolution and systematics of Australian dung beetles. However, like many researchers I've faced the challenges of securing external funding to support taxonomic and phylogenetic research. When the National Science Foundation (NSF) opened the call for its CAREER program which supports integrated research and education activities, I knew I had to apply. Museum-based informal education at the Queensland Museum had shaped my interest in science and ultimately my career, and this grant program presented the perfect opportunity to inspire the next generation of scientists and support my research at the same time. With less than 7% funding success rate, I knew I would have to get creative to get the attention of the National Science Foundation (NSF).

My research proposal outlined how Australian native dung beetles were the ideal model to explore the contribution of biogeographic history to species distribution with the aim of improving how we approach ecological niche modeling. The project focuses heavily on the systematics of the two clades of native dung beetles, the Australasian endemic genera and the cosmopolitan genus *Onthophagus*. Resolving species complexes is critical to understanding species distribution and assessing the accuracy of environmental niche models. Through this combined systematics, phylogeographic and ecological approach, I hope to gain a better understanding of the heritability of environmental tolerance that shaped species distribution across the Australian landscape.

These results would be integrated into a new museum program that communicates the evolutionary processes behind species distribution. Technological advances in software for planetariums now promote the exploration of Earth in high definition, providing a captivating setting for educational programing. I wanted to leverage this technology in a novel way to explore digitised data. I still remember the first time that my dung beetle data was projected in the dome, it was almost as if I was there collecting *Cephalodesmius*. My grant proposed to utilise our institutional planetarium to bring biodiversity data to life and innovate how we teach evolutionary biology and biogeography.

In late January, NSF announced the award for my proposal entitled "Digitized data, dung beetles and the dome: improving the understanding of species distribution through research and planetarium-based education." The grant will support the 5-year research and graduate student training program, and the development of the new planetarium program on biogeography. The innovative use of planetariums to display collections data under the immersive setting of a planetarium dome will bring digitised data to a new audience, and research and collections to the forefront of museum programming here in Cleveland. I am thrilled to have the opportunity to take the science I love to the planetarium and I hope to inspire the next generation of scientists just like Queensland Museum inspired me.

Projecting distribution data from the Atlas of Living Australia on the planetarium dome.

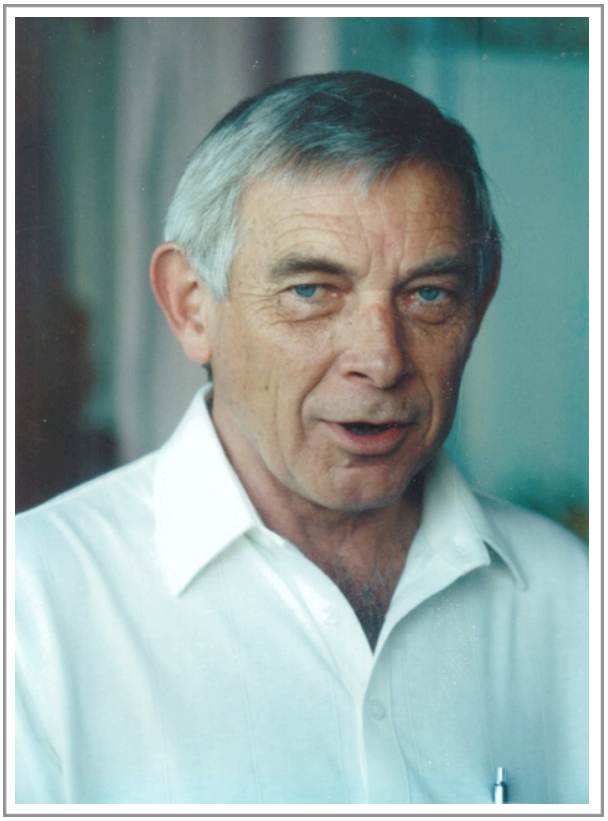
Congratulations and well done, Nicole!!

Rhaphidophoridae. Photo credit: Julian Finn, Museums Victoria (CC BY-NC4.0)

Australian Cave Crickets: 2020 Cave Animal of the Year!

Cave Animal of the Year Awards were initiated in Germany in 2009, and last year, the Australian Speleological Foundation initiated the Australian Cave Animal of the Year awards. These awards are part of a worldwide effort to increase awareness and appreciation of cave creatures. This year's Australian Cave Animal of the Year Award goes to the Cave Crickets (Rhaphidophoridae). The cave crickets are also referred to as camel crickets or cave wetas. Cave crickets are scavengers, feeding on a variety of plant and animal material. They require high humidity so live mainly in caves or rainforests. These crickets are wingless and have very long antennae. Many are undescribed. Want to learn more? Read all about it at: https://www.caveanimaloftheyear.org.au

VALE



GORDON HARRY SYDNEY HOOPER

23 September 1932 - 15 February 2019

Gordon Hooper studied entomology under Frederick Athol Perkins at the University of Queensland (UQ) in the early 1950s, being awarded his B.Sc. in 1955. One of his classmates was the late Merv Bengston who went on to become head of the Entomology Branch of the Queensland Department of Primary Industries. Gordon's first appointment was as a field entomologist with the Queensland Department of Agriculture in Toowoomba. There he worked with Dr Alan May, the then authority on Australian fruit flies. Perhaps this experience led him to return to fruit fly entomology in later years.

After completing an M.Sc. at UQ in 1959, Gordon went on to do his PhD under A.W.A. Brown at the University of Western Ontario, Canada. A.W.A. Brown was an Englishman who studied insect physiology under V.B. Wigglesworth in London, and after moving to Canada became a world leader in the genetics and biochemistry of insecticide resistance in insects. Gordon's dissertation was entitled "Insecticide resistance in the root-maggot *Euxesta notata* (Wied.)", with the PhD awarded in 1964.

Consequently, when Gordon returned to UQ as a lecturer in entomology, he was enthusiastic about teaching and research in pest management and insecticide resistance. In 1965 he developed the course "Economic Entomology" where students had to identify all pest insect species in Queensland, develop a basic knowledge of their biology, and know the then current methods of pest management. One class in 1966 had 24 students and most obtained positions in Departments of Agriculture around Australia. A version of this unit was still being taught into the 1980s, as ET 202 "Introductory Entomology for Agriculture".

Gordon taught entomology at UQ for 20 years (1965-1985), with the period from 1977-1985 being as Head of the Department of Entomology. He was an excellent teacher with logical and clear presentation of course material. He fostered enquiry and a real desire to learn. He also supervised a large number of postgraduate students, many of whom were working on their research projects within State Departments. As Head he took a punt, in 1981, on accepting a novice in entomology to teach the Insect Ecology course when he appointed Myron Zalucki as a "short-term temporary" lecturer. His mentorship was greatly appreciated, as he took the somewhat monarch-centric new appointee aside and suggested he work on the "*Heliothis*" pest group (as they were then known) and to also make some forays into fruit flies. Thirty-nine years later Myron continues at UQ, still working on monarchs, *Heliothis* and making occasional forays into fruit flies. During his career at UQ, Gordon kept an interest in past students and continued to encourage and mentor them.

In the late 1960s Gordon took an interest in fruit fly research and developed friendships and collaborations with prominent researchers at the International Atomic Energy Agency (IAEA) Seibersdorf laboratories, the United States Department of Agriculture laboratories in Hawaii, and the University of Hawaii. At that time Hawaii was the international epicenter for research into pest species of *Bactrocera* (then *Dacus*) and Medfly. From 1969-1971 he undertook a leave of absence from UQ to work at the IAEA Seibersdorf labs, near Vienna. The Seibersdorf laboratories were then, and as they remain, a global focus for research on the development and operationalization of the Sterile Insect Technique (SIT). On return from the IAEA in 1971, Gordon had a Gamma Cell installed under the UQ Entomology Building in order to continue his research into the SIT. On one occasion this unit was used to sterilise pupae for a fruit fly mark-recapture study undertaken by McFarlane *et al.* at Wangaratta, Victoria.

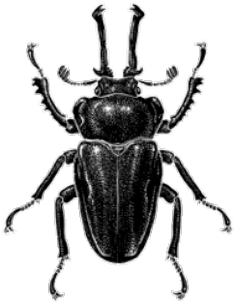
In fruit fly ecology research, Gordon, Myron Zalucki and R.A.I. (Dick) Drew collaborated in studies of species populations in the Cooloola rainforest of southern coastal Queensland. On one occasion Gordon had his UQ technical assistant, Clyde (Peter) Dunlop, climbing high into rainforest canopies to fix pullies and ropes to suspend male lure traps (Steiner traps) in order to measure trap catches at differing heights above ground. Workplace Health & Safety was not an issue in those years!

Gordon had a second stint at the Seibersdorf laboratories between 1982 and 1984, when the Insect and Pest Control section was under Don Lindquist's leadership. Gordon led a small fruit fly group which included Eric Busch-Petersen, who initiated the genetic sexing work on Medfly, and Harry Fay who was on a Special Service Agreement to develop a starter diet for the Medfly mass-rearing facility in Mexico. Harry recalls frequently sneaking out to lunch with Gordon and Eric so the latter two could catch up on a morning deficient in cigarettes, and invariably indulge in an oversized naturschnitzel at a local heuriger. Gordon oversaw the building of a new mass-rearing laboratory at Seibersdorf and conducted research on larval diets, rearing technologies and quality evaluation of mass-reared Medfly. In addition, he supervised entomologists on IAEA Training Fellowships at Seibersdorf from countries such as Egypt, Sudan and India. He also undertook some field trials with a genetic-sexing strain of Medfly on Procida Island in Italy with Ugo Cirio and Alan Robinson.

After missing out on the Chair of Entomology at UQ to Prof H.E.H. Paterson, Gordon decided to make a break from academia and applied for and was appointed in 1986 to the role of Director, Australian Plague Locust Commission, based in Canberra: he remained in this position until his retirement in 1997. Here Gordon oversaw the modernisation of operations, shaping the development of better data capture and the development of modelling tools and software that greatly improved the timely management of incipient locust outbreak populations. For Gordon at the APLC it was not about "high impact" publication, although he always encouraged his colleagues to do so, it was about making a difference to management.

Bactrocera tryoni. Photo: Wikipedia

Gordon had over 60 career publications, the majority of which are listed in Daniels (2004). His first publication was Hooper (1958), and last major report 42 years later (Hooper *et al.* 2000). He made significant contributions to the fields of insecticide



resistance, insect sterilisation technology, and the ecology and management (especially through SIT) of tephritid fruit flies. For the international fruit fly research community, he is perhaps best remembered for his major editorship, with Alan Robinson, of the Elsevier World Crop Pests volumes on fruit flies (Robinson & Hooper 1989). For his contributions to applied entomology, Gordon was awarded a rare 'Doctor of Science' degree from the University of Queensland in 1980.

As a leading member of the Australian entomological community for many decades, Gordon accepted a number of important service roles. He was a foundation member of Australian Entomological Society and served on the first executive as Foundation Treasurer of the Society from 1965-1969. He was President of the Entomological Society of Queensland in 1967, President of the Australian Entomological Society from 1992-1996 and Chief Editor of the AES journal during 1980-1982. During the incursion of *Bactrocera papayae* into north Queensland in the mid 1990s, his technical expertise was applied for national benefit as a Scientific Advisory Panel member of the Papaya Fruit Fly Eradication Program (1995-97).

Socially, Dick Drew recalls that Gordon loved playing golf but swapped this for lawn bowls in later years when arthritis in his hands made it difficult to hold the clubs. A 'contemporary' of his, longtime Director of Entomology at QDPI the late Tom Passlow, remained a lifelong friend.

Gordon's impact as an educator, applied entomologist, and research manager is considerable – a legacy from which many benefited in developing their careers and contributions in entomology. Gordon was extremely energetic and enthusiastic, and a driving force in his areas of interest.

GORDON HARRY SYDNEY HOOPER, 23 September 1932 - 15 February 2019, passed away peacefully at The Canberra Hospital, aged 87 years. He was the beloved and loving husband of Margaret Shirley. Father of Cameron and Craig (dec). Father-in-law of Li-Hsueh. Grandfather of Jennifer.

Prepared by Dick Drew, Harry Fay and Myron Zalucki; collated by Tony Clarke

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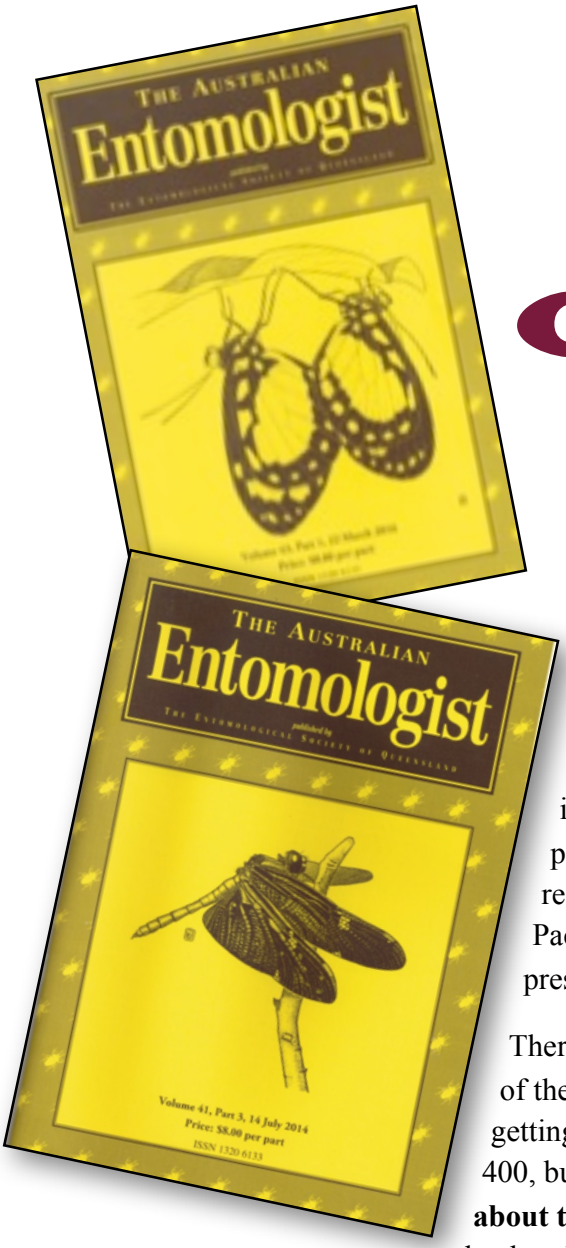
Suburban insects, L to R: Assassin bug nymph, syrphid fly and dung beetle (*Onthophagus dandalu*). Photos K.Ebert



BIG CHANGES

FOR THE *AUSTRALIAN ENTOMOLOGIST !*

Many ESQ members may not know much about the scientific journal owned by the society which is called *Australian Entomologist.* It is published quarterly in full colour and distributed in both hardcopy and electronic form to stand-alone subscribers who pay a separate subscription rate to receive it. It publishes formal, refereed papers on the native insects of Australia, NG and the SW Pacific and goes to more than 40 overseas libraries, giving ESQ a real presence in entomological science worldwide.

There are about 200 subscribers to *Australian Entomologist* with about 50 of them opting for the electronic (pdf) version and the remaining 150 getting hardcopy issues by mail. Membership of the ESQ has just passed 400, but surprising only about 100 of them subscribe to the journal. **This is about to change!** After several months of deliberation ESQ Council made a landmark decision at its December meeting to **supply the electronic version of *Australian Entomologist* to all ESQ members as part of their normal membership.** Copies will be sent by email in the publication months of March, June, September and December, starting from March 2020. This means overall readership of the journal will rise from 200 to 500.

The existing 40 electronic journal subscribers who are already ESQ members have been removed from the stand alone subscription list and no longer have to pay separately. ESQ membership subscription rates have not risen for almost 20 years, but there will now need to be a small contribution from ESQ towards production costs of the *Australian Entomologist*. ESQ subscription rates will not change for 2020, but costs will be monitored during the year and a rise will come in for 2021. This will probably entail a rise from the existing $30 p.a. to $40 p.a. which will be very modest for 9 news bulletins and 4 journals per year.

Stand-alone subscriptions to both hardcopy and electronic *Australian Entomologist* will still be available for those who do not wish to join ESQ. We surveyed hardcopy subscribers during ESQ deliberations of the changes and found that almost 90% wished to maintain their mailed hardcopy version even though they could get the electronic version much cheaper, or even free via their ESQ membership. **So the hardcopy version will be**

maintained. Subscription rates for the journal have not risen for more than 10 years. However, since higher hardcopy costs have been partly subsidised in the past by stand-alone electronic subscribers, who will now be much fewer, we will also be monitoring costs during 2020 with a view to increasing the hardcopy subscription rate for 2021. It will probably rise from the existing $33 p.a to around $50 p.a. for private Australian subscribers. Another review outcome is that hardcopy reprints will no longer be supplied to authors.

The team who produce *Australian Entomologist* is also changing almost completely. David Hancock, who has been Editor for 24 years, is heading off to live in well-deserved retirement in England and the thanks of ESQ go with him. The new team will be largely based at the Queensland Museum. Greg Daniels (QM) is the new Editor while Christine Lambkin (QM), Geoff Monteith (QM), Trevor Lambkin (Brisbane) and David Lane (Atherton) are Assistant Editors. Susan Wright (QM) takes over as Business Manager in March.

We need your manuscripts! Page charges are free for the first ten pages and $10 per page thereafter. If you have something in progress dealing with native insects of Australia and adjacent areas, think of the *Australian Entomologist*. Details are available at https://www.esq.org.au/publications.html

Geoff Monteith
Business Manager
Australian Entomologist

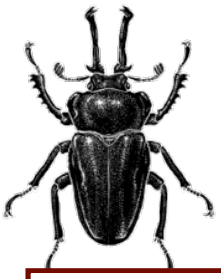
In other news...

MOSQUITOES AND DENGUE: Scientists from CSIRO Health and Biosecurity (Geelong, VIC) and the University of California/San Diego have teamed up to breed genetically modified mosquitoes that are resistant to spreading dengue viruses. They have genetically modified *Aedes aegypti* so that it has a reduced ability to acquire and transmit all four of the serotypes of the dengue virus.
Read more: Broad dengue neutralization in mosquitoes expressing an engineered antibody. Buchman, et al. 2020. https://doi.org/10.1371/journal.ppat.1008103

BUSHFIRE RESPONSE: The Australian Entomological Society Conservation Committee has released a statement on the current bushfire crisis in Australia. Read it on their website link to "AES response to bushfire crisis" at www.austentsoc.org.au

DOGS AND SAUSAGES HELP LOCATE ELECTRIC ANTS IN FNQ: Electric ants are an invasive, stinging ant that was first found in Cairns in 2006. The National Electric Ant Eradication Program has found that the ants are attracted to sausages, enabling them to use sausage-baits to help locate infestations. The NEAEP also has trained dogs which can detect the electric ants. Dogs are also trained to detect the invasive yellow crazy ants. Read more:
www.abc.net.au/news/2020-1-21/sausage-and-dogs-leading-fight-against-electric-ants-fnq/11885068

THE QUEENSLAND MUSEUM'S TOP 10 NEW SPECIES OF THE DECADE: Among the top 10 new species are two spiders and a damselfly. Check out *Desis bobmarleyi*, a spider that lives in the intertidal zone!
https://blog.qm.qld.gov.au/2020/01/17/queensland-museums-top-10-new-species-of-the-decade/



Diary Dates for 2019

Meetings held on the second Tuesday of the respective month

MARCH 12	Gary Fitt, ESQ President	AGM and Presidential Address: *" From Helicoverpa to Ebola – reflections on the ecological underpinning of pest management, resistance management and biosecurity"*
APRIL 9	Geoff Monteith	Cooloola monsters: 40 years of discoveries of these iconic Queensland insects.
MAY 14	Jane Royer	*TBA*
JUNE 11	Notes and Exhibits	Student Award winner and other presentations
AUGUST 13	Matt Krosch	*TBA*
SEPTEMBER 10	Melissa Starkie	*TBA*
OCTOBER 8	Owen Seeman	*TBA*
NOVEMBER 12	To be determined	*TBA*
DECEMBER 10	Notes & Exhibits	Notes and Exhibits/Christmas Afternoon Tea

SOCIETY SUBSCRIPTION RATES

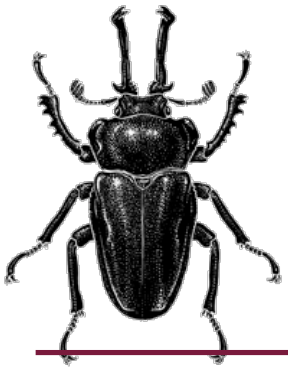
GENERAL	Person who has full membership privileges	**$30pa**
JOINT	Residents in the same household who share a copy of the *News Bulletin*, but each otherwise have full membership privileges.	**$36pa**
STUDENT	Student membership conveys full membership privileges at a reduced rate. **Free the first year**,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

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

THE *AUSTRALIAN ENTOMOLOGIST* SUBSCRIPTION RATES

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

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



Entomological Society of Queensland

Notice of next meeting:

Tuesday, 10 March, 1:00 pm

Annual General Meeting & Presidential address

"From *Helicoverpa* to Ebola – reflections on the ecological underpinning of pest management, resistance management and biosecurity"

presented by
Dr. Gary Fitt
Science Director
CSIRO Health & Biosecurity (Retired)

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

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

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

Next News Bulletin:
Volume 48, Issue 1 (March 2020)

Deadline for contributions: Friday, 13 March 2020.

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