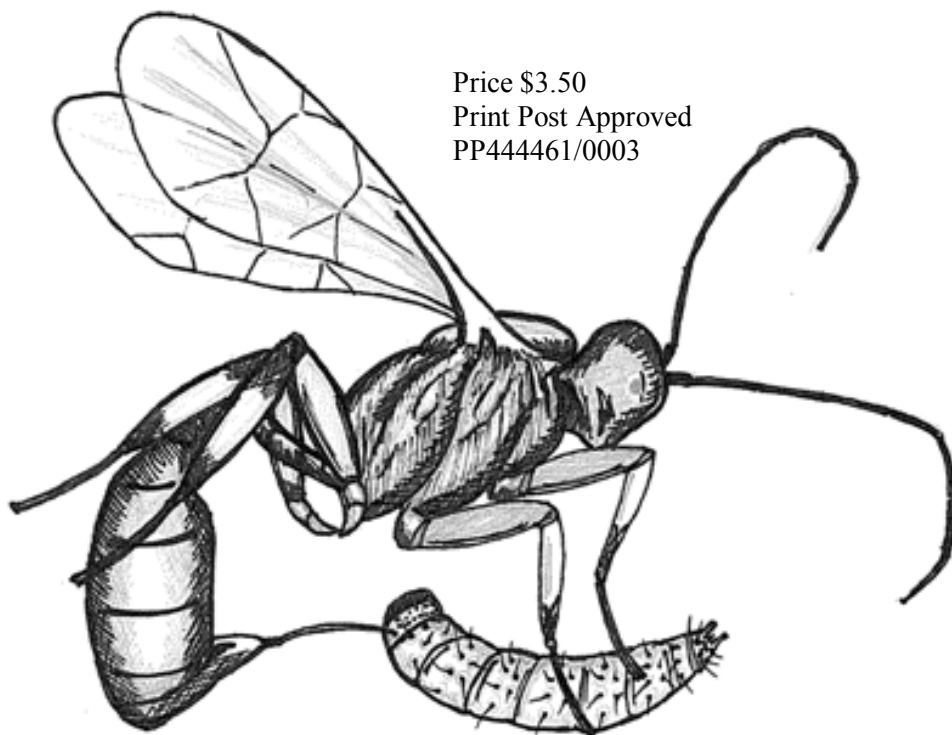


ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC NEWS BULLETIN

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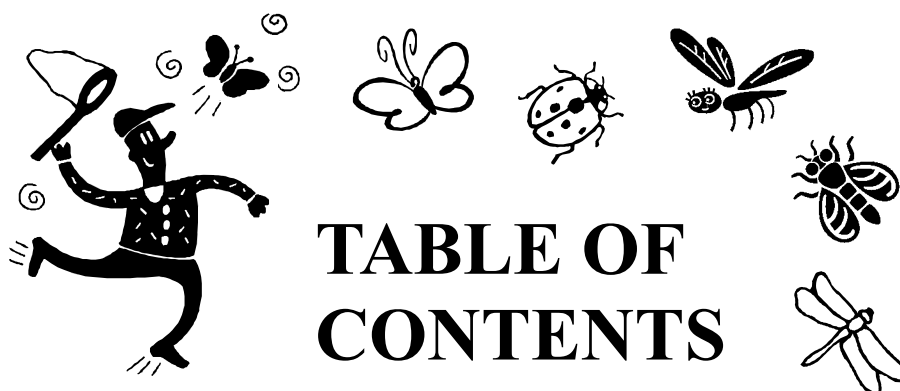
The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. Membership is open to anyone interested in Entomology. The Society promotes liaison among entomologists 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 Monday of each month (March to June, August to December), or on Tuesday if Monday is a public holiday. Visitors and members are welcome. Membership information can be obtained from the Honorary Secretary, or other office bearers of the Society.

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. Its magnificent purple and green colouration makes it one of the most attractive of all Australia Coleoptera. It is restricted to the rainforests of northern Queensland.

COVER: *Diadegma semiclausum* ovipositing into a larva of the diamondback moth, *Plutella xylostella*. Drawn by Sandra Dennien.



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

The Entomological Society of Queensland **Minutes of General Meeting August 11, 2008**

Meeting held in the Large Conference Room, CSIRO Entomology, Long Pocket Labs, 120 Meiers Road, Indooroopilly, on August 11 2008, 12:00 midday.

Attendance:

Richard Bull, Geoff Monteith, Shaun Winterton, Tim Heard, Christine Lambkin, Noel Starick, Anna Marcora, Ross Kendall, Graham Forbes, Felix Bianchi, Mike Furlong, Geoff Thompson, Matthew Purcell, Nancy Schellhorn, Mike Muller, Steve Frances, Judy King, Lynita Howie, Helen Nahrung, Mark Schutze, Shon Schooler, Don Sands, Lyn Cook, Gunter Maywald, Gary Fitt, Penny Mills, Peter James, Rieks Van Klinken.

Visitors:

Farah Zavahir, Brendan Murphy, Barbara Clifford, Greg Harper.

Apologies:

Peter Allsopp, Susan Wright, John Moss, Federica Turco, Gio Fichera.

Minutes:

The minutes of the last General Meeting of June 10, were circulated in the News Bulletin Vol. 36, Issue 4, 2008.

Moved the minutes be approved: Christine Lambkin

Seconded: Don Sands

Membership Nominations and Elections:

The following nominations for membership were put before the meeting and in accordance with Society rules, elected by unanimous show of hands: Jodie Coldwell, Leon Hugo, Andrew Hulthen, G.J. Anderson and Penny Mills.

General Business:

Collecting Permits:

Permits Officer, Susan Wright has revised the format of Entomological Society of Queensland General Permit for National Parks and Forestry. The revisions are to: clarify details of eligibility of applicants; report the number of specimens of a species from geographic areas to be collected; provide comprehensive labelling and place of storage or lodgement of specimens. The revised format will appear on new permits to be issued for the 2008-9 period. All applicants will need a new permit.

Don Sands advised Protected Species Permits will not be renewed until new guidelines are drawn up. He advised that holders of the new permit would be subject to significant obligations and commitments.

Reminder announcement:

- The Aust. Ent. Soc. 39th Annual General Meeting will be held at Orange Agricultural Institute, Orange, NSW on 29th September, 2008. Details can be obtained from their website <http://www.agric.nsw.gov.au/Hort/ascu/myrmecia/events.htm>
- Geoff Monteith advised there will be a Bugcatch outing on 24 August at the Wallum Reserve near Beerwah.
- Don Sands advised the Richmond Birdwing Recovery Network will be holding a workshop on Saturday 16th August at the CSIRO Jamboree Heights centre.

Main Business:

Sheep lice: An entomological perspective
on a veterinary problem

Peter J. James

**Department of Primary Industries and Fisheries,
Animal Research Institute, Yeerongpilly**

Sheep lice (*Bovicola ovis* Schrank) (Phthiraptera: Trichodectidae) are one of the three main parasite problems for the Australian wool industry. Sheep lice are chewing lice and feed by ingesting skin lipid, loose scurf bacteria and superficial skin squames. Sheep lice decrease wool cuts by up to 1 kg per head and reduce wool quality. They appear to have little impact on general sheep health and contrary to common belief, do not reduce weight gains.

Historically, control of sheep lice has been almost exclusively through the use of chemicals and government regulation. In most of Australia, sheep lice were proclaimed as a notifiable disease in the late 1800s and active regulatory programs including market inspections, quarantine and transport restrictions continued through most of the twentieth century. In much of Australia it was a legal requirement that all sheep be treated with chemical within six weeks of shearing regardless of whether or not lice were present. Chemical treatment remains the principal method of control, with a high proportion of sheep owners continuing to treat annually after shearing whether or not lice are present.

There is now a strong campaign worldwide to reduce chemical use for sheep ecto-parasite control, to reduce insecticide residues in wool processing effluent, and occupational exposure to louse control chemicals and selection for resistance. Interestingly, despite widespread application of chemicals by immersion dipping and spraying, resistance was not identified before the first backline treatments, containing synthetic pyrethroids, were introduced for sheep in 1981. Backline treatments, which require much less labour to apply than older methods, became widely used and development of resistance was associated with an upsurge in the prevalence of infestation in the late 1980's and early 1990's¹. Resistance to the insect growth regulators diflubenzuron and triflumuron has recently been identified² and there is concern that a similar increase may occur with spread of resistance to these products.

More rational approaches to controlling sheep lice are required but development has been hampered by a poor knowledge of the biology of sheep lice and a lack of alternatives to chemical methods of control. Below I summarise some of our work towards better integrated control programs:

Detecting lice

Although a number of systems of detecting lice in shorn wool have been tested and new methods are presently being researched currently the detection of lice depends on inspection of live sheep. In the early stages of an infestation only a few sheep in the mob will have lice and numbers of lice on the infested animals are likely to be low. Detecting lice depends firstly on selecting an infested sheep for inspection and secondly, finding lice on that animal. The sensitivity of live sheep inspection is low and direct sheep inspections are tedious and unsuitable for assessing infestation level as a basis for treatment decisions.

It is well known that lice cause pruritis (itching) and fleece derangement (rubbed and pulled wool) but the exact relationship was unclear and anecdote suggested that the association was poor. From experiments to determine the quantitative and temporal relationship between lice, pruritic behaviour and fleece derangement we found that in the early stages of an infestation, when most treatment decisions will be made, there was a strong relationship between the presence of lice and signs of pruritis³. Sheep commenced pruritic behaviour early in the infestation and at levels of lice that would be difficult to detect by direct inspection. Furthermore, the proportion of sheep in the mob with deranged fleece provided a practical method for estimating the level of infestation present. Fleece derangement is now used in the long wool module of LiceBoss™ to assess action thresholds for treatment. In mobs where sheep had been infested for an extended period of time we found only a weak relationship between the level of derangement and lice numbers. In

this circumstance individual sheep sensitivity and immune responsiveness to lice may be a more important determinant of pruritic response than numbers of lice per se.

Preventing new infestations

A major element in louse control programs is the prevention of new infestations. Sheep lice are obligate parasites of sheep and do not breed on other ani-

mals or birds, with the occasional exception of goats. The most important source of infestations is contact with other infested sheep. When the surface of the fleece is shaded and warm, such as when sheep are in close contact, lice move to the surface of the fleece and transfer readily between animals. However, sheep owners often ask about the possibility of sheep becoming infested from other sources. To answer these questions we conducted a series of experiments⁴



Above: Counting lice at Longreach

Survival away from sheep: A critical factor in the likelihood of infestations beginning from non sheep sources is the period for which lice can live away from sheep. Conventional wisdom was that lice would not survive for more than 4-5 days after removal from sheep. However, we found that some lice survived up to 29 days and in nearly all tests, lice survived for at least two weeks. When surviving lice were provided with wool and skin scrapings, most were able to survive and breed.

Wool on fences: Lice are negatively phototropic and most lice dropped out of wool within an hour. All lice were gone after 24 hours, suggesting that wool on fences is unlikely to be a significant source of infestation.

Clothing of sheep handlers: Studies of transmission on shearer's footwear demonstrated that up to 124 lice could transfer per moccasin in 3½ minutes, the approximate time it takes to shear a sheep. At room temperature, lice survived on shearer's moccasins for up to 10 days, suggesting that precautions should be taken to prevent spread by this means. Microwaving the footwear or freezing overnight reliably killed all lice.

Other animals or insects: Although lice are generally host specific and do not breed well on non-natural hosts, the possibility of physical transfer or phoresy remains. Many bird lice species have been found to exhibit phoretic behaviour on hippoboscid flies and phoresy of cattle lice on buffalo flies (*Haematobia irritans*) has been reported. In a preliminary laboratory study we found that *B. ovis* transferred between fly cages by attaching to *Lucilia cuprina* confined closely with them. The highly artificial conditions under which the test was conducted, low numbers of lice which transferred and the lack of previous reports in the literature suggest that this is unlikely to be a significant means of transmission in the field.

Population build up

Increase in louse numbers is a function of both transfer between sheep and subsequent build up in numbers on individual sheep once an infestation has established. In the early stages of an infestation lice numbers increase very slowly and it may take many months for the infestation to become obvious. However, once the majority of sheep in the mob have contracted lice, numbers can start to build up very rapidly and substantial wool losses can result if the flock is not treated. We developed functions for the build up of lice and for spread through flocks in varying situations and have used them to estimate action thresholds in the Lice-Boss™ decision support model⁵.



Above: *Bovicola ovis* females, male, nymphs and egg

Bruce



Bruce

**Left:
Dipping sheep - part
of Australia's heritage**

**Below:
Backline treatment
for lice**



Other methods of controlling lice?

Host resistance

Host resistance can potentially be increased by breeding or selection of resistant genotypes, vaccination, pharmacological intervention or nutritional supplementation to enhance immune response. Most previous work has dealt with haematophagous and invasive parasites. Haematophagous parasites inject antigens into the humoral system or peripheral tissues during feeding whereas invasive parasites live in intimate contact with body tissues and directly present a range of secretory, excretory and cuticular antigens to the host immune system. Sheep lice feed superficially on the skin and do not penetrate deeply enough to directly contact elements of the host immune system. However, we have demonstrated that they stimulate an immune response, and that this response may play a part in regulating the size of louse populations (See ⁶ for review of this work).

Evidence for immune response to *B. ovis* includes:

Humoral immune response: Infested lambs had significantly higher anti-louse IgG titres than unexposed lambs and there was a significant relationship between louse numbers and anti-louse IgG (although not anti-IgE serum titres) in Merino ewes.

Cellular response: *B. ovis* antigens elicited proliferative responses in lymphocytes collected from peripheral blood and prescapular lymph nodes of infested lambs. However, there was no effect in lymphocytes collected from serum from lymph nodes which do not receive lymph from the skin, suggesting that the cellular response was operating locally.

Skin surface antibodies We found Anti-*B. ovis* IgG antibodies in skin washings from infested ewes and a negative relationship between numbers of lice and the concentration of anti-louse antibody during *B. ovis* population decline. Skin washings collected from sheep during decline in louse densities and added to louse diet fed to lice in laboratory colonies reduced louse reproduction. Although the above findings may suggest regulatory role for IgG antibodies at the skin surface, many other biocidal compounds are found on or near the epithelial surface. The effects observed on *B. ovis* could also be due to other isotypes of antibody or other immune effectors associated with the occurrence of IgG at the skin surface.

Hypersensitive (Allergic) response: Protection from bites or invasion by arthropods has been proposed as a major reason for the development of hypersensitive (IgE mediated) responses in terrestrial vertebrates. We found that

intradermal injections with soluble louse antigens stimulated strong skin responses in infested sheep and there was a strong correlation between the size of louse populations and wheal area and skin thickness at 24 h post injection (late phase response). Although there was substantial cross reactivity to the antigens of other insects there was also a significant louse-specific component. It has been suggested that prolonged exposure to allergens may preferentially elicit late phase reactions in humans and a similar response to louse antigens may explain the correlation between louse numbers and the size of the reactions at 24 h.

The effect of hypersensitive response in regulating *B. ovis* populations is unclear. Hypersensitive responses are often implicated in the regulation of ectoparasites through their effect in stimulating grooming, but this is unlikely to be important with sheep lice which are protected by the dense covering of wool present on sheep. There may also be direct effects. For example, interruption of tick feeding and premature detachment of cattle tick larvae has been attributed to release of histamine in hypersensitive reactions⁷ and strains of lice that developed resistance to the mouse louse *Polypax serrata* had twice as many mast cells in their skins as susceptible animals, also suggesting the involvement of a hypersensitive response⁸. However, late phase reactions associated with *B. ovis* infestation may cause the orthokeratosis, increased scurf and the thicker lipid layer observed in infested sheep⁷ and thereby provide an enhanced feeding environment for lice. Whether the stronger late phase reactions are a result of, or the reason for, heavier louse burdens is presently uncertain.

Differences in susceptibility amongst sheep

We found significant differences in the size of louse populations that developed between breeds of sheep, between different bloodlines within breed and large and repeatable differences amongst sheep within flocks⁹. Furthermore, there appeared to be an association between susceptibility to lice and susceptibility to gastrointestinal parasites. Recent New Zealand work has confirmed that susceptibility to lice is heritable¹⁰. Therefore it should be possible to make genetic gains in resistance to lice if an accurate and easy method of estimating resistance can be found.

‘Biological’ methods of control

A number of other non-chemical methods have been investigated or are presently under investigation. These include:

Entomopathogenic fungi: Isolates of the fungi *Metarhizium anisopliae* and *Beauveria bassiana* collected in Queensland were screened in laboratory studies for ability to grow and infect *B. ovis* at high temperatures, a high sporulation rate suitable for mass production and virulence to different stages of *B. ovis*. Several isolates caused 100% mortality to all stages at 34°C in wool based bioassays. A strain of *M. anisopliae* selected on the basis of these assays and applied to sheep by immersion dipping caused a 98% reduction in louse numbers in comparison to controls. Further trials towards the registration of a commercial product are currently in progress.

Entomopathogenic nematodes: Entomopathogenic nematodes have been referred to as pesticides with the power of search and may have particular advantages for controlling lice on long woolled sheep where it is difficult to contact all lice with conventional pesticides. Laboratory assays with four species of nematodes (*Steinernema carpocapsae*, *S. feltiae*, *S. riobrave* and *Heterorhabditis bacteriophora*) confirmed their ability to move along wool fibres and infect and kill *B. ovis*. At higher temperatures *S. carpocapsae* and *S. riobrave* gave better results than the other two species. Preliminary studies with *S. carpocapsae* jetted onto sheep reduced louse numbers by 89.8% at 11 days after treatment and live nematodes were recovered from wool for up to 20 days.

Bacillus thuringiensis (B.t.): The first report of activity against sheep lice was in the early 1970's and since then a number of *B.t.* strains have been identified with activity against *B. ovis* in laboratory assays¹⁰.

Plant extracts: We identified a number of plant extracts with laboratory activity against sheep lice, including tea tree oil and are currently undertaking further studies.

LiceBoss™

Recently, with funding from Australian Wool Innovation, a decision support website LiceBoss™ for wool growers and consultants, has been developed and launched. LiceBoss contains a number of interactive decision support tools as well as a synthesis of information available on most aspects of the biology and control of sheep lice and can be found at <http://www.liceboss.com.au/>

References

- ¹ James PJ (2002) Sheep lice, changing practices and wool industry implications. *Wool Technol Sheep Breed* 50: 61-74
- ² James PJ, Cramp AP and Hook SE (2008) Resistance to insect growth regulator insecticides in populations of sheep lice as assessed by a moulting disruption assay *Med Vet Entomol* (in press).
- ³ James PJ, Bartholomaeus FW and Karlsson LJE (2007) Temporal relationship between infestation with lice (*Bovicola ovis* Schrank) and the development of pruritic behaviour and fleece derangement in sheep. *Vet Parasitol* 149: 251-257
- ⁴ Crawford S, James PJ and Maddocks S (2001) Survival away from sheep and alternative methods of transmission of sheep lice. *Vet Parasitol* 94: 205-216.
- ⁵ James, PJ, Horton, BH, Evans, DE, Campbell NC, McDonald M and Schroder J (2008). LiceBoss™ website <http://www.liceboss.com.au/>
- ⁶ James PJ (1999) Do sheep regulate size of their Mallophagan louse populations? *Int J Parasitol* 29:869-75
- ⁷ Kemp DH and Bourne A (1980) *Boophilus microplus*: the effect of histamine on the attachment of cattle tick larvae - studies in vivo and in vitro. *Parasitology* 80: 487-496.
- ⁸ Nelson WA, Bell JF, Stewart SJ. (1979) *Polyplax serrata*: Cutaneous cytologic reactions in mice that do (CFW Strain) and do not (C57BL) develop resistance. *Exp Parasitol* 48: 259-264.
- ⁹ Pfeffer, A; Morris, CA; Green, RS, et al. (2007) Heritability of resistance to infestation with the body louse, *Bovicola ovis*, in Romney sheep bred for differences in resistance or resilience to gastro-intestinal nematode parasites. *Int J Parasitol*: 37: 1589-1597
- ¹⁰ Gough JM, Akhurst RJ, Ellar DJ, Kemp DH, Wijffels GL (2005) Identification and characterization of proteins from *Bacillus thuringiensis* with high toxic activity against the sheep blowfly, *Lucilia cuprina*. *Biological Control* 90: 39-46.

Vote of thanks:

Matthew Purcell

Chairman's closing statement:

The next meeting will be held at this venue on September 8, 2008 at 12.00 noon with an address by Dr Shaun Winterton, Queensland Department of Primary Industries & Fisheries: "Evolution of the Mantid lacewings based on multiple genetic markers (Neuroptera: Mantispidae)".

News Bulletin contributions from Ensoc Members

We would love to receive your news, field trip reports, sightings of strange and wonderful beasts, Entomological Notes, Bug of the Month, gossip, concerns, questions and suggestions pertaining to the world of entomology. Please send contributions to the News Bulletin editor or your nearest Ensoc office bearer!

Don't delay, next issue out soon!

Thank you, Anna

Notice of Next Meeting

Entomological Society of Queensland

Monday 8th September 2008 12pm

Large Conference Room
CSIRO Long Pocket Laboratories
120 Meiers Rd, Indooroopilly

Dr Shaun Winterton
Qld DPI&F

"Evolution of the Mantid lacewings
based on multiple genetic markers
(Neuroptera: Mantispidae)"



Richmond Birdwing Recovery Network Inc.

The Annual General Meeting of the *Richmond Birdwing Recovery Network Inc.* will be held 10.00 AM - 2.00 pm on:

SATURDAY 13th September 2008

**AT THE CABOOLTURE REGION ENVIRONMENTAL
EDUCATION CENTRE
150 ROWLEY ROAD, BURPENGARY**

The main business will be an address
(from 1 — 2 pm) by

Ted Edwards

(Australian National Insect Collection, Canberra)

***AUSTRALIAN SUN MOTHS — THE
DAY-FLYING BUTTERFLY LOOK-ALIKES***

VISITORS ARE WELCOME

RSVP (by 9 September for catering):
Dawn Muir (ph. 3870 8076) or
email dawnmuir@optusnet.com.au

The 2008 BEERWAH BUG-CATCH

Sunday August 24

When Dave Merritt told us that there were nearly 40 students enrolled in Insect Science (a 2nd-year introductory entomology course) at UQ this semester we looked at our schedules for the remainder of the year and decided to plan an early Bug-Catch at close by Beerwah to take the opportunity to capture the interest of these students. This was the Society's fourteenth Bug-Catch trip and was organized by Geoff Monteith and Chris Lambkin in conjunction with Jenny Greenland from the Environmental Protection Authority.

The Beerwah Wallum Scientific Reserve lies between the Pacific Highway and Beerwah on Roys Road. "Wallum" is the name for the diverse heath/paperbark vegetation which originally occupied most of the swampy, subcoastal lowlands on sandy soils north of Brisbane. Although the infertile soils made it of little use for agriculture, much of it has been cleared for housing and pine plantations. The Beerwah Reserve is a large patch of original wallum set aside for scientific purposes by the Forestry Department at the time when the extensive exotic pine plantations were being established around the Glasshouse Mountains in the 1950-60s. It comprises large areas of low heath in swampy areas interspersed with patches of excellent scribbly gum forest with smaller areas of bloodwood and stringybark. The heaths were in full spring flower at the moment with banksias, melaleucas, boronias, leptospermums and various peas. For a change, the weather favoured our Bug-Catch, with clear blue skies, and a sunny, warm (for August) day.

18 students assembled at the **Reserve** (26°51'22"S 152°59'13"S) including Anthony Allso, Alice Buttenshaw, Stacey Hawtin, Tristan Heaney, Nick Heibloem, Victoria Hutchinson, Thomas Jennings, Trent Leporati, Jonathan McDougall, Ami Amir, Abdul Nasir, Adam Reddiex, Hannah Ritchie, Kathryn Rudland, Yu Keng Tee, Caitlin Thomas, Jordan Wareham; with their tutor Kathy Ebert, and lecturer Dave Merritt. As Insect Science is a remote study course run via web contact and without formal lectures many of the students are not based in Brisbane. At least one, Nick Heibloem, travelled from Nambour for the day. One of Lyn Cook's undergraduate project students, Luke Ambrose also attended with his mother and children.

Ten society members and nine other visitors including Chris Burwell, Claude Rodriguez and their daughter Antonia, Lyn Cook and her partner Greg Harper, Jenny Greenland with her American friend Wendee Holtcamp, husband Don and two younger daughters, Chris Lambkin, Peter Mackey, David Merritt, Geoff Monteith, Bert Orr, Federica Turco, and Susan and Jeff Wright, Sonja Wiseman; collected during the day and night. Geoff visited the area the week earlier to set up Malaise traps, a flight intercept trap, and dung baited traps. The BugCatchers collected for nine hours in a beautiful environment with many habitats including some open pools of water. The students were shown diverse methods such as sweep netting, beating, baited pitfall traps, bark spraying, Malaise traps, light trapping, digging, log rolling, dip netting, and direct search to obtain specimens for their mini-collections. Antonia and Chris Burwell and one of the students waded into deeper water to obtain aquatic specimens. Geoff set up two light sheets at dusk, and Peter Mackey set up a blue-light sheet on the ground. Susan demonstrated pinning techniques. Jeff busily photographed insects for Queensland Museum publications, especially the aquatics and the cricket we spotted at night moulting to adult.

While the insect collecting was generally poor due to the season, honeybees, small green scarabs, silverfish, wasps, and mosquitoes emerged to educate the students. Some more unusual groups were collected including a water scorpion, a huge pink Emperor Gum Moth, and many nymphs of the Mexican lantana biocontrol leaf hopper, *Aconophora compressa*. The Queensland Department of Natural Resources and Mines released *Aconophora* in 1995, as a biological control for lantana. There has been an issue with it feeding on other plants, particularly *Duranta* and the ornamental Fiddlewood *Citharexylum* sp. However at Beerwah the nymphs were definitely feeding in numbers on lantana. **Scale insect gall** collecting was good. Lyn Cook was lucky enough to find galls of mature females of *Apiomorpha variabilis*, *A. rosaeformis*, and another undescribed species on *Eucalyptus* and many galls of an undescribed genus of scale insect on *Melaleuca nodosa*. Lyn also found some Fergusoninid galls and Dave cut them open so that the students could see the fly larvae within.

Chris Lambkin and Geoff Monteith



Figures 1-6: 1. Ant, Kathy, Dave, Fede, and Geoff, watch Stacey sort dip net samples. 2. Geoff demonstrates bark spraying to Tom, Jordan, Sonja, Dave, Ant, Alice, Chris, and Jon. 3. Geoff demonstrates a good beating. 4. Chris explains the workings of the Malaise trap to Ami, Ant, Kathy and Stacey. 5. Chris and Antonia check out the dip net catch. 6. Susan demonstrates pinning and setting techniques to Kathy and Nick, watched by Fede. Photographs 1-3 by Jenny Greenland, 4 by Wendee Holtcamp, 5-6 by Jeff Wright.



Figures 7-11: 7. UQ students YuKeng, Tom, and Alice collect samples from bark spraying. 8. Susan sweep netting syrphids. 9. Students Ami, Page, and Stacey collect soldier and worker termites from beneath the bark of a fallen scribbly gum. 10. Fede, Geoff, and Susan at the light sheet. 11. Tom and Alice vigorously involved in collecting aquatic invertebrates. Photographs 7, 9, 11 by Jenny Greenland, 8, 10 by Jeff Wright.

ESQ Collecting Permits

Reports now overdue

For those of you who have sent me a return, thank-you! **For the others, you are now overdue** and if requesting our renewed permits you will be refused until I receive your permit return. Please note I do this on a voluntary basis and I am getting very tired of chasing people up!!

The information the EPA requires is as follows: latitude and longitude or grid references, datum used, locality information, collector, date, method of collection, habitat, life stage, sex (if known), altitude, scientific name (common name if there is one) and number collected. In the case of butterflies I need to know if a specimen was taken or if the record is an observation only. They also ask for information on where the specimens are held. There is an excel file into which your data should be entered and you should all have a copy.

Please send your reports to me so I can collate the information and then send it on. Reports sent electronically would be very welcome as it saves my fingers but printed reports (especially in the case of nil reports) are fine. **Even if you haven't collected anything the EPA still requires that a report be lodged by every holder of the permit.** I have noticed that a number of members seem worried if they haven't collected anything for the year – please don't be as this is quite acceptable and all I need in that case is a quick call or email to that effect.

Expiry and renewal of permits

The permits the society holds have now expired (as of the 18 August 2008) therefore ensure you are not collecting under our permits. I have negotiated with QPWS an extension and if members need this then please contact me. We have had a few hiccups with the renewal as QPWS now require me to complete a new application rather than a simple renewal plus give them a list of the protected areas in which we will be collecting. This is proving a little difficult but I should have the permit application in by the time this bulletin is published and then we will have to wait. I apologize for any delay but this was unexpected I think both for us and the permitting staff in QPWS. I am expecting the permit to be granted however we may have to be very conscious of areas in which we intend to collect.

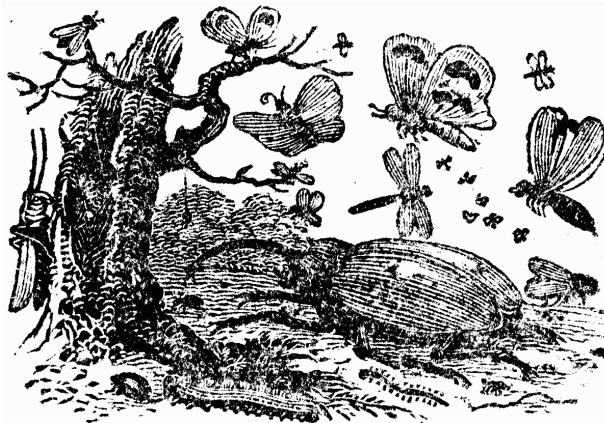
All those members wishing to have access to our new permits need to fill in the attached form and send the signed original back to me. You will note that the protected species permit is no longer listed on that form. One of the decisions council have made is that the protected species permit will be dealt with separately and we will update members on that permit via the bulletin.

Therefore, please keep an eye out in the bulletin for information about the permits as there will be updates in the next few months.

Financial status

A reminder also that **members who hold permits must be financial** members of the society, so please check that you have paid up for 2008.

Susan Wright



News from the USDA-ARS Australian Biological Control Laboratory

Jeff Makinson travelled to Hong Kong in late August to collect stem-boring pyralid moth larvae which feed on the climbing fern, *Lygodium microphyllum*. Bradley Brown is host testing a Cecidomyiid gall-former, *Lophodiplosis indentata*, which attacks the leaves of *Melaleuca quinquenervia*. Another gall-former, *Lophodiplosis trifida* has been approved for release in Florida where this paperbark tree is a major weed. Several insects from Australia have been effective biological control agents and the project is a success.

News from the School of Integrative Biology, UQ

A sizeable contingent of SIB entomologists (Lyn Cook, Bronwen Cribb, Ezekiel Glaze, Gunter Maywald, Lynda Perkins and Myron Zalucki) attended the International Congress of Entomology in Durban, Africa, in July. Myron chaired a session in Insect Plant Interactions on traversing a treacherous landscape, which was co-moderated by Bronwen. Lynda presented work on developing a model of caterpillar movement using pea plants and first-instar larvae of *Helicoverpa armigera*, and Ezekiel presented a talk on modelling plant landscapes. Gunter presented a poster on his chrysomelid systematics research and Lyn talked on plant-scale insect co-radiation. After the congress, Bronwen visited Prof. Frances Duncan at the University of Witwatersrand.

Sassan Asgari attended the Aust & NZ Biocontrol Conference (Sydney, 10-14 Feb) and the Annual Meeting of the Society for Invertebrate Pathology at the University of Warwick, UK (3-8 August). The contents of the talks from the Biocontrol conference will be published in a special issue of Biological Control this year. Mazhar Hussain, (PhD student in Asgari's lab) reported the first microRNA from an insect virus regulating virus replication, which will be published in the Journal of Virology in September. Katie Renwick joined Asgari's and Mike Furlong's labs late in 2007 as a research officer working on interactions of an entomopathogenic fungus and imidacloprid on three vegetable pests. Mike Furlong has visited Samoa and Fiji to help run Farmer Field Schools as part of an ACIAR project. Myron will visit Samoa in August (again).

Dave Merritt carried out field work in Tasmania during July. He set up monitoring equipment in caves to assess the light output rhythm of glow-worms that reside in the caves at Ida Bay, south of Hobart, and two caves in the Mole Creek region. The results confirmed earlier observations that, in Tasmania, the cave glow-worms maintain a synchronised rhythm of glowing inside the caves. Darren Wong from the Merritt lab graduated at the University of Queensland graduation ceremonies in July. His project, titled "In vivo and in vitro expression of resilins from fly and flea", was jointly supervised by David Merritt and Chris Elvin (CSIRO, Livestock Industries).

Several members of Scott O'Neill's and Beth McGraw's labs, including Anne Duplouy, attended a *Wolbachia* meeting in Crete. Some of Anne's work on beautiful South Pacific butterflies has published in Molecular Ecology.

Michelle Rafter (PhD student with Gimme Walter) has been out and about in the field sampling “South African citrus” thrips on mother-of-millions, and spoke at a mother-of-millions field day in Chinchilla. Andrew Manners (ex Walter lab) has started a new job with Biosecurity Queensland (QDPI&F).

New entomology students to SIB include Iumenlam Lyngdoh and Sanjeev Kumar, who have joined Sassan Asgari's lab as Masters in Biotechnology students working on improving the efficacy of insect pathogenic viruses using venom proteins from parasitoid wasps and identifying targets for a microRNA expressed by an ascovirus infecting noctuids, respectively. Paul Lin (PhD candidate) and Penny Mills (Honours student) have joined Lyn Cook's lab to work on the evolution and systematics of scale insects. Matan Shelomi, a student from Naomi Pearce's group in Harvard, is visiting the Zuckerman lab over the northern summer. Some members of second-year Insect Science course took part in a bugcatch on August 24 – see Chris Lambkin's article for the full report.







The Australian Entomological Society Inc.

39th ANNUAL GENERAL MEETING
will be held at
Orange Agricultural Institute
Orange, New South Wales
29th September 2008 commencing at 5:15pm

A provisional agenda is available at:
<http://www.agric.nsw.gov.au/Hort/ascu/myrmecia/events.htm>





New Book Release: **Ants of New Zealand**

Warwick Don

with foreword by Edward O. Wilson

Key Points

- First book on the subject, by the acknowledged expert
- Identifies and describes both native and exotic species
- Illustrated throughout with diagrams and photographs, in colour and b/w

Book

This book is the outcome of a lifetime's research by the author. He reveals that there are 37 established species of ants in New Zealand, 11 of which are

considered to be endemic. This leaves 26 that are exotic or introduced, 2 of which are recent arrivals. Three of 4 additional recent arrivals pose serious threats to New Zealand's invertebrate fauna and economy if they ever become established.

New Zealand's endemic ant fauna comprises a mixture of 'primitive' and 'advanced' species. Like spiders, ants can tell us something about New Zealand's Gondwanan past. Questions about the identification of ants are frequently fielded by museums. The illustrations and photographs in this volume will greatly assist this task. For would-be students of ants, there is also a useful chapter on collecting and studying the fauna.

Contents

Foreword by Edward O. Wilson Preface 1 Introducing the World of Ants 2 Illustrated Key to the Ants of New Zealand (workers of established species only) 3 Established Species – Endemic and Introduced (by genus) 4 Introduced Species – of doubtful establishment 5 Introduced Species – recent arrivals 6 Collecting, Preserving, Culturing and Studying Ants 7 Brief Biographies of Four Myrmecologists of the Past Glossary References Index

Author

Warwick Don is an honorary curator in entomology, Otago Museum, having retired from the Department of Zoology, University of Otago.

Publication details

CATEGORY Natural History, Environment

FORMAT 255 x 190 mm, hb

EXTENT 240 pp approx

ISBN 978 1 877372 47 6

PRICE \$59.95

PUBLICATION DATE January 2008



<http://www.otago.ac.nz/press/booksauthors/2007/Ants%20of%20New%20Zealand.html>

New Book Release:
Mothology: Discover the magic

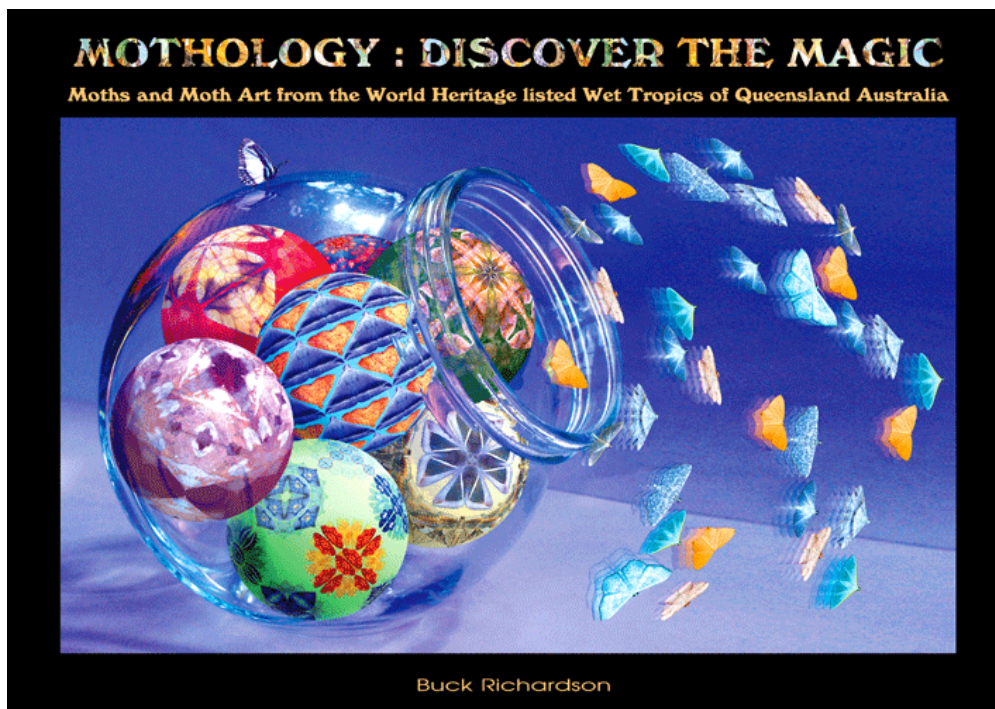
Buck Richardson

September 2008.
Privately Published. 66pp., full colour, hardback.

Available from info@leapfrogoz.com.au
for RRP \$29.95 postage free within Australia.

This book starts with 11pp of illustrated introduction; pp. 12-39 consists of colour photos of identified live moths from Kuranda, Qld, mostly the larger species and shows approximately 370 species, which is followed by pp. 40-65 consisting of various artistic designs generated by many arrangements of the moth photos.

For further information see www.leapfrogoz.com.au



Insect expert discovers new species on eBay

19 August 2008

<http://www.rothamsted.bbsrc.ac.uk/corporate/PressReleases/PressReleases.php?PRID=48>

Dr Richard Harrington, Vice President of the Royal Entomological Society and Deputy Science Director at the Centre for Bioenergy and Climate Change, Rothamsted Research in Harpenden, Hertfordshire, acquired the insect, an aphid, for £20. His colleague Dr Colin Denholm initially spotted the item and made the purchase from an eBay member in Lithuania. The fossilised insect is encased in Baltic amber approximately the size of a Smartie.

After examining the specimen with his team of aphid specialists, Dr Harrington sent the insect to Professor Ole Heie, a world expert on fossil aphids in Copenhagen, for identification. Professor Heie believed the specimen to be an unknown species of the *Mindarus* genus, and named it *Mindarus harringtoni* after Dr Harrington.

The aphid is thought to date back to around 35 to 50 million years ago, and from the plant remains found in the amber, it is thought that it originated from a tropical climate.

Aphids are small plant-feeding insects, and around 4,400 species are known. They vary in size from one to 10 millimetres in length and many can cause substantial damage to agriculture, horticulture and forestry.

The aphid is now housed in the Natural History Museum and a full description of the insect has been published in the Royal Entomological Society's journal, *Antenna*.

Dr Harrington said: "I wanted the aphid to be named *Mindarus ebayi* but flippant species names are frowned upon these days! I'm delighted to have a work of nature named after me – even if it is an extinct fossil!"



Fossil aphid in amber

Photo Credit: ROTHAMSTED RESEARCH VISUAL COMMUNICATIONS UNIT

Things not always quite as they appear

Fielding public enquiries about insects can often raise a smile. "*What's that bug?*" is a little website run as an art project in California by a couple of artists who undertake to try to name any insect picture sent into them. We admired their diplomacy in dealing with the quaint but inventive interpretation their correspondent made of a little insect drama he photographed being enacted on the rope of his tent:

Evening,

We live on Vancouver Island in British Columbia, Canada. A few weeks ago we were camping along side a local river not too far out of town. Around 7:30 that evening I noticed this insect attached to a line on the tent. The insect had attached itself to the back of a wasp and was in the process of sucking the insides of the wasp out. The wasp was minus its wings. In the morning the hungry insect had departed and left the empty carcass of the wasp still attached to the tent line. Nothing left but a hollowed out shell. I unfortunately did not get a photo of what was left but I did get the one attached to this email (below). Any help in the identity of this bug would be greatly appreciated. Many thanks,
Chris,
Victoria. BC Canada

*Hi Chris,
While your story is interesting,
your observation of the occurrence
is not quite accurate. The pictured
insect is a newly metamorphosed
Cicada, and what you have mis-
taken for a meal is not a wasp but
the shed skin of the larval Cicada.
The photo is quite gorgeous.*



http://www.whatsthatbug.com/cicadas_2.html

Unlocking the genome of the world's worst insect pest

CSIRO Monday Mail

Issue 289/30 June 2008

[http://intranet.csiro.au/intranet/communication/internalcomm/
mondaymail/2008/MM080630/htm/genome.htm](http://intranet.csiro.au/intranet/communication/internalcomm/mondaymail/2008/MM080630/htm/genome.htm)

Scientists from CSIRO and the University of Melbourne, and the Baylor College of Medicine in Houston, Texas, have announced they are sequencing the genome of *Helicoverpa armigera*. This is an exciting step forward which will facilitate the development of new, safe, more sustainable ways of controlling what is regarded as the world's worst agricultural insect pest.

At the recent BIO 2008 International Convention in San Diego, California, the Australian Minister for Innovation, Industry, Science and Research, Senator the Hon Kim Carr, said that the team had made great progress and expected to sequence the moth's genome by the end of the year.

The project, which will establish Australian scientists as leaders in organising major insect genome projects, is led by Dr John Oakeshott (CSIRO Entomology) and Associate Professor Phil Batterham (University of Melbourne). *H. armigera* is resistant to most classes of pesticide and threatens the long-term viability of transgenic crops which rely on the biological pesticide, Bt. It causes \$225 million of damage a year in Australia – \$5 billion globally – to crops such as cotton, legumes and vegetables.



Helicoverpa armigera larva (Photo Credit: CSIRO)

Capturing the beauty and frailty of insects

Gnatter

CSIRO Entomology's Monthly Newsletter

15 August 2008/Issue 07

http://www.ento.csiro.au/newssheet/2008/2008_07/ceramics.html

I am a Fine Arts Masters student at RMIT. I spent last year teaching art in high school but I decided to continue my studies this year. My work explores the relationship between ceramics and drawing, in particular how I can bring the two disciplines together. I am looking for ways in which ceramics can bring drawn images to life - how texture and form can bring a three-dimensional quality to drawings, and how the space a vessel contains and inhabits can be defined by a drawing.

My work has been developing along these lines for some time - throughout my honours year two years ago and while I worked secondary art teacher. One recent significant change has been a shift in the size of the pieces I am making and a shift from the human form to other images from the natural world. Recent works feature small feathers falling within and beyond the space that the ceramic vessels inhabit. At the same time I seek to express the beauty and clarity of such moments.

An important element of this exploration and my interest in further study is to refine my technical skills in the construction and production of the ceramic object and in further mastering the art of drawing on a ceramic surface. I have developed new interest in insects and in capturing their beauty and frailty. During my time at CSIRO Entomology I worked directly onto the vessels I had previously made. These were hand constructed in fine porcelain which is very delicate. I use special ceramic pencils drawing directly onto the surface. It is challenging to draw onto a curved surface.

It was great to have access to specimens - as you can see I drew from the collection of moths - and I really learnt a lot during the time I spent with you. I would like to return and explore the beetle collection. Thanks for making me feel so welcome. It was a very inspiring experience.

Ariela Nucci



**Above & Left:
Ariela refers to the
Australian National
Insect Collection to
capture the detail for
her drawings.
(Photo Credit: CSIRO)**



Above: Examples of Ariela's hand drawings on ceramic (Photo Credit: CSIRO)



Above: Examples of Ariela's hand drawings on ceramic (Photo Credit: CSIRO)

Australian Entomological Society Inc. **Research Grants - Call for Applications**

The executive takes great pleasure in calling for applications for the Australian Entomological Society Research Grants to be awarded in 2009.

The scheme is intended to encourage the advancement and dissemination of entomological knowledge, particularly in relation to the Australian fauna. Applications for conference travel will not be considered. The grants are primarily for small, short-term projects and will be available only to members of the Society of at least 12 months standing. Groups will be eligible provided that the primary researcher is a member. Total funds available will be in the order of \$2000.

A report to the Executive in a form suitable for publication in *Myrmecia* will be required at the end of the project or, at the latest, by December 2009.

Each application needs to state clearly:

- The aim of the project
- The expected duration of the project
- A detailed budget, and
- Contact addresses (including email) and telephone numbers of the participants

The names of one or two referees may also be supplied.

The Society Executive will appoint a selection panel to allocate and administer the grants. Applications may be for any amount up to \$2000 but remember that small, short-term projects which enable a diverse range of work to be funded will be favoured. Successful applicants for 2009 will be notified in December 2008 and published in the February 2009 issue of *Myrmecia*. Three copies of your application should reach the Secretary at the following address no later than 31st October 2008.

Prof. Geoff Gurr
Secretary, AES
Charles Sturt University
PO Box 883
Orange NSW 2800 Australia
ggurr@csu.edu.au

DIARY DATES 2008

*Meetings held 2nd Monday of the month
(or Tuesday if Monday is a public holiday)*

June 10th	Student Award Winner: Jason Callander	
	Notes & Exhibits	
August 11th	Dr Peter James (Qld DPI&F)	Lousy research & the Integrated Parasite Management Group
September 8th	Dr Shaun Winterton (Qld DPI&F)	Evolution of the Mantid lacewings based on multiple genetic markers (Neuroptera: Mantispidae)
October 13th	Mr Stacey McLean	Filling Biodiversity Information Gaps in Brisbane City: Bugs, Birds and Bracken Fungi
November 10th	Dr Felix Bianchi (CSIRO Ento.)	The landscape context of the ecosystem service of pest control
December 8th	Notes & Exhibits	

IMPORTANT NOTICE

The official address for the Entomological Society of Queensland and *Australian Entomologist* and to which all communications should be addressed is: **PO Box 537, Indooroopilly 4068, Qld.**

Sustaining associate of the News Bulletin:

TROPICAL FRUIT FLY RESEARCH GROUP, GRIFFITH UNIVERSITY

SOCIETY SUBSCRIPTION RATES

GENERAL:	Person who has full membership privileges	\$30pa
JOINT:	Residents in the same household who share a copy of the <i>News Bulletin</i> , but each otherwise have full membership privileges.	\$36pa
STUDENT:	Students and others at the discretion of the Society Council	\$18pa

Student membership conveys full membership privileges at a reduced rate.
See subscription form on opposite page for details.

THE AUSTRALIAN ENTOMOLOGIST SUBSCRIPTION RATES

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	Institutions	A\$30pa
ELSEWHERE:	Individuals	A\$35pa
	Institutions	A\$40pa

Subscriptions should be sent to the Business Manager,
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NOTICE OF NEXT MEETING

The next meeting of the Society will be held at **12:00 pm** on **Monday, 8th September 2008** in the **Large Conference Room, CSIRO Long Pocket Laboratories**, 120 Meiers Rd Indooroopilly. The main business will be a presentation by **Dr Shaun Winterton (Qld DPI&F): "Evolution of the Mantid lacewings based on multiple genetic markers (Neuroptera: Mantispidae)"**.

VISITORS ARE WELCOME

(Please sign in at CSIRO Reception before attending the meeting)

HONORARY LIFE MEMBERS OF THE SOCIETY

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D.L. Hancock

M.J. Harslett R.P.

D.S. Kettle

D.P.A. Sands

R. P. Kleinschmidt